ASME PVP® 2022

Pressure Vessels & Piping® Conference

Program

CONFERENCE
July 17 – 22, 2022

JW Marriott Resort and Spa,
Las Vegas, NV

https://event.asme.org/PVP

The American Society of Mechanical Engineers®
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Contents

Welcome from the Chair

Andrew Duncan
Conference Chair

Welcome to the 2022 ASME Pressure Vessels and Piping Conference. A return to technical engagement, building relationships and the jumpstart of your career forward awaits you. For nearly 3 years the global events associated with the Covid-19 pandemic have hindered progress in our society. Despite this pandemic, the PVP Conference has forged ahead on a virtual platform. This year, our Conference organizers have chosen to return to the "tried and true" in-person conference as long as health and safety circumstances will allow. We sincerely appreciate the commitment you have shown to this Conference, and we look forward to meeting you in-person in Las Vegas, Nevada.

The PVP Conference is known as the outstanding international technical forum for participants to further their knowledge base by being exposed to diverse topics, and exchange opinions and ideas with leading experts from industry and academia. The Conference is built on a pioneering spirit that disseminates the cutting-edge knowledge on Pressure Vessels and Piping Technologies for and to our global community of practice. Our international experts come from at least 40 different countries in Europe, Africa, the Middle East, Asia, the Americas, and the Oceania islands and present their latest research findings in the area of pressure vessels and piping. The Conference Proceedings capture the essence of what participants experience during the week and preserves the technical content generated in the Pressure Vessels and Piping field.

The ASME Pressure Vessels and Piping Division is the primary sponsor of this Conference, with additional participation by the ASME Nondestructive Evaluation, Diagnosis and Prognosis Division (NDPD). The plenary session features keynote presentations by expert speakers on the topic of the hydrogen economy in the changing landscape of energy production. The conference also has attracted 420 technical papers and 26 presentations from contributing authors/presenters and are presented in Las Vegas throughout the week of July 17-22. In addition, experts have developed 4 technical tutorials and 1 special tutorial offered for the benefit of conference participants. Finally, our Conference will host a Workshop on Introduction to the New Non-metallic Pressure Piping System (NPPS) Standards.

Technical papers and presentations presented at this Conference are separated into Tracks, according to their technical areas in approximately 120 sessions. Technical papers are available online to registered attendees via the Conference App. Hard copy volumes of post-Conference Proceedings will be published by ASME after the Conference. Authors are also encouraged to submit their papers to the Editor of the Journal of Pressure Vessel Technology (JPVT), Dr. Young W. Kwon, (ywkwon@nps.edu) for further review and publication in the JPVT.

On behalf of the PVP Senate Operations Committee, the PVP Division Management Committee, Clay Rodery, the PVP-2022 Technical Program Chair, and myself, the PVP-2022 Conference Chair, we would like to extend our sincere gratitude to all Contributing Authors, Speakers, Reviewers, Panelists, Tutorial Leaders, Session Organizers, Session Chairs and Co-Chairs, and Technical Track Organizers, our ASME Meetings Manager, Kimberly Miceli, and Supervising Event Manager, Jamie Hart, our ASME Publications Coordinator Mary Rose MacDonald, and our ASME Electronic Conference Coordinator, Stacey Cooper. Without their contributions and assistance, we would not have been able to achieve the success of the PVP-2022 Conference. Finally, we would also like to recognize our financial sponsors for their generosity. Their contributions are greatly appreciated.

Andrew Duncan
Conference Chair

PVP 2022 Program Layout

	Sunday 17 July	Monday 18 July	Tuesday 19 July	Wednesday 20 July	Thursday 21 July	Friday 22 July
7:15 am **8:15 am**	Arrival, Registration Open (8:00 am – 6:00 pm)	Authors' Breakfast/ Briefing, Registration Open (7:30 am – 6:00 pm)	Authors' Breakfast/ Briefing, Registration Open (7:30 am – 4:00 pm)	Authors' Breakfast/ Briefing, Registration Open (7:30 am – 3:00 pm)	Authors' Breakfast/ Briefing, Registration Open (7:30 am – 10:00 am)	Open
8:15 am **10:00 am**	**Block 0.1** Open	**Block 1.1** Technical Sessions, Exhibit	**Block 2.1** Technical Sessions, Technical Tutorial, Exhibit	**Block 3.1** Technical Sessions, Technical Tutorial, Exhibit	**Block 4.1** Technical Sessions, Workshop	**Block 5.1** Workshop
10:15 am **12:00 pm**	**Block 0.2** Open	**Block 1.2** Plenary Session, Exhibit	**Block 2.2** Technical Sessions, Technical Tutorial, Exhibit	**Block 3.2** Technical Sessions, Technical Tutorial, Exhibit	**Block 4.2** Conference Evaluation, Technical Sessions, Workshop	**Block 5.2** Workshop
12:00 pm **2:15 pm**	Open	Open	Technical Committee Meetings	Technical Committee Meetings	PVP LEF	Open
2:15 pm **4:00 pm**	**Block 0.3** Special Tutorial (2:30 pm – 4:15 pm)	**Block 1.3** Technical Sessions, Technical Tutorial, Exhibit	**Block 2.3** Technical Sessions, Exhibit	**Block 3.3** Technical Sessions, Technical Tutorial	**Block 4.3** PVP LEF Workshop	Open
4:15 pm **6:00 pm**	**Block 0.4** Early Career Engineers / Students Reception (4:30 pm – 5:45 pm)	**Block 1.4** Technical Sessions, Technical Tutorial, Exhibit	**Block 2.4** Technical Sessions, Exhibit	**Block 3.4** PVP Division Honors and Awards Gala & Dinner (5:00 pm - 10:00 pm)	**Block 4.4** Workshop	Open
Evening	Open	Conference-Wide Reception (6:15 pm – 8:00 pm)	Networking Reception (5:30 pm – 7:00 pm)			

ASME Pressure Vessels & Piping Division

56 Years of Cutting Edge Research in PVP

The 2022 Pressure Vessels & Piping Conference marks the 56th Anniversary of the Pressure Vessels & Piping (PVP) Division. The Division's rich history began with the Pressure Vessel Research Committee (PVRC), which was the research arm of ASME. The PVRC united the most experienced members in the design and manufacture of pressure vessels, valves and pumps; and sponsored research programs on thin and thick shell vessels with the cooperation of the Atomic Energy Commission (AEC) and other organizations as early as 1958. Among a number of institutions that participated in the program, Pennsylvania State University dealt with stress analysis of pressure vessels with nozzle inserts with different types of reinforcement pads under combined loading. D. Hardenberg and S. Zamrik published their results in WRC bulletins of 1963 and 1964. Contributions to this work were also made by C. Taylor at Illinois University using photoelasticity stress analysis, and E.O. Waters at Yale University using computational analysis. In view of the growing interest in pressure vessel technology and research results, F. Williams from Taylor Forge, who was a very active member, spearheaded an organizational meeting at the 1965 ASME Winter Annual Meeting (WAM) in Chicago to form a division dedicated to all technical aspects of pressure vessels and piping. Recommendations were made by F. Williams and D. Young to create the Pressure Vessels and Piping Division. The recommendation passed unanimously, and D. Young was named the first Division Chair on April 13, 1966.

The PVP Division evolved from a small Division with four Technical Committees to the robust Division it is today with eight Technical Committees and a strong, vital and international membership. The Division leadership in the early years had possessed a global vision: to represent an international membership with industry experts involved in the Division growth. To ensure the achievement of their vision, PVPD leadership established a Mission and Core Values:

- The Mission is to facilitate state-of-the-art, efficiency, reliability, and safety as the go-to source of knowledge for pressure technology.
- The Core Values are to embrace integrity and ethical conduct and a welcoming climate for a diverse global community of students and engineers to foster creativity, innovation, and intellectual growth.

To disseminate its mission, global conferences were organized to bring the technical community together and to exchange the technology development in the pressure vessels industry. The continued success of PVP Conferences is due to the dedication of our volunteers and the support of their companies.

ASME is truly an international organization and the PVP Division is an appropriate reflection of this worldwide reach. From 1991 to 2000, the number of contributors from outside of North America grew from approximately one-third to more than two-thirds. Our annual conferences continually host attendees from 35 to 42 different countries representing all regions of the globe. Needless to say, the technical content and the quality of PVP Conference sessions have benefited considerably from overseas participation.

To encourage students' active participation in the annual PVP Conference, the Rudy Scavuzzo Student Paper Competition is organized. The PVP Division encourages students and early-career engineers to get involved with the Conference and the Division. PVP Conference attendees are also encouraged to include their spouses in their conference travel plans. This provides and promotes a welcoming atmosphere that further develops friendship, broadens relationships and extends interaction and networking. Our PVPD Senate Operations Committee (and spouses) actively participate in creating and maintaining the "PVP Family" atmosphere that makes our social events successful. The PVP Division is ever grateful for their unwavering commitment.

PVP 2022 Conference Committee

Andrew Duncan
Conference Chair

Clay D. Rodery
Technical Program Chair

Doug Scarth
Conference Advisor

PVP 2022 Technical Program Representatives

Codes & Standards	Anees Udyawar & Pierre Dulieu
Computer Technology & Bolted Joints	Satoshi Nagata & Anita Bausman
Design & Analysis	Phillip Wiseman & Shunji Kataoka
Fluid-Structure Interaction	Trey Walters & Murthy Lakshmiraju
High-Pressure Technology	Matt Edel & Dusan Spernjak
Materials & Fabrication	Peter Gill & Sylvain Pillot
Operations, Applications & Components	Nicholas Klymyshyn & Ayman Cheta
Seismic Engineering	Keisuke Minagawa & Sukru Guzey
Student Paper Competition	Pierre Mertiny
ASME NDPD Division	Vivek Agarwal & Min Zhang

PVP Division Management Committee (2021-2022)

Matthew R. Feldman	Chair
Andrew Duncan	Vice Chair
Clay D. Rodery	Honors & Awards Chair
Yasumasa Shoji	Communications Chair
Ravi Baliga	Incoming Honors & Awards Chair

PVP Senate of Past Division Chairs

Trevor Seipp	2020-2021	Sam Y. Zamrik	1991-1992
Hakim A. Bouzid	2019-2020	G.E. Otto Widera*	1990-1991
Pierre Mertiny	2018-2019	Robert H. Mallett	1989-1990
Maher Y.A. Younan	2017-2018	Robert W. Swindeman	1988-1989
Douglas A. Scarth	2016-2017	Alexander H.C. Marr	1987-1988
Marina B. Ruggles-Wrenn	2015-2016	Jeffrey T. Fong	1986-1987
Daniel T. Peters	2014-2015	Don B. Van Fossen	1985-1986
Michael E. Nitzel	2012-2014	James R. Farr*	1984-1985
Ronald S. Hafner*	2011-2012	Charles F. Nash	1983-1984
Young W. Kwon	2010-2011	Donald S. Griffin	1982-1983
Luc H. Geraets*	2009-2010	Richard H. Gallagher*	1981-1982
Artin A. Dermenjian	2008-2009	L. Eugene Hulbert	1980-1981
James F. Cory, Jr.	2007-2008	Robert E. Nickell*	1979-1980
Judith A. Todd	2006-2007	Roger F. Reedy*	1978-1979
M.K. Au-Yang*	2005-2006	David H.C. Pai*	1977-1978
Ismail T. Kisisel	2004-2005	Pedro V. Marcal	1976-1977
William J. Bees	2003-2004	Harold H. Waite*	1975-1976
Howard H. Chung	2002-2003	Robert L. Cloud	1974-1975
Joseph Sinnappan	2001-2002	Charles V. Moore	1973-1974
A.G. (Jack) Ware	2000-2001	Irwin Berman*	1972-1973
Robert F. Sammataro*	1999-2000	Danos Kallas*	1971-1972
Thou-Han Liu	1998-1999	Robert J. Cepluch*	1970-1971
William E. Short, II	1997-1998	Charles F. Larson	1969-1970
Richard C. Gwaltney*	1996-1997	Gunther P. Eschenbrenner	1968-1969
Shoei-Sheng Chen*	1995-1996	Vito Salerno*	1967-1968
Greg L. Hollinger	1994-1995	Dana Young*	1966-1967
Carl E. Jaske	1993-1994		
Rudy J. Scavuzzo*	1992-1993		

* Deceased

PVP Division Technical Committee Chairs

Codes & Standards	Kiminobu Hojo
Computer Technology & Bolted Joints	Reza Adibi-Asl
Design & Analysis	Alicia Avery
Fluid-Structure Interaction	Kazuaki Inaba
High-Pressure Technology	Kannan Subramanian
Materials & Fabrication	Do Jun (DJ) Shim
Operations, Applications & Components	Alton Reich
Seismic Engineering	Osamu Furuya

PVP Division Administrative Committee Chairs

Membership & Engagement Chair	Vacant
Website & PVPD Newsletter Editor	Yasumasa Shoji
International Coordination	José Carlos Veiga

ASME Journal of Pressure Vessel Technology

Editor	Young W. Kwon

ASME President

Karen Ohland	2022-2023

ASME Staff

Sr. Manager, TEC Operations	Jamie Hart
Manager, Conferences and Events	Kim Miceli
Coordinator, Conferences and Events	Danielle Cavuoti (Rojas)
Sr. Manager, Conference E-Tools	Stacey Cooper

Opening Ceremony & Plenary Session

The Conference opens in the Grand Ballroom C on Monday, July 18th at 10:15 am. Representatives of the PVP Division Leadership Team will welcome the attendees. The first plenary presentation will be delivered by Timothy Reinhardt, Director for the Division of Methane Mitigation Technologies, Office of Resource Sustainability, Office of Fossil Energy & Carbon Management, U.S. Department of Energy.

The second plenary presentation will be delivered by Erick Escorza, Senior Director for Product Technologies, Tenaris.

Transformational Clean Hydrogen Production, Transportation, and Storage for a Sustainable Energy Future

Timothy Reinhardt
Director for the Division of Methane Mitigation Technologies

Office of Resource Sustainability, Office of Fossil Energy & Carbon Management
US Department of Energy

To support the Administration's "net-zero carbon emissions" goals, the U.S. Department of Energy (DOE) Office of Fossil Energy and Carbon Management (FECM) has established a clean hydrogen research program focused on accelerating the production, transportation, and subsurface storage of hydrogen while leveraging the existing natural gas value chain as effectively as possible. The program mission includes developing low-cost production of "carbon-free" hydrogen through transformational technologies, developing enabling technologies to support safe, efficient, low-cost transportation of hydrogen through existing natural gas infrastructure, and to provide long-term, effective, regional subsurface solutions to ensure bulk volume storage capacity and efficient extraction of gaseous hydrogen.

A Perspective of Steel Industry Actions & Responsibility Towards a Carbon Free Economy

Erick Escorza

Senior Director for Product Technologies

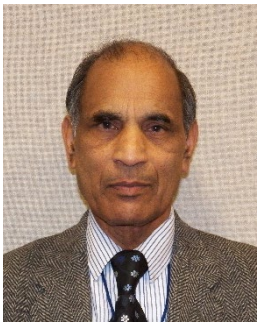
Tenaris

Decarbonization process is a global priority and requires the commitment of both institutional stakeholders and companies. Energy transition and circular economy are two pillars for directing business strategies and regional development policies towards carbon neutrality. Steel Industry has a great responsibility towards energy transition through reduction of carbon emissions, increase of circular economy and develop new products & services to support new technologies.

Nowadays, the steel industry is one of the three biggest producers of CO2. Every ton of steel produced emits on average 1.85 tons of CO2, accounting to about 8% of global emissions according to the World Steel Association (report 2018). The steel industry, through the World Steel Association has joined efforts to take action on reducing emissions. The presentation will provide some more insights and perspectives of the potential energy mix in the coming years, with concrete examples and current actions of Tenaris involvement in innovative projects and products.

Honors & Awards Gala

The ASME PVP Division Honors and Awards Gala, during which Division and selected ASME Society awards are presented, will be held on Wednesday, July 20, from 5:00 pm until 10:00 pm, in the Grand Ballroom. The top PVP Division award, the ASME S. Y. Zamrik PVP Medal, will be presented to Dr. Hardayal S. Mehta.



Dr. Hardayal S. Mehta
San Jose, CA

Dr. Hardayal S. Mehta received his BS in Mechanical Engineering from Jodhpur University (India) in 1964, and his MS and PhD in Mechanical Engineering from the University of California at Berkeley in 1968 and 1971 respectively. It was at Berkeley that he joined ASME as a member some 51 years ago. He was elected a Fellow in 1999.

After a short time with directing various piping and structural analyses activities with Impell Corporation, Dr. Mehta joined the GE Nuclear Division (now GE-Hitachi Nuclear Energy) in 1978 where he was employed until his retirement in December 2021 as Chief Consulting Engineer.

Dr. Mehta is internationally recognized for his expertise in the structural integrity of nuclear power plant components, in particular Boiling Water Reactor (BWR) vessels, internals, and associated piping. His areas of specialty include environmental fatigue, flaw evaluation and fracture mechanics. In the 1980s he contributed to several industry projects addressing growth and stability of stress corrosion cracks in large diameter BWR piping, evaluation of flaws and toughness of carbon steel and stainless-steel piping, and application of environmental fatigue stress rules to carbon steel reactor piping. In the process, he contributed to the development of engineering approaches and solutions to demonstrate margins for code acceptability and continued operation.

In recognition of his expertise in these areas, Dr. Mehta was invited to contribute to the *Companion Guide to the ASME Boiler & Pressure Vessel Codes*, for which he contributed to the following chapters:

- BWR Reactor Internals and Other BWR Issues
- Applications of Elastic-Plastic Fracture Mechanics in Section XI, ASME Code Evaluations
- New Generation of BWRs

Additionally, Dr. Mehta contributed a chapter to a related ASME book titled *Global Applications of the ASME Boiler & Pressure Vessel Code*. His contribution, titled *Nuclear Power and Generation IV Nuclear Reactors in India*, describes India's transition from the current heavy and light water reactors to fast breeder reactors and then advanced reactors primarily based on thorium fuel that is available in abundance.

Dr. Mehta began serving on ASME Boiler and Pressure Vessel Code committees in 1993 and has been a key contributor in the development and incorporation of provisions for evaluation of flaws of nuclear pressure vessels and piping into the ASME Code. Between the various Task Groups, Working Groups, and Subgroups that support ASME Sections III and XI, Dr. Mehta has contributed a cumulative total of 138 person-years of service.

Dr. Mehta has also been active in the activities of the Pressure Vessel Research Council (PVRC), including the Steering Committee on Cyclic Life and Environmental Effects in Nuclear Applications. Recommendations of this committee, which included the revision of fatigue curves for carbon, low alloy and stainless steels to include environmental effects, has had a significant impact on BWR fatigue evaluations.

Dr. Mehta has been an active supporter of the ASME Pressure Vessels and Piping Division. As a member the Codes & Standards and Materials & Fabrication Technical Committees, he has received Certificates of Recognition for outstanding service to both committees. He has been a prolific developer of technical sessions, particularly on the topic of environmental fatigue, for which he was awarded a Certificate of Appreciation in 2009. He was the Principal or Contributing Editor for nine PVP conference volumes from 1992 to 1999, primarily in the areas of fatigue and fracture. Since publishing his first PVP paper in 1984, he has delivered 31 papers and technical presentations at PVP conferences. Dr. Mehta also served the PVP Division as an Associate Editor of the ASME Journal of Pressure Vessel and Piping Technology from 2012 to 2017.

Dr. Mehta has a friendly demeanor and freely shares his time and knowledge mentoring colleagues, early career engineers, and engineering students. Since 2012, he has served on the Editorial Board of the Early Career Technical Conference held by the University of Alabama/Birmingham School of Mechanical Engineering. This conference attracts student papers at colleges and universities throughout the Southeast United States, and the papers bear a strong resemblance to PVP conference papers in formatting and content.

In summary, Dr. Mehta's record as a contributor to pressure vessel and piping technology, his record of service to the Pressure Vessels and Piping Division, and his mentorship and support to the PVP community exemplifies the qualities that the Medal represents.

Tutorials

Tutorials offer both the experienced and early-career engineer excellent opportunities to refresh their knowledge and to venture into specific technical areas outside their expertise. Admission to the tutorials is free for Conference Registrants.

Special Tutorials and Presentations: These are one-hour or two-hour conference sessions, held on Sunday afternoon. The session leaders will make available the necessary presentation materials.

Technical Tutorials: These tutorials are two to four hours in length. Technical Tutorials fill two consecutive conference session blocks and are integrated into the conference session schedule. The Technical Tutorial notes will be available in either printed or electronic format.

Each attendee will receive a Certificate of Attendance, as proof of his or her participation in the Special Tutorial or the Technical Tutorial.

The PVP Division will not assign Continuing Education Units (CEUs) on these certificates. However, attendees may negotiate CEU credits with their respective licensing boards.

An outline of the tutorial sessions for the 2022 PVP Conference is presented in the following pages.

Special Tutorial

What to Expect the First 5-10 Years of Your Career

Michiel Brongers, Consultant; John Sharples, Jacobs; Nathan Barkley, Becht; Preeti Doddihal, Kinectrics; Peter Gill, Jacobs; Clay Rodery, C&S Technology LLC; and Arris Tijsseling, Eindhoven University of Technology

Sunday, July 17, 2:30 pm – 4:15 pm

Catalunia AB

This Special Tutorial will be organized as a panel session with diverse representatives from industry, government, and academia, with different times of experience in their careers. Every panelist will make a few points about career challenges and tips from his experience and unique perspective. Then, we will go into a time to take questions from the audience, and hopefully we will have a dynamic and interesting discussion. This special tutorial is a part of an early career event/reception in which early career engineers get to know each other and can exchange information on their engineering related experiences.

Waterhammer: Predicting Pressures and Pipe Forces, and Mitigation Options

Trey Walters, Applied Flow Technology, and **Arris Tijsseling,** Eindhoven University of Technology

Part 1: Monday, July 18, 2:15 pm – 4:00 pm
Part 2: Monday, July 18, 4:15 pm – 6:00 pm
Catalunia AB

Waterhammer in piping systems is an area of frequent concern to designers and operators. Waterhammer has the potential to cause catastrophic failures if not properly addressed.

System designers have multiple options to mitigate waterhammer in the basic design. These include pipe system design, check valve selection and motor operated valve selection and actuation. In some cases, mitigation using surge suppression devices is required. Options included surge vessels, relief systems, vacuum breaker valves and air release valves. This short course will provide an overview of the waterhammer phenomenon, discuss resources for engineers to assess waterhammer issues at the design stage and, for problematic systems already in operation, the benefits and drawbacks of various surge suppression options. The impact from pump transients during startups and unplanned trips will be discussed. The various ways to simulate rotodynamic and positive displacement pumps in waterhammer situations will be described.

ASME Post Construction Standards

Brent Ray, Marathon Petroleum Company and **Clay Rodery,** C&S Technology LLC. Additional presenters: **Scott Hamilton**, Hex Technology; **Jaan Taagepera**, Chevron Tech Center; **Steve Roberts**, Shell Global Solutions (US) Inc.

Part 1: Tuesday, July 19, 8:15 am – 10:00 am

Part 2: Tuesday, July 19, 10:15 am – 12:00 pm

Catalunia AB

The tutorial addresses current topics related to ASME Post Construction Standards such as:

- Overview of ASME Post Construction Standards,
- PCC-1—Guideline for Pressure Boundary Bolted Flange Joint Assembly,
- PCC-2—Repair of Pressure Equipment and Piping,
- PCC-3—Inspection Planning Using Risk Based Methods,
- PTB-2—Guide to Life Cycle Management of Pressure Equipment Integrity.

The afternoon session, to be held in the same room, will moderate interactive discussions on the current topics and future directions of ASME Post Construction Standards. Discussion topics will include:

- Real life applications of Repair and Testing techniques,
- Future direction of Post Construction Standards including Fitness for Service,
- Case studies on application of Risk Based Inspection Planning

Attendees are encouraged to share their own examples and experience and will be asked for feedback on additional topics or repair methods that should be considered for inclusion into ASME Post Construction Standards.

Fracture Mechanics Applications for Piping

Dr. Frederick (Bud) Brust, Dr. Gery Wilkowski, P.E., and **Suresh Kalyanam**, Engineering Mechanics Corporation of Columbus

Part 1: Wednesday, July 20, **8:15 am – 10:00 am**

Part 2: Wednesday, July 20, **10:15 am – 12:00 pm**

Part 3: Wednesday, July 20, **12:15pm – 4:00 pm**

Catalunia AB

Fracture mechanics has been applied to plant piping and pipelines for flaw evaluation (assessment of an actual flaw found in service) and flaw tolerance evaluations (will leak before- break behavior occur). This technology has evolved considerably over the decades from the early assumptions of brittle fracture using linear elastic fracture mechanics. This tutorial will show the developments over time and various current technical aspects for modern flaw evaluation/flaw tolerance analyses. The tutorial is targeted for those new to flaw assessment/ tolerance analyses and provides some overview of methodologies for those willing to undertake advanced applications. This tutorial includes five modules:

Module 1: Background on fundamental aspects of fracture mechanics, and historical developments

Module 2: Subcritical crack growth analyses and considerations

Module 3: Material toughness/strength conditions

Module 4: Failure modes and criteria for flawed pipes under quasi-static loading assumptions Module 5: Failure modes and criteria for flawed pipes under dynamic loading

This important tutorial is planned to span of three sessions.

Nonmetallic Pressure Piping Systems (NPPS) Standards Technical Tutorials Workshop

Coordinator: Charles L. Henley, PE*, CSSBB, CWI, Kiewit Engineering Group Inc.

Part 1: Thursday, July 21, 8:15 am – 10:00 am

Part 2: Thursday, July 21, 10:15 am – 12:00 pm

Part 3: Thursday, July 21, 2:15pm – 4:00 pm

Part 4: Thursday, July 21, 4:15 pm – 6:00 pm

Part 5: Friday, July 22, 8:15 am – 10:00 am

Part 6: Friday, July 22, 10:15 am – 12:00 pm

Catalunia AB

This series of technical tutorials introduces the five new standards originally published by ASME in 2019 regarding rules for the construction of nonmetallic pressure piping systems. These ASME Standards for Nonmetallic Pressure Piping Systems are: ASME NM.1-2020 Thermoplastic Piping Systems, ASME NM.2-2020 Glass-Fiber-Reinforced Thermosetting- Resin Piping Systems, ASME NM.3.1-2020 Nonmetallic Materials Part 1 – Thermoplastic Material Specifications, ASME NM.3.2-2020 Nonmetallic Materials Part 2 – Reinforced Thermoset Plastic Material Specifications, and ASME NM.3.3-2020 Nonmetallic Materials Part 3 – Properties. These standards cover the design, manufacture, fabrication, installation, examination, testing, and inspection of thermoplastic and glass-fiber-reinforced thermosetting- resin piping systems suitable for pressure applications. They also cover specifications of nonmetallic materials for piping components including material allowable design values and limits on the use of nonmetallic materials. These technical tutorials are intended for beginning and experienced users of nonmetallic materials in pressure piping applications who want to understand the content of ASME's newest standards.

Part 1 – Introduction and ASME NM.1: Design and Fabrication/Erection Standard Requirements

Thursday, July 21, 8:15 am – 10:00 am

I. Introduction

Speakers: Charles Henley, Kiewit Engineering Group Inc, Don McGriff, ISCO Industries, Inc. Jeff Eisenman, Maverick Applied Science, and Carlton Ramcharran, ASME

This is a general introduction to the three nonmetallic pressure piping standards, the history of their development, and their overall scope and organization. It provides the general background into the development of the standards and a high-level introduction to the more detailed technical tutorials provide through the rest of the day.

II. ASME NM.1 Thermoplastic Piping Systems

II.A– Part 1 – Design and Fabrication/Erection Standard Requirements

Speakers: Don McGriff, ISCO Industries, Inc., Constance Eastman, Kiewit Corporation, and Tim Adams, Jensen Hughes

This session will provide a general introduction into thermoplastic piping. The tutorial will cover aspects of the ASME NM.1 Standard that include: scope of standard; material types and properties; design considerations and criteria; standards for piping components; and inspection, examination, and testing requirements in the standard. The session will include references to other standards such as ASME NM.3 and ASTM material and testing standards.

Part 2 – ASME NM.1: Jointing Demonstration

Thursday, July 21, 10:15 am – 12:00 pm

Speakers: Don McGriff, ISCO Industries, Inc., Constance Eastman, Kiewit Corporation, and Tim Adams, Jensen Hughes

This part will educate attendees on methods of joining/welding/fusing thermoplastics, and the procedure and welder qualifications involved in those processes. Various joining methods will be demonstrated to show specific steps in the processes and how they relate to the requirements in the Standard.

Part 3 - ASME NM.2: Composite Materials

Thursday, July 21, 2:15pm – 4:00 pm

Speakers: Bruce Colley, Ineos Composites, Phil Gilbert, Fiber Glass Systems NOV, and Gerald Van Beek, Southern Company Services

This part will provide a general introduction into glass-fiber-reinforced thermosetting-resin (FRP) piping, and will cover aspects of the ASME NM.2 Standard that include: terms and definitions; scope of standard; constituent materials; standards for piping components; various laminate types, product forms, and manufacturing methods; references to other standards such as ASME NM.3 and ASTM material and testing standards; and material requirements in selected appendices of ASME NM.2.

Part 4 - ASME NM.2: Design Part 1, Design Methods and Allowable Stresses

Thursday, July 21, 4:15 pm – 6:00 pm

Speakers: Bruce Hebb, and Shahin Shadlou, RPS Composites Inc.

This part will introduce the four design methods outlined in Chapter 2 of NM.2. The tutorial will cover aspects of the standard that include: design conditions and criteria; allowable stresses and design limits; Method A, B, C, and D design methods; pressure design of various piping components; design factors based on various laminate types; and qualification using multiple design methods.

Part 5 - ASME NM.2: Design Part 2, Pipe Stress Analysis and Supports

Friday, July 22, 8:15 am – 10:00 am

Speakers: Darryl Mikulec, and Jeff Eisenman, Maverick Applied Science

This part will discuss various requirements to perform pipe stress analysis and the unique design requirements for pipe supports which attach to FRP piping. The tutorial will cover aspects of the standard that include: methods of analysis; load combinations; how to apply the allowable stress envelope to define acceptance criteria for longitudinal stresses; stress intensification factors for various types of piping components; means to increase flexibility of a piping system; and requirements and good engineering practices for the design of pipe supports.

Part 6 - ASME NM.2: Fabrication and Examination

Friday, July 22, 10:15 am – 12:00 pm

Speakers: Tom Haber, Maverick Applied Science, and Alex Yuen, Fiber Glass Systems NOV

This part introduces the fabrication, assembly, erection, inspection, examination, and testing requirements in Chapters 5 and 6 of ASME NM.2. Aspects of the standard to be covered include: bonding procedure specification and qualification; bonder qualification; assembly and erection tolerances; guidelines for bolted joints; inspector qualifications; examination requirements and acceptance criteria; testing requirements including leakage pressure tests; and documentation and records.

Exhibit (Technology Demonstration Forum)

Monday, July 18, 8:15 am – 6:00 pm;

Tuesday, July 19, 8:15 am – 6:00 pm;

Wednesday, July 20, 8:15 am – 3:30 pm

Marquis Ballroom 4 & 5

The Conference Exhibit, formerly known as the Technology Demonstration Forum, will be held from Monday, July 18th to Wednesday, July 20th. Vendors and Sponsors will present and discuss their capabilities, equipment, and services in the Marquis Ballroom 4 & 5.

Networking Reception

Tuesday, July 19, 5:30 pm – 7:00 pm

Grand Ballroom C

This year, the PVP Division is organizing a Networking Reception from 5:30 to 7:00 pm on Tuesday, July 19. This event brings together industry and academia around a table to discuss possible future collaboration on potential projects. Snacks and a cash bar will be served.

Social Programs and Tours

Reception for Early Career Engineers & Students

Sunday, July 17, 4:30 pm – 5:45 pm

Cascade

A special combined reception will be held on Sunday, July 17 for early career engineers (ten years or less from time of graduation) and students. This event is an opportunity for early career engineers and students to meet the PVP Division Leadership Team to learn how to get more involved in activities of the PVP Conference and other parts of ASME. The PVP Division Leadership Team will be pleased to answer any questions you may have regarding the Conference and provide guidance on how to navigate through the Conference Program during the week. All early career engineers and students are welcome and encouraged to attend this event.

Conference-Wide Reception

Monday, July 18, 6:15 pm – 8:00 pm

Valencia Ballroom

All registered attendees and their guests are invited to attend the Conference Wide Reception. Meet with your colleagues, many of whom you may not have seen for a while. Join with the registrants and guests for a relaxing evening. We will have displays of student paper posters in the Valencia Ballroom. All student authors who participate in the Rudy Scavuzzo Student Paper Competition are invited to present their posters.

No charge for registered conference participants and guests.

Tour 1: Las Vegas City Tour

Monday, July 18, 10:00 am – 3:00 pm (lunch on your own)

Departure at front lobby

Guests will start their day with a tour of the Bellagio Conservatory, Fountains and Lobby. The next stop will be at the beautiful Shark Reef at Mandalay Bay. There will be time provided for lunch on your own at the food court at the Mandalay Bay.

Registration: 75 USD per person. You may go back into your conference registration to add tickets online. Instructions are in your confirmation email or contact

Tour 2: Mob Museum Guided Tour

Tuesday, July 19, 9:00 am – 1:00 pm

Departure at front lobby

This downtown museum, located in a renovated courthouse where the Kefauver Committee hearings exposed organized crime, is no penny-ante deal. Guests are encouraged to take part in all the museum has to offer, which includes “participating” in a police lineup, reading actual files of mobsters, punching in a city and seeing its mob crime history, watching how agents spied on mobsters and listening to actual wiretaps and tapes of gangster schemes. Lunch is not included.

Registration: $75 per person. You may go back into your conference registration to add tickets online

Conference Information

Technical Sessions and Programs

All technical sessions will be held in the meeting areas on the Conference Center of the JW Marriott Las Vegas Resort & Spa. Each room will be equipped with an LCD projector that can be connected to a personal computer for electronic presentations (e.g., Microsoft PowerPoint). Please note that ASME will not provide personal computers. Personal computers are the responsibility of the Session Developer or presenter. It is strongly recommended that authors provide their presentation materials to the Session Developer or Session Chair at or before the Authors' Breakfast, so that all the papers in a session can be loaded onto a single computer. Authors are recommended to have their presentations on a USB flash (pen) drive, in the event that compatibility problems occur between their computers and the LCD projector.

The location of the session rooms is shown in the hotel floor plan on the Sessions-At-A- Glance sheet that is provided with the registration package.

Rudy Scavuzzo Student Paper Competition

The Rudy Scavuzzo Student Paper Competition was sponsored by the Senate of Past Chairs of the PVP Division for the 2022 Conference. The undergraduate and graduate student papers were judged in two categories: the BS/MS level and the Ph.D. level. Papers were judged and winners were selected prior to the Conference. In each category (i.e., BS/MS and Ph.D.), $1,500 will be awarded to the lead author of the Outstanding Student Paper;

$1,200 will be awarded to the lead author of the First Runner-Up Student Paper, and $1,000 will be awarded to the lead author of the Second Runner-Up Student Paper. Students in the competition must attend the Conference. The winners will be announced at the Honors and Awards Gala and Dinner.

Technical Committee Meetings

Tuesday, July 19 12:15 pm – 2:15 pm

Wednesday, July 20 12:15 pm – 2:15 pm

The Pressure Vessels & Piping Division Technical Committees will meet during the noon breaks on Tuesday, July 19, and Wednesday, July 20. Visitors are encouraged to attend and take an active part in PVP committee activities. All committee meetings, schedules and rooms are listed under PVP 2022 Committee Meetings.

PVP Division Honors and Awards Gala and Dinner

Wednesday, July 20 5:00 pm – 10:00 pm

Grand Ballroom C

The Honors and Awards Gala, honoring all Division Award Recipients and the 2022 ASME S.Y. Zamrik PVP Medalist, Hardayal S. Mehta, will be held on Wednesday, July 20, from 5:00 pm until 10:00 pm, in the Grand Ballroom C. Entertainment will be provided throughout the evening. One ticket is included in the full Conference registration fee. Additional tickets may be purchased at the Conference Registration desk.

Author's Breakfast/Briefing

Monday, July 18 – Thursday, July 21 7:15 am – 8:00 am

Cascade

Authors, Panelists, Session Developers, Chairs, and Co-Chairs are required to attend a breakfast briefing in the Cascade room on Monday through Thursday, at 7:15 am, on the morning of their sessions. Session protocol will be discussed, and the participants will have the opportunity to become better acquainted with one another before their scheduled sessions. Authors are encouraged to place all the presentation files for their session on a single computer either before or at the Authors' Breakfast.

Registration Hours

Grand Ballroom A

The ASME Registration Desk is at Grand Ballroom A and will be open during the following hours, to provide advance registrants with their materials, to process on-site registrations, and to provide additional Conference information:

Sunday, July 17	8:00 am – 6:00 pm
Monday, July 18	7:30 am – 6:00 pm
Tuesday, July 19	7:30 am – 4:00 pm
Wednesday, July 20	7:30 am – 3:00 pm
Thursday, July 21	7:30 am – 10:00 am

On-Site Registration Fees

For those not registered in advance, the On-Site Registration Fees are as follows:

	Full Registration*	One Day Registration**
ASME Member	$1,200	$800
Author/Panelist	$1,200	$800
Session Chair	$1,200	$800
Session Co-Chair	$1,200	$800
Coop. Soc. Member***	$1,200	$800
Non-Member****	$1400	$960
ASME Life Member †	$500	$500
ASME Member Student (Author or Non-Author)‡	$500	$350
Student (Author) ‡	$500	$350
Student Non-Member (Author or Non-Author)‡	$600	$450
Extra Ticket Awards Dinner (Wednesday Night)	$ 75	

* Full Registration fees include admission to all technical sessions, coffee breaks, Conference-Wide Reception, one (1) ticket for the Honors and Awards Gala and Dinner (please RSVP during registration), and online access to the Conference Technical Papers.

** One Day Registration fees include admission to all technical sessions, and coffee breaks for one-day.

*** To qualify for discounted registration fees, you must be a member of ASME, or one of the Cooperating Societies. Please fill in your society affiliation and membership number on the registration form.

**** Anyone paying the non-member fee is eligible to receive 4 month membership to ASME as part of their registration fee.

† Registration under this category includes admission to all technical sessions, coffee breaks, Conference-Wide Reception, one (1) ticket for the Honors and Awards Gala and Dinner, and online access to the Conference Technical Papers.

‡ Student Registration Fees include admission to all technical sessions, coffee breaks, Conference-Wide Reception, and online access to the Conference Technical Papers.
Students not in the Student Paper Competition will be required to purchase a ticket to attend the Honors and Awards Gala and Dinner.

‡‡ Guests wishing to attend the Honors and Awards Gala and Dinner will be required to purchase a ticket.

Cooperating Societies

If you are a member of a Cooperating Society, you may register at the ASME member rate.

Swapcard Conference App

The SwapCard conference app will be the digital hub for PVP-2022. It will allow you to access technical papers and explore the conference program. To download the app, access the App Store on iOS devices and the Play Store on Android. If you are using a Blackberry or Windows phone, skip these steps. You will need to use the web version of the app. Install the app by searching for CrowdCompass AttendeeHub. Once you have found the app, tap either Download or Install. After installing, a new icon will appear on the home screen. Once downloaded, open the AttendeeHub app, then search and tap "ASMEPVP2022" to access the Conference information and activate usage.

Conference Publications

Information on paper titles and authors are included in the Final Program. All attendees registered for the entire Conference (i.e., Full Registration) will receive online access to the Conference Technical Papers presented at the Conference. If you pre-register to the Conference prior to July 14, 2022 you will be able to download the Conference proceedings online at the link that will be sent to you by email. **It is recommended to download the batch file before coming to the Conference.**

Papers presented at the Conference will be available post-conference in printed bound volumes of the Official Conference Proceedings. Printed proceedings can be ordered through ASME Customer Service approximately three to four months after the Conference. A complete set of the volumes may be purchased as a package at a 10% discount. The Official Conference Proceedings will also be published post-conference as part of the ASME Digital Collection at **http://asmedigitalcollection.asme.org**. All ASME Conference Proceedings are submitted to be indexed in Scopus, Compendex, ISI Conference Proceedings Citations Index, and in multiple other indexing publishers.

Disabled Registrants

Whenever possible, arrangements can be made for disabled registrants, if advance notice is given. Please indicate any special needs on the registration form, or contact Kim Miceli at: micelik@asme.org to process your request.

Tax Deductibility

Expenses of attending professional meetings have been held to be tax deductible as ordinary business expenses for U.S. citizens. Please verify the tax regulations in your country to determine whether Conference expenses are deductible.

Guest/Family Programs

Guests and family members of registrants are welcome to the Guest Programs that include: Las Vegas City Tour (Monday), the Conference Wide Reception in the Valencia Ballroom (Monday evening), and the Mob Museum Guided Tour (Tuesday). Tickets are required for admission to all events. Please also note that the tours have an associated fee for participants. Early registration is strongly recommended for the events that require fees, as they are available only on a first-come, first-served basis.

Breakfast for guests is served from 7:30 am to 10:00 am in the Palms Tower Suite 3200 of the JW Marriott Las Vegas Resort & Spa.

Professional Development Hours Available

Professional Development Hours are available for your attendance at the PVP Conference. Simply stop by the Registration Desk and fill out a certificate request form with the sessions that you have attended. The certificates will be sent to the emails specified on the forms.

Publishing Conference Papers in the ASME Journal of Pressure Vessel Technology

Technical papers presented at the ASME PVP 2022 Conference are published in the form of the ASME Conference Proceedings. Publication of papers in these proceedings does not preclude authors from publishing their papers in ASME archival journals, such as the ASME Journal of Pressure Vessel Technology (JPVT), which is the technical voice of the Pressure Vessels & Piping Division. Authors are encouraged to submit their papers to the Journal.

The Journal is edited by Dr. Young W. Kwon whose contacts are hereafter, and manuscripts should be submitted to him through the URL address: https://journaltool.asme.org/home/JournalDescriptions.cfm?JournalID=14.

Manuscripts should be prepared according to the ASME Journals author resources, which can be found in the link: https://journaltool.asme.org/home/AuthorResources.cfm.

Dr. Young W. Kwon, Editor

Journal of Pressure Vessel Technology
Dept. of Mechanical & Astronautical Engineering
700 Dyer Road
Naval Postgraduate School Monterey, CA 93943
Phone/Fax: 831-656-3468 / 2238
E-mail: ywkwon@nps.edu

PVP 2022 Committee Meetings

Date/Time	Meeting	Room	Responsible Person
Sunday, July 17			
8:30 am – 1:00 pm	PVP Division Leadership Team	Aragon	M. Feldman
Monday, July 18			
8:15 am – 10:00 am	PVPD Professional Development	Aragon	M. Younan
Tuesday, July 19			
8:15 am – 10:00 am	PVPD Communications Committee	Aragon	A. Duncan
10:15 am – 12:00 pm	PVPD 2023 Program Committee	Aragon	C. Rodery
10:15 am – 5:45 pm	BPVC VIII-3 Subgroup on High Pressure Vessels	Parian A	K. Subramanian/ A. Maslowski
12:00 pm – 2:00 pm	PVPD Codes & Standards Technical Committee	Catalunia AB	K. Hojo
12:00 pm – 2:00 pm	PVPD High Pressure Technology Technical Committee	Parian A	K. Subramanian
12:00 pm – 2:00 pm	PVPD Operations, Applications & Components Technical Committee	Aragon	A. Reich
12:00 pm – 2:00 pm	PVPD Design & Analysis Technical Committee	Parian B	A. Avery
2:15 pm – 4:00 pm	PVPD International Coordination Committee	Aragon	J. C. Veiga
4:15 pm – 6:00 pm	PVPD Honors & Awards Committee	Aragon	C. Rodery
Wednesday, July 20			
10:15 am – 12:00 pm	JPVT Editors	Aragon	Y. Kwon
12:00 pm – 2:00 pm	PVPD Materials & Fabrication Technical Committee	Catalunia AB	D.J. Shim
12:00 pm – 2:00 pm	PVPD Seismic Engineering Technical Committee	Aragon	O. Furuya
12:00 pm – 2:00 pm	PVPD Fluid-Structure Interaction Technical Committee	Parian A	K. Inaba
12:00 pm – 2:00 pm	PVPD Computer Technology & Bolted Joints Technical Committee	Parian B	R. Adibi-Asl
2:15 pm – 4:00 pm	PVPD Early Career Engineers Committee	Aragon	N Barkley
Thursday, July 21			
8:15 am – 6:00 pm	Study Group on Materials Testing & Qualification for Hydrogen Service	Marquis 1	C. San Marchi
8:15 am – 10:00 am	PVPD General Committee	Marquis 8	A. Duncan
10:15 am – 12:00 pm	PVPD Conference Evaluation	Marquis 8	P. Mertiny
12:45 pm – 6:00 pm	PVP Division Leadership Engagement Forum	Marquis 8	P. Mertiny
Friday, July 22			
8:15 am – 12:00 pm	PVP Division Leadership Team	Grand Ballroom A	A. Duncan

CALL FOR PAPERS

2023 ASME Pressure Vessels & Piping Conference

Abstracts Due – November 7, 2022

RE-ENERGIZING THE PRESSURE VESSEL AND PIPING COMMUNITY

Join us in Atlanta, Georgia for the 2023 ASME Pressure Vessels & Piping Conference, as we continue to re-energize the Pressure Vessels & Piping Community. The PVP Conference is the ideal platform to keep up with new technologies, network and interact with experts, practitioners, and peers in the Pressure Vessels & Piping area. The PVP Conference is a recognized international forum with participants from more than 40 countries in Europe, Africa, the Middle East, Asia, the Americas and the Oceania islands. The ASME Pressure Vessels & Piping Division sponsors the PVP Conference with participation by the ASME NDPD Division.

PAPER & PANEL SESSIONS

More than 150 paper and panel sessions are planned, including tutorials and workshops, a Technical Demonstration Forum and Exhibition. General topics will include:

- Codes & Standards
- Computer Technology & Bolted Joints
- Design & Analysis
- Fluid-Structure Interaction
- High-Pressure Technology
- Materials & Fabrication
- Operations, Applications & Components
- Seismic Engineering
- Non-Destructive Examination

SCHEDULE FOR SUBMISSION*

• **November 7, 2022**	**Abstracts are due**
• December 5, 2022	Abstract Accept/Reject Notification
• January 16, 2023	Submission of Full-Length Paper for Review
• February 27, 2023	Peer Review Comments Returned
• April 14, 2023	Copyright Agreement Form (for each paper) due
• April 17, 2023	Final Manuscripts in ASME format for publication due

** All final manuscripts must be submitted in the standard ASME format for publication. All presented technical papers will be published as citable documents available post-conference.*

FOR MORE INFORMATION

Please visit the 2023 PVP Conference website at https://event.asme.org/PVP for additional information. Technical paper abstracts must be submitted electronically via the website.

PVP Conference Chair

Clay D. Rodery
C&S Technology LLC
League City, TX USA
roderyc@asme-member.org

PVP Technical Program Chair

Yasumasa Shoji, PhD
YS Corporation LLC
Tokyo, Japan
yasumasa.shoji@nifty.com

SESSION TITLES BY SESSION BLOCK

Sessions are arranged in Session Blocks in the format X.YZ, where: X indicates the Day, Y indicates the Session Block, and Z indicates the Conference Session Room. Conference Session Rooms are as follows: A = Marquis 1; B = Marquis 2; C = Marquis 3; D = Marquis 6; E = Marquis 7; F =Marquis 8; G = Andalucia; H = Murcia; I = Castilla AB; J = Leon; K = Catalunia AB; L = Marquis 4/5. The parenthetical designations are the Technical Committee session references.

The Technical Committee and other acronyms used are shown below:

- CS = Codes & Standards
- CT = Computer Technology & Bolted Joints
- DA = Design & Analysis
- FSI = Fluid–Structure Interaction
- HT = High Pressure Technology
- MF = Materials & Fabrication
- NDE = ASME NDE, Diagnosis and Prognosis Division
- NPPS = Nonmetallic Pressure Piping System (NPPS) Standards Workshop
- OAC = Operations Applications, & Components
- SE = Seismic Engineering
- TW = Technical Tutorials

All sessions are sponsored by the indicated Technical Committee unless specifically noted in the daily listing of individual sessions beginning on page __.

Sunday, July 17, 2022

Block 0.3: Sunday, July 17, 2022 (2:30 pm – 4:15 pm)

0.1K (TW-1-1)	SPECIAL TUTORIAL--WHAT TO EXPECT THE FIRST 5-10 YEARS OF YOUR CAREER

Monday, July 18, 2022

Block 1.1: Monday, July 18, 2022 (8:15 am – 10:00 am)

1.1A (CT-1-1)	THE HANS KOCKELMANN MEMORIAL SYMPOSIUM ON DESIGN AND ANALYSIS OF BOLTED FLANGE JOINTS - 1
1.1B (MF-1-1)	APPLICATION OF FRACTURE MECHANICS IN FAILURE ASSESSMENT
1.1C (MF-4-1)	EUROPEAN PROGRAMS IN STRUCTURAL INTEGRITY
1.1D (DA-4-1)	THE ARTURS KALNINS MEMORIAL SESSION ON INELASTIC, NONLINEAR, AND LIMIT LOAD ANALYSIS
1.1E (MF-29-1)	COMPOSITES FOR PRESSURE VESSELS
1.1F (MF-17-1)	ADVANCED AND ADDITIVE MANUFACTURING AND MATERIAL TECHNOLOGIES (JOINT WITH D&A)
1.1G (DA-3-1)	FATIGUE
1.1H (CS-7-1)	RECENT DEVELOPMENTS IN ASME CODES AND STANDARDS - 1
1.1I (CS-14-1)	REPAIR, REPLACEMENT AND MITIGATION FOR FITNESS-FOR-SERVICE RULES
1.1J (SE-1-1)	EARTHQUAKE RESISTANCE AND SEISMIC MARGIN / STRUCTURAL DYNAMICS
1.1K (FSI-4-1)	FSI DESIGN FOR INDUSTRY
1.1L (TDF-1-1)	TECHNOLOGY DEMONSTRATION FORUM – 1

Block 1.2: Monday, July 18, 2022 (10:15 am – 12:00 pm)

1.2R (PS-1-2)	OPENING CEREMONY AND PLENARY LECTURE
1.2L (TDF-1-2)	TECHNOLOGY DEMONSTRATION FORUM – 2

Block 1.3: Monday, July 18, 2022 (2:15 pm – 4:00 pm)

1.3A (CT-1-2)	THE HANS KOCKELMANN MEMORIAL SYMPOSIUM ON DESIGN AND ANALYSIS OF BOLTED FLANGE JOINTS - 2
1.3B (MF-1-2)	APPLICATION OF FRACTURE MECHANICS IN FAILURE ASSESSMENT
1.3C (MF-4-2)	EUROPEAN PROGRAMS IN STRUCTURAL INTEGRITY
1.3D (CS-1-1)	STRUCTURAL INTEGRITY OF PRESSURE COMPONENTS
1.3E (DA-8-1)	FITNESS FOR SERVICE EVALUATIONS - 1
1.3F (MF-2-5)	PANEL SESSION--HYDROGEN FOR THE GREEN ECONOMY
1.3G (MF-17-2)	ADVANCED AND ADDITIVE MANUFACTURING AND MATERIAL TECHNOLOGIES (JOINT WITH D&A)
1.3H (CS-7-2)	RECENT DEVELOPMENTS IN ASME CODES AND STANDARDS - 2
1.3I (SE-3-1)	DAMPING AND VIBRATION CONTROL / RESILIENCE AND METAMATERIALS / MULTI-HAZARDS AND MARGINS
1.3J (OAC-1-1/ 5-1)	SAFETY, RELIABILITY, AND RISK MANAGEMENT AND PUMPS AND VALVES
1.3K (TW-2-1)	TECHNICAL TUTORIAL--WATERHAMMER: PREDICTING PRESSURES AND PIPE FORCES, AND MITIGATION OPTIONS - PART 1
1.3L (TDF-1-3)	TECHNOLOGY DEMONSTRATION FORUM – 3

Block 1.4: Monday, July 18, 2022 (4:15 pm – 6:00 pm)

1.4A (CT-1-3)	THE HANS KOCKELMANN MEMORIAL SYMPOSIUM ON DESIGN AND ANALYSIS OF BOLTED FLANGE JOINTS - 3
1.4B (CS-8-1)	HYDROGEN EFFECTS ON MATERIAL BEHAVIOR FOR STRUCTURAL INTEGRITY ASSESSMENT (JOINT WITH MF-02)
1.4C (MF-17-3)	ADVANCED AND ADDITIVE MANUFACTURING AND MATERIAL TECHNOLOGIES (JOINT WITH D&A)
1.4D (CS-1-2)	STRUCTURAL INTEGRITY OF PRESSURE COMPONENTS
1.4E (DA-8-2)	FITNESS FOR SERVICE EVALUATIONS - 2
1.4F (MF-12-1)	LEAK-BEFORE-BREAK
1.4G (MF-20-1)	MATERIAL QUALITY AND FAILURE ANALYSIS
1.4H (CS-7-3)	RECENT DEVELOPMENTS IN ASME CODES AND STANDARDS - 3

1.4I (SE-7-1)	SEISMIC EVALUATION OF SYSTEMS, STRUCTURES AND COMPONENTS - 1
1.4J (OAC-2-1/ 3-1)	QUALIFICATION AND TESTING AND MONITORING, DIAGNOSTICS AND INSPECTION
1.4K (TW-2-2)	TECHNICAL TUTORIAL--WATERHAMMER: PREDICTING PRESSURES AND PIPE FORCES, AND MITIGATION OPTIONS - PART 2
1.4L (TDF-1-4)	TECHNOLOGY DEMONSTRATION FORUM – 4

Tuesday, July 19, 2022

Block 2.1: Tuesday, July 19, 2022 (8:15 am – 10:00 am)

2.1A (CS-3-1)	THE DAVID JONES MEMORIAL SESSION ON ENVIRONMENTAL FATIGUE ISSUES (JOINT WITH M&F)
2.1B (FSI-2-1)	FLOW-INDUCED VIBRATION
2.1C (HT-7-1)	DESIGN AND ANALYSIS OF HIGH PRESSURE HYDROGEN EQUIPMENT - 1
2.1D (MF-5-1)	FITNESS-FOR-SERVICE AND FAILURE ASSESSMENT
2.1E (HT-4-1)	DESIGN AND ANALYSIS OF HIGH-PRESSURE EQUIPMENT FOR INDUSTRY (DON FRYER MEMORIAL SESSION)
2.1F (MF-17-4)	ADVANCED AND ADDITIVE MANUFACTURING AND MATERIAL TECHNOLOGIES (JOINT WITH D&A) - 4
2.1G (DA-2-1)	DESIGN AND ANALYSIS OF PIPING AND COMPONENTS - 1
2.1H (SE-7-2)	SEISMIC EVALUATION OF SYSTEMS, STRUCTURES AND COMPONENTS - 2
2.1I (OAC-4-1)	THE RONALD S. HAFNER MEMORIAL SYMPOSIUM ON STORAGE AND TRANSPORTATION OF RADIOACTIVE AND OTHER HAZARDOUS MATERIALS - 1
2.1J (CS-13-1)	HIGH TEMPERATURE CODES AND STANDARDS
2.1K (TW-2-3)	TECHNICAL TUTORIAL--ASME POST CONSTRUCTION STANDARDS - PART 1
2.1L (TDF-2-1)	TECHNOLOGY DEMONSTRATION FORUM – 5

Block 2.2: Tuesday, July 19, 2022 (10:15 am – 12:00 pm)

2.2A (CS-3-2)	THE DAVID JONES MEMORIAL SESSION ON ENVIRONMENTAL FATIGUE ISSUES (JOINT WITH M&F)
2.2B (FSI-2-2)	FLOW-INDUCED VIBRATION
2.2C (HT-7-2)	DESIGN AND ANALYSIS OF HIGH PRESSURE HYDROGEN EQUIPMENT - 2
2.2D (MF-5-2)	FITNESS-FOR-SERVICE AND FAILURE ASSESSMENT
2.2E (MF-22-1)	3D CRACK GROWTH SIMULATION USING FEA
2.2F (SE-9-1)	ADVANCED SEISMIC EVALUATION AND CODE - 1
2.2G (DA-2-2)	DESIGN AND ANALYSIS OF PIPING AND COMPONENTS - 2
2.1H (NDE-1-1)	EMERGING NON-DESTRUCTIVE EVALUATION AND PROGNOSTIC TECHNIQUES AND APPLICATIONS
2.2I (OAC-4-2)	THE RONALD S. HAFNER MEMORIAL SYMPOSIUM ON STORAGE AND TRANSPORTATION OF RADIOACTIVE AND OTHER HAZARDOUS MATERIALS - 2
2.2J (CS-13-2)	HIGH TEMPERATURE CODES AND STANDARDS
2.2K (TW-2-4)	TECHNICAL TUTORIAL--ASME POST CONSTRUCTION STANDARDS - PART 2
2.2L (TDF-2-2)	TECHNOLOGY DEMONSTRATION FORUM – 6

Block 2.3: Tuesday, July 19, 2022 (2:15 pm – 4:00 pm)

2.3A (CT-4-1)	ASSEMBLY OF BOLTED JOINTS - 1
2.3B (FSI-2-3)	FLOW-INDUCED VIBRATION
2.3C (MF-2-1)	MATERIALS FOR HYDROGEN SERVICE (JOINT WITH C&S): HIGH ALLOY METALS FOR GASEOUS HYDROGEN SERVICE
2.3D (MF-16-1)	CREEP AND CREEP-FATIGUE INTERACTION
2.3E (CS-36-1)	MASTER CURVE METHOD AND APPLICATIONS - 1
2.3F (SE-9-2)	ADVANCED SEISMIC EVALUATION AND CODE - 2
2.3G (DA-2-3)	DESIGN AND ANALYSIS OF PIPING AND COMPONENTS - 3
2.3H (CS-15-1)	PROBABILISTIC AND RISK-INFORMED METHODS FOR STRUCTURAL INTEGRITY ASSESSMENT - 1 (JOINT WITH MF-14)
2.3I (HT-2-1)	STRUCTURES UNDER EXTREME LOADING CONDITIONS - 1
2.3J (OAC-4-3)	THE RONALD S. HAFNER MEMORIAL SYMPOSIUM ON STORAGE AND TRANSPORTATION OF RADIOACTIVE AND OTHER HAZARDOUS MATERIALS - 3
2.3K (CS-7-4)	PANEL SESSION--CASE STUDIES AND FUTURE NEEDS IN ASME POST CONSTRUCTION STANDARDS
2.3L (TDF-2-3)	TECHNOLOGY DEMONSTRATION FORUM – 7

Block 2.4: Tuesday, July 19, 2022 (4:15 pm – 6:00 pm)

2.4A (CT-4-2)	ASSEMBLY OF BOLTED JOINTS - 2
2.4B (DA-9-1)	PIPING AND EQUIPMENT DYNAMICS AND DYNAMIC RESPONSE ANALYSIS
2.4C (MF-2-2)	MATERIALS FOR HYDROGEN SERVICE (JOINT WITH C&S): HYDROGEN-ASSISTED FATIGUE
2.4D (MF-16-2)	CREEP AND CREEP-FATIGUE INTERACTION
2.4E (CS-36-2)	MASTER CURVE METHOD AND APPLICATIONS - 2
2.4F (CS-21-1)	FATIGUE MONITORING AND RELATED ASSESSMENT METHOD
2.4G (DA-2-4)	DESIGN AND ANALYSIS OF PIPING AND COMPONENTS - 4
2.4H (CS-15-2)	PROBABILISTIC AND RISK-INFORMED METHODS FOR STRUCTURAL INTEGRITY ASSESSMENT - 2 (JOINT WITH MF-14)
2.4I (HT-2-2)	STRUCTURES UNDER EXTREME LOADING CONDITIONS - 2
2.4J (OAC-7-1)	PLANT LIFE EXTENSION: AGING AND LIFE MANAGEMENT
2.4K (NDE-2-1)	NDE TECHNIQUES AND APPLICATIONS FOR PETROCHEMICAL AND POWER PLANT COMPONENTS
2.4L (TDF-2-4)	TECHNOLOGY DEMONSTRATION FORUM – 8

Wednesday, July 20, 2022

Block 3.1: Wednesday, July 20, 2022 (8:15 am – 10:00 am)

3.1A (CT-4-3)	ASSEMBLY OF BOLTED JOINTS - 3
3.1B (DA-1-1)	THE G.E.O. (OTTO) WIDERA MEMORIAL SYMPOSIUM ON DESIGN AND ANALYSIS OF PRESSURE VESSELS, HEAT EXCHANGERS, AND COMPONENTS - 1
3.1C (MF-2-3)	MATERIALS FOR HYDROGEN SERVICE (JOINT WITH C&S): HYDROGEN INFRASTRUCTURE
3.1D (MF-6-1)	MATERIALS AND TECHNOLOGIES FOR NUCLEAR POWER PLANTS
3.1E (HT-1-1)	DESIGN, ANALYSIS AND LIFE PREDICTION OF HIGH-PRESSURE VESSELS AND EQUIPMENT
3.1F (CS-11-1)	RECENT DEVELOPMENTS IN CHINESE CODES AND STANDARDS - 1
3.1G (FSI-1-1)	THERMAL HYDRAULIC PHENOMENA WITH VESSELS, PIPING AND COMPONENTS
3.1H (OAC-6-1)	CONTINUED SAFE OPERATION OF EXISTING ASSETS
3.1I (NDE-3-1)	RELIABILITY - MODELING AND EXPERIMENTAL ANALYSIS
3.1J (CT-8-1)	NEW AND EMERGING METHODS OF ANALYSIS AND APPLICATIONS - 1
3.1K (TW-2-5)	TECHNICAL TUTORIAL--FRACTURE MECHANICS APPLICATIONS FOR PIPING - PART 1
3.1L (TDF-3-1)	TECHNOLOGY DEMONSTRATION FORUM – 9

Block 3.2: Wednesday, July 20, 2022 (10:15 am – 12:00 pm)

3.2A (DA-10-1)	DESIGN AND ANALYSIS OF BOLTED JOINTS
3.2B (DA-1-2)	THE G.E.O. (OTTO) WIDERA MEMORIAL SYMPOSIUM ON DESIGN AND ANALYSIS OF PRESSURE VESSELS, HEAT EXCHANGERS, AND COMPONENTS - 2
3.2C (MF-2-4)	MATERIALS FOR HYDROGEN SERVICE (JOINT WITH C&S): TEST METHODS FOR EVALUATING HYDROGEN EMBRITTLEMENT
3.2D (MF-6-2)	MATERIALS AND TECHNOLOGIES FOR NUCLEAR POWER PLANTS
3.2E (MF-24-1)	MATERIALS AND FABRICATION FOR REFINING
3.2F (CS-11-2)	RECENT DEVELOPMENTS IN CHINESE CODES AND STANDARDS - 2
3.2G (FSI-1-2)	THERMAL HYDRAULIC PHENOMENA WITH VESSELS, PIPING AND COMPONENTS
3.2H (OAC-6-2)	CONTINUED SAFE OPERATION OF EXISTING ASSETS
3.2I (NDE-4-1)	PREDICTIVE NON-DESTRUCTIVE EVALUATION AND STRUCTURAL HEALTH MONITORING OF COMPLEX MATERIALS AND STRUCTURES
3.2J (CT-8-2)	NEW AND EMERGING METHODS OF ANALYSIS AND APPLICATIONS - 2
3.2K (TW-2-6)	TECHNICAL TUTORIAL--FRACTURE MECHANICS APPLICATIONS FOR PIPING - PART 2
3.2L (TDF-3-2)	TECHNOLOGY DEMONSTRATION FORUM – 10

Block 3.3: Wednesday, July 20, 2022 (2:15 pm – 4:00 pm)

3.3A (DA-12-1)	FRACTURE
3.3B (DA-1-3)	THE G.E.O. (OTTO) WIDERA MEMORIAL SYMPOSIUM ON DESIGN AND ANALYSIS OF PRESSURE VESSELS, HEAT EXCHANGERS, AND COMPONENTS - 3
3.3C (MF-2-6)	MATERIALS FOR HYDROGEN SERVICE (JOINT WITH C&S)
3.3D (CS-22-1)	FRACTURE TOUGHNESS AND OTHER SMALL SPECIMEN MECHANICAL PROPERTIES (JOINT WITH MF-11)
3.3E (MF-25-1)	HIGH STRENGTH STEELS FOR PRESSURE VESSELS AND PIPING APPLICATIONS
3.3F (CS-11-3)	RECENT DEVELOPMENTS IN CHINESE CODES AND STANDARDS - 3
3.3G (MF-10-1)	PIPELINE INTEGRITY - 1
3.3H (OAC-6-3)	CONTINUED SAFE OPERATION OF EXISTING ASSETS
3.3I (NDE-4-2)	PREDICTIVE NON-DESTRUCTIVE EVALUATION AND STRUCTURAL HEALTH MONITORING OF COMPLEX MATERIALS AND STRUCTURES
3.3J (FSI-3-1)	STRUCTURES UNDER EXTREME LOADING CONDITIONS
3.3K (TW-2-7)	TECHNICAL TUTORIAL--FRACTURE MECHANICS APPLICATIONS FOR PIPING - PART 3

Thursday, July 21, 2022

Block 4.1: Thursday, July 21, 2022 (8:15 am – 10:00 am)

4.1B (DA-15-1)	6TH INTERNATIONAL SYMPOSIUM ON COKE DRUM LIFE CYCLE MANAGEMENT - 1
4.1C (MF-3-1)	WELDING RESIDUAL STRESS AND DISTORTION SIMULATION AND MEASUREMENT - 1
4.1D (MF-11-1)	SMALL-SCALE AND MINIATURE MECHANICAL TESTING (JOINT WITH CS-22) - 1
4.1E (CS-45-1)	CONSTRAINT EFFECTS ON CODES AND STANDARDS
4.1G (MF-10-2)	PIPELINE INTEGRITY - 2
4.1H (CS-30-1)	FATIGUE ASSESSMENT AND MANAGEMENT - A PROBABILISTIC PERSPECTIVE
4.1I (DA-17-1)	COMPOSITE MATERIALS AND STRUCTURES
4.1J (DA-11-1)	COMPUTATIONAL FLUID DYNAMICS IN DESIGN AND ANALYSIS
4.1K (NPPS-1)	INTRODUCTION TO THE NEW NONMETALLIC PRESSURE PIPING SYSTEM (NPPS) STANDARDS – PART 1 – INTRODUCTION AND ASME NM.1: DESIGN AND FABRICATION/ERECTION STANDARD REQUIREMENTS

Block 4.2: Thursday, July 21, 2022 (10:15 am – 12:00 pm)

4.2B (DA-15-2)	6TH INTERNATIONAL SYMPOSIUM ON COKE DRUM LIFE CYCLE MANAGEMENT - 2 [FORUM SESSION: WHAT'S NEXT FOR THE INDUSTRY?]
4.2C (MF-3-2)	WELDING RESIDUAL STRESS AND DISTORTION SIMULATION AND MEASUREMENT - 2
4.2D (MF-11-2)	SMALL-SCALE AND MINIATURE MECHANICAL TESTING (JOINT WITH CS-22) - 2
4.2E (CS-37-1)	IMPROVEMENT OF FLAW CHARACTERIZATION RULES FOR FFS

4.2G (DA-14-1)	RISK INFORMED DESIGN CONSIDERING BEYOND DESIGN BASIS EVENTS
4.2H (CS-24-1)	INTERNATIONAL SESSION FOR GEN IV REACTORS DESIGN AND CONSTRUCTION
4.2I (DA-19-1)	SPECIAL CONSIDERATIONS IN THE DESIGN AND ANALYSIS OF SUPPORTS, RESTRAINTS, AND WELDED ATTACHMENTS
4.2J (CS-18-1)	DEVELOPMENTS IN HDPE AND NON-METALLIC PIPE CODES AND STANDARDS
4.2K (NPPS-2)	INTRODUCTION TO THE NEW NONMETALLIC PRESSURE PIPING SYSTEM (NPPS) STANDARDS – PART 2 – ASME NM.1: JOINTING DEMONSTRATION

Block 4.3: Thursday, July 21, 2022 (2:15 pm – 4:00 pm)

4.3K (NPPS-3)	INTRODUCTION TO THE NEW NONMETALLIC PRESSURE PIPING SYSTEM (NPPS) STANDARDS – PART 3 – ASME NM.2: COMPOSITE MATERIALS

Block 4.4: Thursday, July 21, 2022 (4:15 pm – 6:00 pm)

4.4K (NPPS-4)	INTRODUCTION TO THE NEW NONMETALLIC PRESSURE PIPING SYSTEM (NPPS) STANDARDS – PART 4 – ASME NM.2: DESIGN PART 1, DESIGN METHODS AND ALLOWABLE STRESSES

Friday, July 22, 2022

Block 5.1: Friday, July 22, 2022 (8:15 am – 10:00 am)

5.1K (NPPS-5)	INTRODUCTION TO THE NEW NONMETALLIC PRESSURE PIPING SYSTEM (NPPS) STANDARDS – PART 5 – ASME NM.2: DESIGN PART 2, PIPE STRESS ANALYSIS AND SUPPORTS

Block 5.2: Friday, July 22, 2022 (10:15 am – 12:00 pm)

5.2K (NPPS-6)	INTRODUCTION TO THE NEW NONMETALLIC PRESSURE PIPING SYSTEM (NPPS) STANDARDS – PART 6 – ASME NM.2: FABRICATION AND EXAMINATION

PVP Conference Daily Sessions

Block 0.3: Sunday, July 17, 2022 (2:30 pm – 4:15 pm)

SESSION 0.3K (TW-01-01): Special Tutorial--What to Expect the First 5-10 Years of Your Career
Catalunia AB, 2:30 pm - 4:15 pm

Session Developer/Session Chair: ***Nathan Barkley - Becht, USA***

Session Developer/Session Co-Chair: ***Maher Younan - American University in Cairo, New Cairo, Egypt***

Session Developers:
Michiel Brongers - Consultant, USA
John Sharples - Jacobs, United Kingdom

Panelists:
Preeti Doddihal - Kinectrics
Peter Gill - Jacobs
Clay Rodery - C&S Technology LLC
Arris Tijsseling - Eindhoven University of Technology

Block 1.1: Monday, July 18, 2022 (8:15 am – 10:00 am)

SESSION 1.1A (CT-01-01): The Hans Kockelmann Memorial Symposium on Design and Analysis of Bolted Flange Joints – 1
Marquis 1, 8:15 am - 10:00 am

Session Developer/Session Chair: ***Manfred Schaaf - AMTEC***

Session Developer/Session Co-Chair: ***Dale Rice - VSP Technologies***

Session Developer: ***Satoshi Nagata - Toyo Engineering Corporation***

Estimation of Bolt Creep Characteristics and Sealing Performance of Flanged Joints, {PVP2022-78366}
Technical Paper Publication
Hiroshi Yamanaka - Idemitsu Kosan Co., Ltd.

Evaluation for Residual Lifetime and Remaining Axial Tension to Loosening Failure on Bolted Joints Used in Long-Life Machine and Plant Equipment, {PVP2022-80082}
Technical Paper Publication
Soichi Hareyama - Tokyo Metropolitan University
Kenichi Manabe - Tokyo Metropolitan University
Satoshi Kobayashi - Tokyo Metropolitan University

A Study of the Strength of ASME Section X FRP Flanges, {PVP2022-81832}
Technical Paper Publication
Sofiane Bouzid - École de Technologie Supérieure
Hakim A. Bouzid - École de Technologie Supérieure
Anh Dung Ngô - École de Technologie Supérieure

Revision of the Annex Z V Concerning the Calculation of Bolted Joints in the French Nuclear Code RCC-M®, {PVP2022-81911}
Technical Paper Publication
Hubert Lejeune - Cetim
Philippe Rohart - Cetim
Manuela Triay - Framatome
Aurélien Di Rienzo - Framatome

SESSION 1.1B (MF-01-01): Application of Fracture Mechanics in Failure Assessment
Marquis 2, 8:15 am - 10:00 am

Session Developer/Session Chair: ***Harry Coules - University of Bristol***

Session Developer/Session Co-Chair: ***Sureshkumar Kalyanam - Engg. Mech. Corp. of Columbus***

Study of a Method for Determining the Fracture Toughness of Pipe Steel Based on Instrumented Charpy Impact Testing, {PVP2022-84022}
Technical Paper Publication
Yatong Zhao - Sinopec Dalian Research Institute of Petroleum and Petrochemicals
Jian Shuai - China University of Petroleum, Beijing
Lei Shi - Sinopec Dalian Research Institute of Petroleum and Petrochemicals
Zijian Huang - Sinopec Dalian Research Institute of Petroleum and Petrochemicals
Zhanfeng Chen - Hangzhou Dianzi University

An Investigation Into the Applicability of Charpy Dynamic Fracture Tests for a Digital Twin, {PVP2022-84857}
Technical Paper Publication
Fabian Sorce - Imperial College London
Daniel Cogswell - University of Sheffield
Catrin Davies - Imperial College London

Failure Estimation Methods for Steam Generator Tubes With Wall-Thinning or Crack, {PVP2022-84697}
Technical Paper Publication
Yoshihito Yamaguchi - Japan Atomic Energy Agency
Akihiro Mano - Japan Atomic Energy Agency
Yinsheng Li - Japan Atomic Energy Agency

Computational Mechanics Based Validation of Crack Growth Approaches for Fracture Specimen Predictions, {PVP2022-84898}
Technical Paper Publication
Sureshkumar Kalyanam - Engg. Mech. Corp. of Columbus
Lance Hill - Engg. Mech. Corp. of Columbus
Gery Wilkowski - Engg. Mech. Corp. of Columbus
Frederick Brust - Engg. Mech. Corp. of Columbus

SESSION 1.1C (MF-04-01): European Programs in Structural Integrity

Marquis 3, 8:15 am - 10:00 am

Session Developer/Session Chair: ***Tomas Nicak – Framatome***

Session Developer/Session Co-Chair: ***Stephane Marie - Framatome***

Advanced Structural Integrity Assessment Tools for Safe Long Term Operation (ATLAS+), {PVP2022-80693}
Technical Paper Publication
Sebastian Lindqvist - VTT
Mike Smith - University of Manchester
Anna Dahl - EDF
Arnaud Blouin - FRAMATOME
Peter Dillström - KIWA Inspecta
Szabolcs Szavai - BZN
Tomas Nicak - FRAMATOME

Ductile Tearing Prediction of Ferritic Pipes by GTN Model for ATLAS+ European Project (Report 2), {PVP2022-84554}
Technical Paper Publication
Satoshi Kumagai - Mitsubishi Heavy Industries Ltd
Kiminobu Hojo - Mitsubishi Heavy Industries
Takatoshi Hirota - Mitsubishi Heavy Industries
Keiji Kawanishi - Mitsubishi Heavy Industries

ATLAS+ European Project - General Method for the Components J-R Curve Derivation, {PVP2022-84853}
Technical Paper Publication
Arnaud Blouin - Framatome
Stephane Marie - Framatome
Tomas Nicak - Framatome GmbH
Olivier Ancelet - Framatome

ATLAS+ European Project - Prediction of Large Ductile Tearing in Austenitic Piping, {PVP2022-84848}
Technical Paper Publication
Arnaud Blouin - Framatome
Stephane Marie - Framatome
Tobias Bolinder - KIWA Inspecta
Franck Tankoua - CEA

SESSION 1.1D (DA-04-01): The Arturs Kalnins Memorial Session on Inelastic, Nonlinear, and Limit Load Analysis

Marquis 6, 8:15 am - 10:00 am

Session Developer/Session Chair: ***Dan Vlaicu - Ontario Power Generation***

Design Modifications to the Explosive Destruction System Closure System, {PVP2022-82285}
Technical Paper Publication
John Ludwigsen - Sandia National Laboratories
Jerome Stofleth - Sandia National Laboratories
Megan Tribble - Sandia National Laboratories
Robert Crocker - Sandia National Laboratories

Effect of Harmonic Settlement on the Strength of Open-Top Steel Storage Tanks Subject to Wind Loads, {PVP2022-84069}
Technical Presentation Only
Elmer Miguel Irizarry - University of Puerto Rico at Mayaguez
Deepak Suthar - Purdue University
Sukru Guzey - Purdue University

Numerical Study on Buckling Behaviors of Thin-Walled Longitudinal Corrugated Cylindrical Shells Under Axial Compression Loads, {PVP2022-84396}
Technical Paper Publication
He Ma - Zhejiang University
Zhiping Chen - Zhejiang University
Peng Jiao - Zhejiang University
Xinyi Lin - Zhejiang University

Standard API Storage Tank Shell Buckling Predictions With Machine Learning, {PVP2022-84937}
Technical Presentation Only
Myriam Sarment - Purdue University
Sukru Guzey - Purdue University

SESSION 1.1E (MF-29-01): Composites for Pressure Vessels

Marquis 7, 8:15 am - 10:00 am

Session Developer/Session Chair: ***Peter Gill - Jacobs***

Session Co-Chair: ***Adam Cooper***

A Review on the Effect of Heat Treatment for Thermoplastic Composites, {PVP2022-84454}
Technical Paper Publication
Ningtao Shang - Zhejiang University
Riwu Yao - Zhejiang University
Jinkui Wu - Donghong Pipe Industry Co., Ltd.
Zhiyong Kong - Donghong Pipe Industry Co., Ltd.
Jinyang Zheng - Zhejiang University
Jianfeng Shi - Zhejiang University

Study on the Bonding Strength and Corrosion Resistance of Low-Pressure Cold Sprayed Al/Al2O3 Composite Coatings on Pressure Vessel Steel Substrate, {PVP2022-84489}
Technical Paper Publication
Yonggang Wang - China Special Equipment Inspection and Research Institute (CSEI)
Xin Liu - China Special Equipment Inspection and Research Institute (CSEI)
Liang Sun - China Special Equipment Inspection and Research Institute (CSEI)

Friction Stir Welding of Hybrid Recycled Metal Matrix Composites, {PVP2022-84429}
Technical Paper Publication
John Victor Christy - United Arab Emirates University
Abdel Hamid Ismail Mourad - United Arab Emirates Univ

Combined Effect of Sustained Load and Harsh Environment on E-Glass/Epoxy Composites: Long Term Exposure, {PVP2022-84669}
Technical Paper Publication
Amir Hussain Idrisi - United Arab Emirates University
Abdel Hamid Ismail Mourad - United Arab Emirates Univ

SESSION 1.1F (MF-17-01): Advanced and Additive Manufacturing and Material Technologies (Joint with D&A)

Marquis 8, 8:15 am - 10:00 am

Session Developer/Session Chair: ***Kevin Mandeville - DNV***

Session Developer: ***Paul Korinko - Savannah River National Lab***

Further Developments in Nuclear Pressure Vessel Manufacture Using the Hot Isostatic Pressing Process and Thick-Section Electron Beam Welding, {PVP2022-79403}
Technical Paper Publication
John Sulley - Rolls-Royce
Dan Thatcher - Rolls-Royce
Gary Jones - Rolls-Royce
Phil Wallace - Rolls-Royce
Dave Stewart - Rolls-Royce
Ted Warner - Rolls-Royce

Electric-Field-Assisted Diffusion Welding to Fabricate Alloy 617 Compact Heat Exchangers, {PVP2022-83842}
Technical Paper Publication
Xinchang Zhang - Idaho National Laboratory
Ryann Rupp - Idaho National Laboratory
Jorgen Rufner - Idaho National Laboratory
Michael McMurtrey - Idaho National Laboratory

A Statistical Study of Mechanical Properties From Mild Steel Welds Deposited via Gas Metal Arc Additive Manufacturing (GMAAM), {PVP2022-84056}
Technical Paper Publication
Teresa Melfi - Lincoln Electric Co.
J. Ben Schaeffer - Lincoln Electric Co.
Brad Barnhart - Lincoln Electric Additive Solutions

Slope Out Welding Development for Thick Section Electron Beam Welding for Pressure Vessel Applications, {PVP2022-85478}
Technical Paper Publication
William Kyffin - Nuclear AMRC
Thomas Dutilleul - Nuclear AMRC
Robert Widdison - Nuclear AMRC
John Crossley - Nuclear AMRC
David Gandy - EPRI
Marc Albert - EPRI

SESSION 1.1G (DA-03-01): Fatigue

Andalucia, 8:15 am - 10:00 am

Session Developer/Session Chair: Shunji Kataoka **– *JGC Corporation***

Session Developer/Session Co-Chair: ***Shane Finneran - DNV***

Session Developerr: ***Jose Duo - Seaborg Technologies***

An Efficient Method of Estimating Spectral Fatigue Damage for Low RMS Stress Ranges and Arbitrary Fatigue Curves, {PVP2022-84596}
Technical Paper Publication
Benjamin Francis - Worley
David Mair - Worley

Investigation of Surface Finish Effect on Fatigue Strength of Carbon and Low Alloy Steels, {PVP2022-84695}
Technical Paper Publication
Seiji Asada - Mitsubishi Heavy Industries, Ltd
Akihiko Hirano - Hitachi-GE Nuclear Energy, Ltd
Yun Wang - Hitachi, Ltd.
Masao Itatani - Toshiba Energy Systems & Solutions Corporation
Masahiro Takanashi - IHI Corporation
Yuichiro Nomura - Mitsubishi Heavy Industries, Ltd.
Fumihiro Ochi - The Kansai Electric Power CO., INC.
Takeshi Ogawa - Aoyama Gakuin University

Recent Developments of Advanced Calculation Concepts for the Fatigue Assessment of Power Plant Components, {PVP2022-85543}
Technical Paper Publication
Juergen Rudolph - Framatome GmbH
Tim Schopf - Materials Testing Institute (MPA), University of Stuttgart
Stefan Weihe - Materials Testing Institute (MPA), University of Stuttgart

Thermomechanical Fatigue Initiation in Nuclear Grades of Austenitic Stainless Steel Using Plant Realistic Loading, {PVP2022-84760}
Technical Paper Publication
Glenn Trownson - Jacobs
Peter Gill - Jacobs
William Brayshaw - Jacobs
James Watson - Jacobs
Jonathan Mann - Rolls-Royce

SESSION 1.1H (CS-07-01): Recent Developments in ASME Codes and Standards – 1

Murcia, 8:15 am - 10:00 am

Session Developers: ***Michael McMurtrey - Idaho National Laboratory***

Yanli Wang - Oak Ridge National Laboratory

Session Developer/Session Chair: ***Ting-Leung Sham - Idaho National Laboratory***

Session Developer/Session Co-Chair: ***Mark Messner - Argonne National Laboratory***

A Remembrance of Keith Wichman by Gery Wilkowski

New ASME Standard on Plant Systems Design, {PVP2022-80241}
Technical Paper Publication
Ralph Hill - Hill Engineering Solutions
Michael Delamare - Bechtel Group, Inc.
Jared Harper - TerraPower LLC
Jeremy Shook - Electric Power Research Institute

Technical Basis of ASME B31 Code Case 216: Use of Enhanced Pressure Ratings for Brazed Copper Tubes and Fittings by Cold Stretch Process, {PVP2022-83710}
Technical Paper Publication
Kang Xu - Linde Inc.
Gustavo Timoteo - Linde Engineering
Adam Renaldo - Linde Inc.
Philip Miller - Linde Engineering
Terry Wills - Linde Engineering

Initiating Requirements for Certifying Engineer in ASME Section VIII Division 1 Pressure Vessel Code, {PVP2022-83834}
Technical Presentation Only
Steven Roberts - Shell Global Solutions (US) Inc.

Technical Background for the Update and Extension of the Time-Dependent Allowable Stresses of Type 304 and 316 Stainless Steels, {PVP2022-83840}
Technical Paper Publication
Ting-Leung Sham - Idaho National Laboratory
Michael McMurtrey - Idaho National Laboratory

SESSION 1.1I (CS-14-01): Repair, Replacement and Mitigation for Fitness-for-Service Rules

Castilla AB, 8:15 am - 10:00 am

Session Developer/Session Chair: ***Steven McCracken - EPRI***

Session Developer/Session Co-Chair: ***Nick Mohr - EPRI***

Revision of Case N-666-1 to Permit Overlay Repair of Dissimilar Metal Socket Welds and to Allow Higher Carbon Content in the Pipe and Socket Fitting, {PVP2022-83798}
Technical Paper Publication
Steven McCracken - EPRI
Christopher Lohse - Gateway for Accelerated Innovation in Nuclear (GAIN)

Use of HDPE Piping in Buried Nuclear Class 3 Systems Categorized as Low Safety Significant, {PVP2022-84425}
Technical Paper Publication
Jim O'Sullivan - Procon 1, LLC

Quantification of the Tempering Response for Temper Bead Welding of SA-508 Low Alloy Steel, {PVP2022-84884}
Technical Paper Publication
Eun Jang - OSU
Yuxiang Luo - The Ohio State University
Boian Alexandrov - The Ohio State University
Steven Mccracken - Electric Power Research Institute (EPRI)
Jon Tatman - Electric Power Research Institute (EPRI)
Darren Barborak - AZZ

Development of the Technical Basis for the New Code Case "Performance and Qualification Criteria for Mitigation of Stress Corrosion Cracking by Surface Stress Improvement", {PVP2022-85151}
Technical Paper Publication
Nicholas Mohr - EPRI
Stephen Tate - EPRI
Marc Albert - EPRI
Sungwoo Cho - Doosan Heavy Industries & Construction
Won-Geun Yi - Doosan Heavy Industries & Construction
Jean Collin - Dominion Engineering, Inc.
Markus Burkardt - Dominion Engineering, Inc.
John Broussard - Dominion Engineering, Inc.
Young Sik Pyun - Sun Moon University

SESSION 1.1J (SE-01-01): Earthquake Resistance and Seismic Margin / Structural Dynamics

Leon, 8:15 am - 10:00 am

Session Developer/Session Chair: ***Osamu Furuya - Tokyo Denki University***

Session Co-Developer/Session Co-Chair: ***Izumi Nakamura - National Research Institute for Earth Science and Disaster Prevention***

Session Developers:
Tomoyo Taniguchi - Tottori University
Kiyoshi Aida - Mitsubishi Heavy Industries

Session Co-Developers:
Akira Maekawa - Osaka Sangyo University
Katsuhisa Fujita - Osaka City University

An Improvement for Retrofitted Method of Reinforced Concrete Frame With Post-Installed Shear Wall, {PVP2022-83814}
Technical Presentation Only
Wen-I Liao - National Taipei University of Technology
Chien-Kuo Chiu - National Taiwan University of Science and Technology

Rocking Response Analysis of Flat-Bottom Cylindrical Tanks Considering Rotational Inertia of Content Liquid, {PVP2022-84909}
Technical Paper Publication
YuichI Yoshida - National Research Institute of Fire and Disaster
Tomoyo Taniguchi - Tottori University
Teruhiro Nakashima - Nihon Suiko Sekkei Co., Ltd.

Study on the Predictive Evaluation Method of Load Acting on Roof in Nonlinear Sloshing of Cylindrical Tank, {PVP2022-82752}
Technical Paper Publication
Shunichi Ikesue - Mitsubishi Heavy Industries, Ltd.
Hideyuki Morita - Mitsubishi Heavy Industries, Ltd.
Hidekazu Ishii - Mitsubishi Heavy Industries, Ltd.
Hiromi Sago - Mitsubishi Heavy Industries, Ltd.
Shinobu Yokoi - Mitsubishi FBR Systems, Inc.
Tomohiko Yamamoto - Japan Atomic Energy Agency

Seismic Test and Seismic Response Analysis of U-Shaped Tube Bundle With Triangular Arrays in Steam Generator, {PVP2022-83643}
Technical Paper Publication
Kazuo Hirota - Mitsubishi Heavy Industries, Ltd.
Masatsugu Monde - Mitsubishi Heavy Industries, Ltd.
Naoki Ono - Mitsubishi Heavy Industries, Ltd.
Tomohito Nakamori - Mitsubishi Heavy Industries, Ltd.
Masahito Matsubara - Mitsubishi Heavy Industries, Ltd.
Tomonori Mineno - Mitsubishi Heavy Industries, Ltd.

Koshi Taguchi - The Kansai Electric Power Company, Incorporated

SESSION 1.1K (FSI-04-01): FSI Design for Industry
Catalunia, AB 8:15 am - 10:00 am

Session Developer/Session Chair: ***Trey Walters - Applied Flow Technology***

Session Developer/Session Co-Chair: ***Kazuaki Inaba - Tokyo Institute of Technology***

Forward and Inverse Problems in Transient Responses of Plates Under Impact Loadings, {PVP2022-83685}
Technical Paper Publication
Kazuaki Inaba - Tokyo Institute of Technology
Ming Ji - Tokyo Institute of Technology

Experimental and Numerical to Investigate the Flexible Fluid-Structure Interaction in the Water Tank as a Tuned Liquid Damper, {PVP2022-84046}
Technical Presentation Only
Bui Pham Duc Tuong - Ho Chi Minh City University of Technology and Education
Nguyen Van Doan - Ho Chi Minh City University of Technology and Education
Phan Duc Huynh - Ho Chi Minh City University of Technology and Education

Fluid-Structure Interaction Analysis of a Peristaltic Pump by Using Numerical and Experimental Methods, {PVP2022-84409}
Technical Paper Publication
Qingye Li - Dalian University of Technology
Chaoyong Zong - Dalian University of Technology
Jianhua Zhang - Dalian University of Technology
Yanfeng Zhang - Baoding Lead Fluid Technology Co
Xueguan Song - Dalian University of Technology

Experimental Investigation in LPG-Releasing Process From Damaged Storage Vessel, {PVP2022-80457}
Technical Paper Publication
Mi Zhou - North China Electrical Power University
Shuhao Ma - North China Electrical Power University
Naiqiang Zhang - North China Electrical Power University

FORUM SESSION 1.1L (TDF-1-1): Technology Demonstration Forum – I
Marquis 4/5, 8:15 am - 10:00 am

Block 1.2: Monday, July 18, 2022 (10:15 am – 12:00 pm)

SESSION 1.2R (PS-1-2): Opening Ceremony and Plenary Lecture
Grand Ballroom, 10:15 am - 12:00 pm

Session Developer/Session Chair: ***Andrew Duncan - Savannah River National Laboratory***

Session Co-Developer: ***Clay Rodery - C&S Technology LLC***

Transformational Clean Hydrogen Production, Transportation, and Storage for a Sustainable Energy Future
Plenary Lecture
Timothy Reinhardt – U.S. Department of Energy

A Perspective of Steel Industry Actions & Responsibility Towards a Carbon Free Economy
Plenary Lecture
Erick Escorza - Tenaris

FORUM SESSION 1.2L (TDF-1-2): Technology Demonstration Forum – II
Marquis 4/5, 10:15 am - 12:00 pm

Block 1.3: Monday, July 18, 2022 (2:15 pm – 4:00 pm)

SESSION 1.3A (CT-01-02): The Hans Kockelmann Memorial Symposium on Design and Analysis of Bolted Flange Joints – 2
Marquis 1, 2:15 pm - 4:00 pm

Session Developer/Session Chair: ***Hubert Lejeune - CETIM***

Session Developer/Session Co-Chair: ***Anita Bausman - VSP Technologies***

Session Developer: ***Satoshi Nagata - Toyo Engineering Corporation***

K-Factor Testing of PTFE-Coated Studs, {PVP2022-83608}
Technical Paper Publication
Scott Hamilton - Hex Technology
Don Oldigues - Whitmore Mfg. LLC
Tom Blake - Whitmore Mfg. LLC
Dan Meigs - Hex Technology

Washers: Are They as Good as We Think?, {PVP2022-83610}
Technical Paper Publication
Scott Hamilton - Hex Technology
Dan Meigs - Hex Technology

Effect of the Bending Stiffness of Bolted Flange Joints on the Dynamics, {PVP2022-84708}
Technical Paper Publication
Linbo Zhu - Xi'an Jiaotong University
Hu Pan - Xi'an Jiaotong University
Yilong Yang - Xi'an Jiaotong University
Abdel-Hakim Bouzid - École de Technologie Supérieure
Jun Hong - Xi'an Jiaotong University

Comparison Between Different Calculation Methods for Determining Bolting-Up Torque Moments, {PVP2022-86163}
Technical Paper Publication
Manfred Schaaf - AMTEC GmbH
Alexander Mutz - Kernkraftwerk Gösgen-Däniken AG
Stefan Hufnagel - AMTEC GmbH

SESSION 1.3B (MF-01-02): Application of Fracture Mechanics in Failure Assessment

Marquis 2, 2:15 pm - 4:00 pm

Session Developer/Session Chair: ***Preeti Doddihal - Kinectrics***

Session Developer/Session Co-Chair: ***Jessica Lam - Ontario Power Generation***

Investigations on Multi-Stage Tests and Transient Endurance Limit Behavior Under Low-, High- and Very High Cycle Fatigue Loads, {PVP2022-84718}
Technical Paper Publication
Tim Schopf - Materials Testing Institute - University of Stuttgart
Stefan Weihe - Materials Testing Institute - University of Stuttgart
Jürgen Rudolph - Framatome GmbH

Fatigue Crack Growth Prediction of a Pipe With a Circumferential Surface Flaw Using δJ and Reference Stress Method, {PVP2022-84555}
Technical Paper Publication
Kiminobu Hojo - Mitsubishi Heavy Industries Ltd
Satoshi Kumagai - Mitsuhishi Heavy Industires

Investigation of Fracture Toughness and Microstructure of the High Flux Reactor Vessel Surveillance Test Specimen Withdrawn in 2019, {PVP2022-84714}
Technical Presentation Only
M. Kolluri - NRG
F. Naziris - NRG
H. H. S. P. Bregman - NRG
S. P. A. Hageman - NRG
F. H. E. De Haan – De Wilde - NRG

Impact of Thermal Ageing Embrittlement on Westinghouse and Combustion Engineering-Designed Pressurized Water Reactor Pressurizers Based on Pressure-Temperature Limit Comparison, {PVP2022-85520}
Technical Paper Publication
Alexandria Scott - Westinghouse
Louis Turicik - Westinghouse
Brian Hall - Westinghouse
Anees Udyawar - Westinghouse
Amy Freed - EPRI
Elliot Long - EPRI

SESSION 1.3C (MF-04-02): European Programs in Structural Integrity

Marquis 3, 2:15 pm - 4:00 pm

Session Developer/Session Chair: ***Stephane Marie - Framatome***

Session Developer/Session Co-Chair: ***Tomas Nicak - Framatome***

Advanced Structural Integrity Assessment Tools for Safe Long Term Operation - ATLAS+ Project: Status of the Activities of the WP3 on Modelling in 2020 & 2021, {PVP2022-84842}
Technical Paper Publication
Arnaud Blouin - Framatome
Stephane Marie - Framatome
Tomas Nicak - Framatome GmbH
Antti Timperi - VTT
Peter Gill - Jacobs

BRUTE: Evaluation of Mechanical Properties of True Reactor Pressure Vessel Material From Barsebäck 2, {PVP2022-83819}
Technical Paper Publication
Pentti Arffman - VTT Technical Research Centre of Finland
Jari Lydman - VTT Technical Research Centre of Finland
Noora Hytönen - VTT Technical Research Centre of Finland
Zaiqing Que - VTT Technical Research Centre of Finland
Sebastian Lindqvist - VTT Technical Research Centre of Finland

Development of a Robust Procedure for the Evaluation of Striation Spacings in Low Cycle Fatigue Specimens Tested in a Simulated PWR Environment, {PVP2022-84027}
Technical Paper Publication
Benjamin Howe - University of Manchester
Jonathan Mann - Rolls Royce
Zaiqing Que - VTT Technical Research Centre of Finland
Caitlin Huotilainen - VTT Technical Research Centre of Finland
Fabio Scenini - University of Manchester
Grace Burke - University of Manchester

INCEFA-SCALE (Increasing Safety in NPPs by Covering Gaps in Environmental Fatigue Assessment - Focusing on Gaps Between Laboratory Data and Component-Scale), {PVP2022-84625}
Technical Paper Publication
Kevin Mottershead - Amec Foster Wheeler
Alec Mclennan - Jacobs
Roman Cicero - Inesco Ingenieros
Stephan Courtin - EDF
Sergio Cicero - University of Cantabria
Zaiqing Que - VTT

SESSION 1.3D (CS-01-01): Structural Integrity of Pressure Components

Marquis 6, 2:15 pm - 4:00 pm

Session Developer/Session Chair: ***Steven Xu - Kinectrics***

Session Developer/Session Co-Chair: ***Pierre Dulieu – Tractebel Engie***

Criteria for Specifying Static Equipment Construction Code for Process Plant, {PVP2022-78987}
Technical Paper Publication
Kamlesh Chikhaliya - Linde Engineering India Pvt. Ltd.
Ruediger Gawlick - Linde Engineering GmBH, Munich Germany

Experimental and Numerical Assessment of Weld Residual Stresses in Dissimilar Metal Weld of Reactor Pressure Vessel Nozzles, {PVP2022-79529}
Technical Paper Publication
Pierre Dulieu - Tractebel Engie
Valéry Lacroix - Tractebel Engie
Vratislav Mares - VSB-Technical University of Ostrava
Larbi Arbaoui - Cenaero
Jean-Philippe Bournot - Cenaero

State-of-the-Art of WPS in RPV PTS Analysis, {PVP2022-83699}
Technical Paper Publication
Maksym Zarazovskii - IPP-CENTRE LLC
Vladislav Pištora - ÚJV Řež
Dana Lauerova - ÚJV Řež
Florian Obermeier - Framatome GmbH
Diego Fernando Mora Mendez - Paul Scherrer Institute
Yaroslav Dubyk - IPP-CENTRE LLC
Tobias Bolinder - Kiwa Technical Consulting
Carlos Cueto-Felgueroso Garcia - TECNATOM
Szabolcs Szávai - Bay Zoltán Nonprofit Ltd
Judit Dudra - Bay Zoltán Nonprofit Ltd
Oriol Costa Garrido - Jozef Stefan Institute
Christophe Blain - Institut de Radioprotection et de Sûreté Nucléaire
Markku Puustinen - LUT University
Jinya Katsuyama - Japan Atomic Energy Agency
B. Richard Bass - Oakridge Consulting International, Inc.
Paul T. Williams - Oakridge Consulting International, Inc.
Oleksii Shugailo - SSTC NRS

An Elastic Buckling Pressure Level Comparison for Torispherical Heads - Empirical Equations vs. FEA Results, {PVP2022-84559}
Technical Paper Publication
Mark Belloni - Magnus Engineering Services, Inc.
Pankajkumar Shah - Magnus Engineering Services, Inc.

SESSION 1.3E (DA-08-01): Fitness for Service Evaluations – 1

Marquis 7, 2:15 pm - 4:00 pm

Session Developer/Session Chair: ***Kannan Subramanian - Structural Integrity Associates***

Session Developer/Session Co-Chair: ***Andrew Owens - Koch Engineered Solutions***

Session Co-Developers:
Bhaskar Shitole - Woodley
Gysbert van Zyl - Integrity Engineering Solutions

Parametric Study on the Vibration of Small-Bore Piping Branch Connections, {PVP2022-84119}
Technical Paper Publication
Gysbert van Zyl - Integrity Engineering Solutions
Richard Brodzinsky - Integrity Engineering Solutions

Impact of General and Local Metal Loss on the API 579-1 Creep Residual Life, {PVP2022-84642}
Technical Paper Publication
Lorenzo Scano - Studio Scano Associato
Francesco Piccini - Studio Scano Associato

Evaluation of the API 579-1/ASME FFS-1 KPECL and KCECLL Stress Intensity Factors, {PVP2022-84922}
Technical Paper Publication
Steven Altstadt - Wiss Janney Elstner Assoc Inc

Reorganize Significance of Mt, Ms and Plastic Zone Size Against LMSD Under Plastic Collapse Regime of API 579-1/ASME FFS-1 FFS on Japanese Seismic Regulation, {PVP2022-85187}
Technical Paper Publication
Yoichi Ishizaki - Idemitsu Kosan Co.Ltd.
Futoshi Yonekawa - Idemitsu Kosan Co.Ltd.,

SESSION 1.3F (MF-02-05): Panel Session--Hydrogen for the Green Economy

Marquis 8, 2:15 pm - 4:00 pm

Session Developer/Session Chair: ***Chris San Marchi - Sandia National Laboratories***

Session Developer/Session Co-Chair: ***Daniel T. Peters - Structural Integrity Associates, Inc.***

Panelists:
Jeff Whitworth - Director of the Emerging Fuels Institute, Pipeline Research Council International
Kyle McKeown - Head of Engineering, Nel Hydrogen
Mark Richards - Program Manager, Hydrogen and Fuel Cell Technologies Office, U.S. DOE

SESSION 1.3G (MF-17-02): Advanced and Additive Manufacturing and Material Technologies (Joint with D&A)

Andalucia, 2:15 pm - 4:00 pm

Session Chair: ***Timothy Krentz - Savannah River National Lab***
Session Developers:
Paul Korinko - Savannah River National Lab
Peter Gill - Jacobs

The Mechanical Performance of Additively Manufactured 316l Austenitic Stainless Steel, {PVP2022-84543}
Technical Paper Publication
Andrew Wisbey - Jacobs
David Coon - Jacobs
Mark Chatterton - Jacobs
Joshua Barras - TWI
Da Guo - The University of Manchester
Kun Yan - The University of Manchester
Mark Callaghan - Jacobs
Wajira Mirihanage - The University of Manchester

Fracture and Tensile Characterization of Additively Manufactured Type 300 Series Stainless Steel in the Baseline and Hydrogen and Tensile Characterization of Additively Manufactured Type 304l Stainless Steel in the Baseline and Hydrogen Charged Conditions, {PVP2022-84723}
Technical Paper Publication
Timothy Krentz - Savannah River National Lab
Paul Korinko - Savannah River National Lab
Anthony McWilliams - Savannah River National Lab

Ductile Damage Model Development and Validation of 316l Laser Powder Bed Fusion Steel Under Multiaxial Stress Conditions, {PVP2022-84785}
Technical Paper Publication
Theo Hales - Imperial College London
Tobias Ronneberg - Imperial College London
Paul Hooper - Imperial College London
Catrin Mair Davies - Imperial College London

Fracture Toughness Testing of 316L Steel Manufactured by Laser Powder Bed Fusion, {PVP2022-85651}
Technical Paper Publication
Ee Tan - imperial College London
Fabian Sorce - Imperial College London
Catrin Mair Davies - Imperial College London

SESSION 1.3H (CS-07-02): Recent Developments in ASME Codes and Standards – 2

Murcia, 2:15 pm - 4:00 pm

Session Developer/Session Chair: ***Ting-Leung Sham - Idaho National Laboratory***

Session Developer/Session Co-Chair: ***Yanli Wang - Oak Ridge National Laboratory***

Session Co-Developers:
Mark Messner - Argonne National Laboratory
Michael McMurtrey - Idaho National Laboratory

An Initial Assessment of the Creep-Rupture Strengths for Weldments With Alloy 800H Base Metal and Alloy 617 Filler Metal, {PVP2022-83919}
Technical Paper Publication
Ryann Rupp - Idaho National Laboratory
Ting-Leung Sham - Idaho National Laboratory

Development of a Pressure Vessel Qualification Methodology and Testing - Proposal Enhancement to ASME BPVC Certification, {PVP2022-84487}
Technical Paper Publication
Irawan Josodipuro - PT PERTAMINA HULU MAHAKAM

Implementing Probabilistic Design Methods in Plant Systems Design, {PVP2022-84743}
Technical Paper Publication
Adin Mann - Middough Inc.
Ben Pellereau - Rolls-Royce
Mihai Diaconeasa - North Carolina State University
Michael Martin - Rolls-Royce
Nawal Prinja - Jacobs

Design Charts for an Integrated Creep-Fatigue Damage Evaluation Approach, {PVP2022-84807}
Technical Paper Publication
Bipul Barua - Argonne National Laboratory
Mark C. Messner - Argonne National Laboratory
Ting-Leung Sham - Idaho National Laboratory

SESSION 1.3I (SE-03-01): Damping and Vibration Control / Resilience and Metamaterials / Multi-Hazards and Margins

Castilla AB, 2:15 pm - 4:00 pm

Session Developer/Session Chair: ***Keisuke Minagawa - Saitama Institute of Technology***

Session Developer/Session Co-Chair: ***Satoru Kai - IHI Corporation***

Session Developers:
Oreste Bursi - University of Trento
Constantine Petropoulos - Sargent & Lundy

Session Co-Developers:
Fabrizio Paolacci - Roma Tre University
Alessandra Marino - INAIL
Ismail Kisisel - Sargent & Lundy
Antonio Casimiro Caputo - Roma Tre University

Research and Development of Viscous Fluid Dampers for Improvement of Seismic Resistance of Thermal Power Plants Part 12 Vibration Measurement of Excisting Boiler Structure, {PVP2022-84633}
Technical Paper Publication
Keisuke Minagawa - Saitama Institute of Technology
Kiyoshi Aida - Mitsubishi Heavy Industries, LTD.
Satoshi Fujita - Tokyo Denki University

SCoReS: An Algorithm for Records Selection to Employ in Seismic Risk and Resilience Analysis, {PVP2022-84550}
Technical Paper Publication
Renato Giannini - Roma Tre University, Department of Architecture
Fabrizio Paolacci - University Roma Tre

Quantitative Probabilistic Seismic Resilience Assessment of Industrial Facilities, {PVP2022-84660}
Technical Paper Publication
Antonio Casimiro Caputo - Roma Tre University
Bledar Kalemi - Roma Tre University
Fabrizio Paolacci - Roma Tre University
Gianluca Quinci - Roma Tre University
Daniele Corritore - Roma Tre University

A Study on Behavior of Deteriorated Reinforced Concrete Slab After Repair and Retrofit, {PVP2022-81158}
Technical Presentation Only
Wen-I Liao - National Taipei University of Technology
Chien-Kuo Chiu - National Taiwan University of Science and Technology
Wan-Yi Chou - National Taipei University of Technology

SESSION 1.3J (OAC-01-01/05-01): Safety, Reliability, and Risk Management and Pumps and Valves

Leon, 2:15 pm - 4:00 pm

Session Developer/Session Chair: ***Alton Reich - Streamline Automation, LLC***

Session Developer/Session Co-Chair: ***Mike Weber - BAM***

Investigation Into Degradation of a Pilot Operated Pressure Relief Valve Main Seat During Development Testing, {PVP2022-83156}
Technical Paper Publication

Martin Kane - Rolls-Royce
Phil Thompson - Rolls-Royce
Dave Stewart - Rolls-Royce

Analytical Method for Evaluating a 4-Piece Retaining Ring, {PVP2022-83675}
Technical Paper Publication
Alton Reich - Streamline Automation, LLC
Roberto Disalvo - Streamline Automation, LLC

Evaluation of Welding Techniques for Stainless Steels Piping Without Use of Backing Gas, {PVP2022-84731}
Technical Paper Publication
Chakradhar Sanagavaram - Shell Japan Ltd
Sivakumar Chiluvuri - Shell Canada Ltd
Jorge Penso - Shell Houston Technology Center

Safety Advantages of Full-Containment Storage Tanks and the Cost-Effective Implementation for Refrigerated LPG Storage Systems, {PVP2022-85433}
Technical Paper Publication
Amin Al-Fayez - Saudi Aramco
Samuel Morris - Saudi Aramco
Hani Alsubaikhy - Saudi Aramco
Ali Refai - Saudi Aramco

SESSION 1.3K (TW-02-01): Technical Tutorial--Waterhammer: Predicting Pressures and Pipe Forces, and Mitigation Options - Part 1

Catalunia AB, 2:15 pm - 4:00 pm

Session Chair: ***Trey Walters - Applied Flow Technology***

Session Co-Chair: ***Arris Tijsseling - Eindhoven University of Technology***

Session Developer/Session Co-Chair: ***Maher Younan - American University in Cairo, New Cairo, Egypt***

Presented by:
Trey Walters - Applied Flow Technology
Arris Tijsseling - Eindhoven University of Technology

FORUM SESSION 1.3L (TDF-1-3): Technology Demonstration Forum – III

Marquis 4/5, 2:15 pm - 4:00 pm

Block 1.4: Monday, July 18, 2022 (4:15 pm – 6:00 pm)

SESSION 1.4A (CT-01-03): The Hans Kockelmann Memorial Symposium on Design and Analysis of Bolted Flange Joints – 3

Marquis 1, 4:15 pm - 6:00 pm

Session Developer/Session Chair: ***Scott Hamilton - Hex Technology***

Session Developer/Session Co-Chair: ***Manfred Schaaf - AMTEC***

Session Developer: ***Satoshi Nagata - Toyo Engineering Corporation***

PTFE Gasket Material Performance Variation With Thickness, {PVP2022-84765}
Technical Paper Publication
Anita Bausman - VSP Technologies
Jeffrey Wilson - VSP Technologies

Evaluating the Sealing Performance of Engineered PTFE Based Gaskets in Fiberglass Reinforced Plastic Flanges, {PVP2022-80474}
Technical Paper Publication
Jeffery Wilson - VSP Technologies
Tim Rice - VSP Technologies

Load Loss as a Factor Impacting Gasket Leakage, {PVP2022-84703}
Technical Paper Publication
Dale Rice - VSP Technologies
Jerry Waterland - VSP Technologies

Developing a Test Protocol to Determine Packing Performance in a Soot Blower, {PVP2022-84869}
Technical Paper Publication
Carlos D. Girão - TEADIT
Igor Meira - TEADIT
Isadora Ruas Henriques - TEADIT

SESSION 1.4B (CS-08-01): Hydrogen Effects on Material Behavior for Structural Integrity Assessment (Joint with MF-02)

Marquis 2, 4:15 pm - 6:00 pm

Session Developer/Session Chair: ***Steven Xu - Kinectrics***

Session Developer/Session Co-Chair: ***Chris San Marchi - Sandia National Laboratories***

Session Developers:
Joe Ronevich - Sandia National Laboratories
David Cho - Bruce Power
Jinyang Zheng - Zhejiang University
Michael Martin - Rolls-Royce

DetaClad™ Characterization for High-Temperature and High-Pressure Hydrogen Service, {PVP2022-80639}
Technical Paper Publication
Olivier Sarrat - NobelClad
Curtis Prothe - NobelClad
Tim Delahanty - NobelClad

An Extended Process-Zone Modeling Framework for Overload Crack Initiation in Zr-2.5Nb Pressure Tubes, {PVP2022-85158}
Technical Paper Publication
Steven Xu - Kinectrics
Douglas Scarth - Kinectrics
David Cho - Bruce Power

Evaluation of the Effect of Hydrogen Embrittlement on Dissimilar or Similar Welded Austenitic Stainless Steel Using in Situ Scanning Electron Microscope, {PVP2022-84470}
Technical Presentation Only
Hee Soo Yun - Korea Research Institute of Standards and Science
Sang Koo Jeon - Korea Research Institute of Standards and Science
Un Bong Baek - Korea Research Institute of Standards and Science
Seung Hoon Nahm - Korea Research Institute of Standards and Science

Numerical Method to Determine Fracture Toughness Under Hydrogen Environment From Small Punch Test Data and Experimental Validation, {PVP2022-84687}
Technical Paper Publication
Ki-Wan Seo - Korea University
Jin-Ha Hwang - Korea University
Yun-Jae Kim - Korea University

Difference of Hydrogen Diffusion Regularity Between Interstice-Doped and Substitution-Doped Formed by Steel Carburizing, {PVP2022-84462}
Technical Paper Publication
Baihui Xing - Zhejiang University
Jing Wang - Zhejiang University of Technology
Haotian Wei - Zhejiang University
Juan Shang - Zhejiang University
Zhengli Hua - Zhejiang University
Chaohua Gu - Zhejiang University
Jinyang Zheng - Zhejiang University

SESSION 1.4C (MF-17-03): Advanced and Additive Manufacturing and Material Technologies (Joint with D&A)

Marquis 3, 4:15 pm - 6:00 pm

Session Developer/Session Chair: ***Andrew Duncan - Savannah River National Lab***

Session Developers:
Paul Korinko - Savannah River National Lab
Peter Gill - Jacobs

Mechanical Properties and Metallurgical Examination Results for a Batch of Powder Metallurgy - Hot Isostatically Pressed Low Alloy Steel Grade 508 4N , {PVP2022-85077}
Technical Paper Publication
John Sulley - Rolls-Royce
David Stewart - Rolls-Royce
Gary Jones - Rolls-Royce
Daniel Thatcher - Rolls-Royce
Phil Wallace - Rolls-Royce
Ted Warner - Rolls-Rocye

Additive Manufacturing of Monel K-500 via Directed Energy Deposition for Pressure Vessel Applications, {PVP2022-85735}
Technical Paper Publication
Ze Chen - Singapore Centre for 3D Printing, School of Mechanical and Aerospace Engineering, Nanyang Technological University
Chengcheng Wang - Singapore Centre for 3D Printing, School of Mechanical and Aerospace Engineering, Nanyang Technological University
Sastry Kandukuri - DNV
Kun Zhou - Singapore Centre for 3D Printing, School of Mechanical and Aerospace Engineering, Nanyang Technological University

3D Printed Metal Pressure Vessels, {PVP2022-84749}
Technical Presentation Only
David Alfano - US Army - DEVCOM AC - Benet Laboratories
Andrew Littlefield - US Army CCDC AC Benét Labs

Complex Lattice Structure-Based Heat Exchangers Through Additive Manufacturing: Opportunities and Challenges, {PVP2022-84355}
Technical Paper Publication
Jerome Wong - University of Alberta
Ahmed Qureshi - University of Alberta
Pierre Mertiny - University of Alberta

SESSION 1.4D (CS-01-02): Structural Integrity of Pressure Components

Marquis 6, 4:15 pm - 6:00 pm

Session Developer/Session Chair: ***Kiminobu Hojo - MHI***

Session Developer/Session Co-Chair: ***Anees Udyawar - Westinghouse***

Session Developer: ***Pierre Dulieu - Tractebel Engie***

Design of Ellipsoidal Heads and Torispherical Heads in Pressure Vessels and Review of Restrictions in Material Strength Imposed in ASME Sec. VIII Div. 1 – a Comparative Study of Various Codes of Construction, {PVP2022-84770}
Technical Paper Publication
Shyam Gopalakrishnan - Lloyd's Register Marine & Inspection Services India LLP
Ameya Mathkar - Lloyd's Register Marine & Inspection Services India LLP
Sujay Pathre - Lloyd's Register Marine & Inspection Services India LLP

Comparison of Stresses in Flexible Shell Element Expansion Joint of a Heat Exchanger for Code Application When Made of a Single and Multiple Flexible Shell Element, {PVP2022-84771}
Technical Paper Publication
Shyam Gopalakrishnan - Lloyd's Register Asia
Ameya Mathkar - Lloyd's Register Marine and Inspection Services India LLP
Sujay Pathre - Lloyd's Register Marine & Inspection Services India LLP

Non-Linear Analysis Design Rules: Recommendations for Industrial Practices, {PVP2022-80794}
Technical Presentation Only
Ronan Tanguy - World Nuclear Association
Byung-Chan Na - World Nuclear Association

Introduction of Standard Development Organization (SDO) Convergence Board, {PVP2022-84707}
Technical Presentation Only
Seiji Asada - Mitsubishi Heavy Industries, Ltd.

SESSION 1.4E (DA-08-02): Fitness for Service Evaluations – 2

Marquis 7, 4:15 pm - 6:00 pm

Session Developer/Session Chair: ***Gysbert van Zyl - Integrity Engineering Solutions***

Session Developer/Session Co-Chair: ***Kannan Subramanian - Structural Integrity Associates***

Session Co-Developer: ***Bhaskar Shitole - Woodley***

Engineering Critical Assessment (ECA) of Onshore Natural Gas Pipelines Using Partial Safety Factors (PSFs), {PVP2022-84151}
Technical Paper Publication
Penchala Sai Krishna Pottem - Engineers India Limited
Gurumurthy Kagita - Engineers India Limited
Deepak Gupta - Engineers India Limited
Gudimella G. S. Achary - Engineers India Limited
Subramanyam V. R. Sripada - Engineers India Limited

Level 3 Fitness for Service Assessment of Dented Pipes With Diameter Less Than 6.25 Inch, {PVP2022-84935}
Technical Paper Publication
Khaled Mostafa - Next Structure Integrity
Ahmed Alian - Next Structural Integrity

An Evaluation of Probabilistic Integrity Assessment Codes, {PVP2022-84277}
Technical Paper Publication
Markus Niffenegger - Paul Scherrer Institute
Lingyun Guo - Paul Scherrer Institute

Probabilistic Modular Tool to Assess Leak Before Break in Pipes, {PVP2022-84226}
Technical Paper Publication
Francesco Brigante - NRG
Franciska H. E. De Haan-De Wilde - NRG
Casper Versteylen - NRG

SESSION 1.4F (MF-12-01): Leak-before-Break

Marquis 8, 4:15 pm - 6:00 pm

Session Developer/Session Chair: ***Peter Gill - Jacobs***

Session Developer/Session Co-Chair: ***Mo Uddin - Structural Integrity Associates, Inc.***

Session Developers:
David Rudland - USNRC
John Sharples - Jacobs

Overview of Leak-Before-Break Best Practice Document Developed Under the ATLAS+ Project, {PVP2022-82129}
Technical Paper Publication
John Sharples - Wood Nuclear
Peter Gill - Jacobs
Brian Daniels - Jacobs

Evaluation of the Fracture Behavior of Cold-Worked Elbows With Prescribed Cracks Behavior of Circumferentially Surface Cracked Elbows Tested Under Elevated Temperature and Pressurized Conditions, {PVP2022-84833}
Technical Paper Publication
Sureshkumar Kalyanam - Engg. Mech. Corp. of Columbus
Sushma Pothana - Engg. Mech. Corp. of Columbus
Gery Wilkowski - Engg. Mech. Corp. of Columbus
Yunior Hioe - Engg. Mech. Corp. of Columbus
Fabian Orth - Engg. Mech. Corp. of Columbus
Frederick Brust - Engg. Mech. Corp. of Columbus
Steven Gilbert - Naval Nuclear Laboratory

Development of Predictive Evaluation Methods of Pipe Wall Thinning by Flow Accelerated Corrosion at Drift Region in Junction Piping, {PVP2022-84566}
Technical Paper Publication
Shun Watanabe - Central Research Institute of Electric Power Industry
Ryo Morita - Central Research Institute of Electric Power Industry

Application of Leak-Before-Break to Small Diameter Piping Nozzles With Dissimilar Metal Butt Welds Susceptible to PWSCC Using xLPR, {PVP2022-86180}
Technical Paper Publication
Nat Cofie - Structural Integrity Associates
Dilip Dedhia - Structural Integrity Associates
Gary Dominguez - Structural Integrity Associates
Mo Uddin - Engineering Mechanics Corporation of Columbus
Craig Harrington - Electric Power Research Institute
Nate Glunt - Electric Power Research Institute
Do Jun Shim - Electric Power Research Institute

SESSION 1.4G (MF-20-01): Material Quality and Failure Analysis

Andalucia, 4:15 pm - 6:00 pm

Session Developer/Session Chair: ***Peter Gill - Jacobs***

Session Developer/Session Co-Chair: ***Adam Cooper***

Session Developers:
Michiel Brongers - Consultant
Rita Kirchhofer - Exponent

Unique Failures in Explosion Bond Cryogenic Transition Joints, {PVP2022-80411}
Technical Paper Publication
Richard Colwell - Bechtel Corp

Effect of Normalizing Cooling Rate on Impact Toughness of ASME SA – 350 LF2 CL1 Forgings, {PVP2022-84549}
Technical Paper Publication
Ricardo Hernandez Soto - Técnicas Reunidas S.A
José María Gómez De Salazar Caso De Los Cobos - Facultad de Ciencias Químicas - Universidad Complutense de Madrid

Hydrogen Induced Cracking Susceptibility in the Heat Affected Zone of SA-508 Pressure Vessel Steel Induced Cracking Susceptibility in the Heat Affected Zone of Sa-508 Pressure Vessel Steel, {PVP2022-84781}
Technical Paper Publication
Joshua Velasquez - The Ohio State University
Boian Alexandrov - Ohio State University
Steven Mccracken - Electric Power Research Institute

Flanges Impact Testing Exemption Assessment, {PVP2022-84867}
Technical Paper Publication
Roberto Robles - Hytech Ingenieria
Antonio Santana - Cenergy
Miguel Muñoz - Shell

SESSION 1.4H (CS-07-03): Recent Developments in ASME Codes and Standards – 3

Murcia, 4:15 pm - 6:00 pm

Session Developer/Session Chair: ***Ting-Leung Sham - Idaho National Laboratory***

Session Developer/Session Co-Chair: ***Mark Messner - Argonne National Laboratory***

Session Co-Developers:
Michael McMurtrey - Idaho National Laboratory
Yanli Wang - Oak Ridge National Laboratory

A Viscoplastic Model for Alloy 800H for Use With the Section III, Division 5 Design by Inelastic Analysis Methods for Class A Components, {PVP2022-84861}
Technical Paper Publication
Mark Messner - Argonne National Laboratory

History of Shear Design Provisions in ASME/ACI Code for Concrete Reactor Vessels and Containments, {PVP2022-85013}
Technical Presentation Only
Ahmed Elremaily - Sargent & Lundy

Re-Visiting ASME B16.5 and B16.47 Flange Standards, {PVP2022-85659}
Technical Presentation Only
Ayman Cheta - Shell Global Solutions (US)

Technical Basis of the Code Case Providing Design Rules for the Use of Polyethylene Pipe for Class 3 ASME BPVC Section III, Division 1 Above Ground Piping Systems, {PVP2022-86019}
Technical Paper Publication
Timothy Adams - Jensen Hughes
Jason Hebeisen - American Electric Power

Technical Overview and Basis of the Design Sections of the NM.1 Standard, {PVP2022-86021}
Technical Paper Publication
Timothy Adams - Jensen Hughes
Lorenz Vetter - Sargent & Lundy
Shen Fong - Westinghouse Electric Co.

SESSION 1.4I (SE-07-01): Seismic Evaluation of Systems, Structures and Components – 1

Castilla AB, 4:15 pm - 6:00 pm

Session Co-Developer/Session Chair: ***Satoru Kai - IHI Corporation***

Session Co-Chair: ***Keisuke Minagawa - Saitama Institute of Technology***

Session Developer: ***Akihito Otani - IHI Corporation***

Session Co-Developer: ***Akemi Nishida - Japan Atomic Energy Agency***

Inelastic Response Evaluation Method of Equipment Considering Peak Broadening of Response Spectrum, {PVP2022-83745}
Technical Paper Publication
Yusuke Minakawa - Hitachi-GE Nuclear Energy,Ltd.
Naotomo Maruyama - Hitachi-GE Nuclear Energy,Ltd.
Ichiro Tamura - The Chugoku Electric Power Co., Inc.
Takuma Iwamoto - The Chugoku Electric Power Co., Inc.
Masaki Tsuruki - HITACHI, LTD.

On the Use of Artificial Neural Network Technique for Seismic Fragility Analysis of a Three-Dimensional Industrial Frame, {PVP2022-83874}
Technical Paper Publication
Gianluca Quinci - Roma Tre University
Fabrizio Paolacci - Roma Tre University
Hoang Nam Phan - Da Nang University of Technology

Utilisation of a Sensor Array for the Risk-Aware Navigation in Industrial Plants at Risk of Natech Accidents, {PVP2022-84014}
Technical Paper Publication
Gerard O'Reilly - Scuola Universitaria Superiore IUSS Pavia
Davit Shahnazaryan - Scuola Universitaria Superiore IUSS Pavia
Al Moayad Bellah Nafeh - Scuola Universitaria Superiore IUSS Pavia
Volkan Ozsarac - Scuola Universitaria Superiore IUSS Pavia
Denis Sarigiannis - Scuola Universitaria Superiore IUSS Pavia
Paolo Dubini - European Centre for Training and Research in Earthquake Engineering
Filippo Dacarro - European Centre for Training and Research in Earthquake Engineering
Alberto Gotti - European Centre for Training and Research in Earthquake Engineering
Annalisa Rosti - European Centre for Training and Research in Earthquake Engineering
Davide Silvestri - European Centre for Training and Research in Earthquake Engineering
Emanuele Brunesi - European Centre for Training and Research in Earthquake Engineering
Sergio Mascetti - Università degli Studi di Milano
Mattia Ducci - Università degli Studi di Milano
Davide Carletti - Università degli Studi di Milano
Mariano Ciucci - National Institute for Insurance against Accidents at Work (INAIL)/DIT

Alessandra Marino - National Institute for Insurance against Accidents at Work (INAIL)/DIT

Seismic Vulnerability Assessment and Fragility Functions Derivation for Steel Storage Legged Tanks, {PVP2022-84416}
Technical Paper Publication
Giammaria Gabbianelli - University of Pavia
Daniele Perrone - University of Salento
Roberto Nascimbene - University School for Advanced Studies IUSS Pavia
Fabrizio Paolacci - University Roma Tre

SESSION 1.4J (OAC-02-01/03-01): Qualification and Testing and Monitoring, Diagnostics and Inspection
Leon, 4:15 pm - 6:00 pm

Session Developer/Session Chair: ***Radim Kopriva - UJV Rez, A. S.***

Session Developer/Session Co-Chair: ***Milan Brumovsky - UJV Rez Plc***

Stress Analyses of Large Unanchored Open-Topped Oil Storage Tanks With Tapered Shells, {PVP2022-83656}
Technical Paper Publication
Lei Shi - China Petrochemical Corporation Foreign Affairs Bureau
Yatong Zhao - Dalian Research Institute of Petroleum and Petrochemicals, SINOPEC
Zijian Huang - Dalian Research Institute of Petroleum and Petrochemicals, SINOPEC

Research on On-Line Monitoring and Evaluation Method of Thermal Insulation Performance of Vehicle LNG Gas Cylinder, {PVP2022-84413}
Technical Paper Publication
Kun Shi - China Special Equipment Inspection and Research Institute
Yunyi Zhou - China Special Equipment Inspection and Research Institute
Hangjian Hu - China Special Equipment Inspection and Research Institute
Zhixiang Duan - China Special Equipment Inspection and Research Institute

Reconstruction of Phased Array Ultrasonic Testing Image of Through Hole Based on Finite Element Analysis of Phased Array Ultrasonic Testing Image Based on Finite Element Analysis, {PVP2022-84468}
Technical Paper Publication
Ying Feng - Zhejiang University
Haiqing Fang - Zhejiang University
Weican Guo - Zhejiang Academy of Special Equipment Science
Di Jiao - China Nuclear Power Engineering Co., Ltd.
Jianfeng Shi - Zhejiang University

A Recurrent Neural Network Method for Condition Monitoring and Predictive Maintenance of Pressure Vessel Components, {PVP2022-84696}
Technical Paper Publication
Chris Halliday - Frazer-Nash Consultancy
Iain Palmer - Frazer-Nash Consultancy
Nigel Pready - Frazer-Nash Consultancy
Mark Joyce - Frazer-Nash Consultancy

SESSION 1.4K (TW-02-02): Technical Tutorial--Waterhammer: Predicting Pressures and Pipe Forces, and Mitigation Options - Part 2
Catalunia AB, 4:15 pm - 6:00 pm

Session Chair: ***Trey Walters - Applied Flow Technology***

Session Co-Chair: ***Arris Tijsseling - Eindhoven University of Technology***

Session Developer/Session Co-Chair: ***Maher Younan - American University in Cairo, New Cairo, Egypt***

Presented by:
Trey Walters - Applied Flow Technology
Arris Tijsseling - Eindhoven University of Technology

FORUM SESSION 1.4L (TDF-1-4): Technology Demonstration Forum – IV
Marquis 4/5, 4:15 pm - 6:00 pm

Block 2.1: Tuesday, July 19, 2022 (8:15 am – 10:00 am)

SESSION 2.1A (CS-03-01): The David Jones Memorial Symposium on Environmental Fatigue Issues (Joint with M&F)
Marquis 1, 8:15 am - 10:00 am

Session Developer/Session Chair: ***Seiji Asada - Mitsubishi Heavy Industries Ltd.***

Session Developer/Session Co-Chair: ***Peter Gill - Jacobs***

Session Developers:
Claude Faidy - CF Integrity Engineering
Thomas Metais – EDF
Subhasish Mohanty - Argonne National Laboratory

Environment Assisted Fatigue – Rules, Assumptions and Challenges for Fatigue Management of Primary Piping, {PVP2022-84627}
Technical Paper Publication
Jussi Solin - VTT Technical Research Centre of Finland Ltd
Tommi Seppänen - VTT Technical Research Centre of Finland Ltd
Petri Lemettinen - Fortum Power and Heat Ltd
Rami Vanninen - TVO Oyj
Erkki Pulkkinen - TVO Oyj

Environment Assisted Fatigue – Experimental Challenges and Solutions, {PVP2022-84719}
Technical Paper Publication
Jussi Solin - VTT Technical Research Centre of Finland Ltd
Tommi Seppänen - VTT Technical Research Centre of Finland Ltd
Erkki Pulkkinen - TVO Oyj
Rami Vanninen - TVO Oyj
Petri Lemettinen - Fortum Power and Heat Ltd

Statistical Analyses of Austenitic Stainless Steel High Cycle Fatigue Data to Support a Revised Design Factor for Design Fatigue Curve Development, {PVP2022-84249}
Technical Paper Publication
Andrew Morley - Rolls-Royce Plc
Alec Mclennan - Jacobs

Fatigue Benchmark Comparison Effort Between Code_Aster and CNNC/NPIC Software – Part 3, {PVP2022-78364}
Technical Paper Publication
Yin Liu - Electricité de France
Hai Xie - Nuclear Power Institute of China
Zichen Kong - Electricité de France
Xuejiao Shao - Nuclear Power Institute of China
Stephan Courtin - Electricité de France
Sam Cuvilliez - Electricité de France
Furui Xiong - Nuclear Power Institute of China

SESSION 2.1B (FSI-02-01): Flow-Induced Vibration
Marquis 2, 8:15 am - 10:00 am

Session Developer/Session Chair: ***Marwan Hassan - University of Guelph***
Session Developer/Session Co-Chair: ***Atef Mohany - Ontario Tech University***

Session Co-Developer: ***Trey Walters - Applied Flow Technology***

Experience Measuring Acoustic Induced and Flow Induced Vibration in a Blowdown Type System, {PVP2022-84903}
Technical Paper Publication
Chris Middleton - Wood
Daniel Eilers - Emerson Automation Solutions
Denis Karczub - Energy Institute
Rob Swindell - Wood
Nick Horder - Xodus Group
Hisao Izuchi - Chiyoda Corporation
Adin Mann - Middough Inc.

Flow-Induced Vibration Simulations of a Straight Tube Bundle in Water Cross-Flow, Through URANS Approach, {PVP2022-81757}
Technical Paper Publication
Daniele Vivaldi - IRSN
Jean Baccou - IRSN

Predicting Pressure Relief Valve Generated Acoustic Induced Pipe Wall Vibration, {PVP2022-84916}
Technical Paper Publication
Rob Swindell - Wood
Hisao Izuchi - Chiyoda Corporation
Denis Karczub - Energy Institute
Daniel Eilers - Emerson Automation SOlutions
Adin Mann - Middough Inc.

Experimental Study on Flow-Induced Vibration Control of Multiple Cylinders in Tandem With Helical Strakes, {PVP2022-84443}
Technical Paper Publication
Bowen Tang - School of Chemical Engineering and Science
Xiantao Fan - School of Chemical Engineering and Science
Wei Tan - Tianjin University

SESSION 2.1C (HT-07-01): Design and Analysis of High Pressure Hydrogen Equipment – 1
Marquis 3, 8:15 am - 10:00 am

Session Developer/Session Chair: ***Sean Berg - BakerRisk***

Session Developer/Session Co-Chair: ***Melanie Sarzynski - Wiss, Janney, Elstner Associates, Inc.***

Session Developer: ***Kannan Subramanian - Structural Integrity Associates***

Development of C-Ring Geometry to Explore Fatigue Crack Extension and Verification in High-Pressure Vessels, {PVP2022-84635}
Technical Paper Publication
Robert Wheeler - Sandia National Laboratories
Joseph Ronevich - Sandia National Laboratories
Chris San Marchi - Sandia National Laboratories
John Emery - Sandia National Laboratories
Peter Grimmer - Sandia National Laboratories

Fatigue Design Sensitivities of Stationary Type 2 High-Pressure Hydrogen Vessels, {PVP2022-83904}
Technical Paper Publication
John Emery - Sandia National Laboratories
Peter Grimmer - Sandia National Laboratories
Robert Wheeler - Sandia National Laboratories
Chris San Marchi - Sandia National Laboratories
Joseph Ronevich - Sandia National Laboratories

Study on Burst Pressure of Type IV Hydrogen Storage Cylinder Based on Progressive Failure Analysis, {PVP2022-84525}
Technical Paper Publication
Ning Zhu - Zhejiang University
Kai Ma - Zhejiang University
Chaohua Gu - Zhejiang University
Ruiming Zhang - Zhejiang University
Zhengli Hua - Zhejiang University
Yayu Liu - Zhejiang University
Liqing Wei - Zhejiang University

SESSION 2.1D (MF-05-01): Fitness-For-Service and Failure Assessment

Marquis 6, 8:15 am - 10:00 am

Session Developer/Session Chair: ***Marvin Cohn - Intertek***

Session Developer/Session Co-Chair: ***Harry Coules - University of Bristol***

Analysis of the Load Bearing Capacity of Cracked Additively Manufactured Polymers Using Failure Assessment Diagrams, {PVP2022-78280}
Technical Paper Publication
Sergio Cicero - University of Cantabria
Victor Martinez-Mata - University of Cantabria
Sergio Arrieta - University of Cantabria

Creep Life Prediction Using Creep Tests and Omega Method: Practical Application to a 2.25 Cr - 1 Mo Steel, {PVP2022-83888}
Technical Paper Publication
Pierre Planques - CIRIMAT
Anthony Le Guellaut - Groupe Institut de Soudure
Raphaël Goti - TotalEnergies
Bernard Viguier - CIRIMAT

Remaining Life Estimation and Periodic Monitoring of Internal Flaws on Pyrolysis Furnace Tubes Using Best Practices of NDT, Metallurgical Analysis and Risk Management, {PVP2022-84860}
Technical Presentation Only
Alfonso Parra - Quest Integrity USA LLC.
Jeff Major - Quest Integrity USA LLC.

Crack Growth in Carbon and C-0.5Mo Steels in High Temperature Hydrogen: Laboratory Data and Fitness for Service Modelling, {PVP2022-84906}
Technical Paper Publication
Brandon Rollins - DNV
Nathaniel Sutton - The Equity Engineering Group

SESSION 2.1E (HT-04-01): The Don Fryer Memorial Session on Design and Analysis of High-Pressure Equipment for Industry

Marquis 7, 8:15 am - 10:00 am

Session Developer/Session Chair: ***Taylor Nyquist - A&A Machine and Fabrication, LLC***

Session Developer/Session Co-Chair: ***Kumarswamy Karpanan - TechnipFMC***

Analysis of Pressure Pulsation in Hypercompressor Pipeline of Flow Pulsation in Hypercompressor Pipeline, {PVP2022-83744}
Technical Paper Publication
Maofei Geng - Hefei General Machinery Research Institute Co., Ltd

Jun Xiao - Hefei General Machinery Research Institute Co., Ltd
Zegang Qian - Hefei General Machinery Research Institute Co., Ltd
Shuai Liu - Sinopec Yanshan Petrochemical Company
Chengyan Zhang - Hefei General Machinery Research Institute Co., Ltd
Le Wang - Hefei General Machinery Research Institute Co., Ltd
Xiaoling Yu - Xi'an Jiaotong University
Haihong Wang - Hefei General Machinery Research Institute Co., Ltd

High Pressure Connections Bolt Tightening – Requirements, Challenges, Problems, and Solution Proposition, {PVP2022-84166}
Technical Paper Publication
Przemyslaw Lutkiewicz - Freudenberg Oil & Gas Technologies
Finn Kirkemo - Equinor
David Robertson - Freudenberg Oil & Gas Technologies

Fugitive Emission for Different Seals and Flange Designs – Test Results and Design Prediction., {PVP2022-84173}
Technical Paper Publication
Przemyslaw Lutkiewicz - Freudenberg Oil & Gas Technologies
Stuart Wellings - Freudenberg Oil & Gas Technologies
David Robertson - Freudenberg Oil & Gas Technologies

SESSION 2.1F (MF-17-04): Advanced and Additive Manufacturing and Material Technologies (Joint with D&A) – 4

Marquis 8, 8:15 am - 10:00 am

Session Developer/Session Chair: ***Paul Korinko - Savannah River National Lab***

Session Developer: ***Andrew Duncan - Savannah River National Lab***

Simulations of Crack Extensions in Sub-Sized Bend Specimens of Additively Manufactured 304 Stainless Steels Without and With Charged Hydrogen, {PVP2022-85330}
Technical Presentation Only
Shengjia Wu - University of Michigan
Jwo Pan - University of Michigan, Ann Arbor
Paul Korinko - Savanah River National Laboratory

Role of Micro-Residual Stress on Deformation of Additively Manufactured Steel, {PVP2022-84736}
Technical Presentation Only
Abdullah Al Mamun - Bangor University

Fracture in the Ductile-To-Brittle Transition Region of A Narrow-Gap Alloy 52 and Alloy 52 Dissimilar Metal Weld With Buttering, {PVP2022-80690}
Technical Paper Publication
Sebastian Lindqvist - VTT
Noora Hytönen - VTT
Laura Sirkiä - VTT
Pentti Arffman - VTT
Jari Lydman - VTT
Yanling Ge - VTT
Zaiqing Que - VTT
Pekka Nevasmaa - VTT

SESSION 2.1G (DA-02-01): Design and Analysis of Piping and Components – 1

Andalucia, 8:15 am - 10:00 am

Session Developer/Session Chair: ***Chakrapani Basavaraju - U.S. Nuclear Regulatory Commission***

Session Developer/Session Co-Chair: ***Bing Li - Kinectrics***

ASME Sec. III NB-3200-Based Environmental Fatigue Analysis of Safety Injection Piping for Determining Postulated Rupture Locations, {PVP2022-81565}
Technical Paper Publication
Bonghee Lee - KEPCO E&C
Ilkwun Nam - KEPCO E&C
Wooseok Yang - KEPCO-E&C
Chankyo Lee - KEPCO E&C
Dongjae Lee - KEPCO E&C

Refractory Stiffness Consideration for Modeling Pipe Bends, {PVP2022-83678}
Technical Paper Publication
Chithranjan Nadarajah - Becht

Overview of Piping Stress Analysis Using Shell Elements, {PVP2022-83681}
Technical Paper Publication
Robert Weyer - Amesk
Milad Hajimohammadkarim - Energy Industries Engineering & Design Co. (EIED)

Analysis of Buckling Scenarios in Large Storage Tanks, {PVP2022-84302}
Technical Presentation Only

Enayat Mahajerin - Saginaw Valley State Univ

SESSION 2.1H (SE-07-02): Seismic Evaluation of Systems, Structures and Components – 2
Murcia, 8:15 am - 10:00 am

Session Co-Developer/Session Chair: ***Satoru Kai - IHI Corporation***

Session Co-Chair: ***Osamu Furuya - Tokyo Denki University***

Session Developer: ***Akihito Otani - IHI Corporation***

Session Co-Developer: ***Akemi Nishida - Japan Atomic Energy Agency***

Relationship Between Natural Period, Strength, and Response Of Piping Systems Subjected to Seismic Motion, {PVP2022-83884}
Technical Paper Publication
Ichiro Tamura - The Chugoku Electric Power Company
Shinji Tamura - Shimane University

First Large Scale Shaking Table, {PVP2022-84472}
Technical Paper Publication
Chikahiro Minowa - Jeoju Technical Institute in Tashkent
Izumi Nakamura - Tokyo City University
Osamu Furuya - Tokyo Denki University

Earthquake NaTech Risk Assessment, Monitoring and Management of Cylindrical Liquid Storage Tanks With Floating Roof in Major-Hazard Industrial Plants, {PVP2022-84734}
Technical Paper Publication
Michela Salimbeni - Sapienza University of Rome
Maurizio De Angelis - Sapienza University of Rome
Valerio Vezzari - Global Sensing Srl
Mariano Ciucci - Istituto Nazionale per l'Assicurazione contro gli Infortuni sul Lavoro

Seismic Fragility Assessment of Steel Industrial Storage Tanks, {PVP2022-84961}
Technical Paper Publication
Giammaria Gabbianelli - University of Pavia
Daniele Perrone - University of Salento
Emanuele Brunesi - European Centre for Training and Research in Earthquake Engineering
Ricardo Monteiro - IUSS Pavia

SESSION 2.1I (OAC-04-01): The Ronald S. Hafner Memorial Symposium on Storage and Transportation of Radioactive and Other Hazardous Materials – 1
Castilla AB, 8:15 am - 10:00 am

Session Developer/Session Chair: ***Mike Weber - BAM***

Session Developer/Session Co-Chair: ***Steve Hensel - SRNS***

Finite Element Analysis of Ring Compression Testing for Used Nuclear Fuel Cladding, {PVP2022-83911}
Technical Paper Publication
Zenghu Han - Argonne National Laboratory
Michael Billone - Argonne National Laboratory
Yung Liu - Argonne National Laboratory

An Estimate of Spent Nuclear Fuel Mechanical Loads in the General 30 cm Package Drop Scenario, {PVP2022-84353}
Technical Paper Publication
Nicholas Klymyshyn - Pacific Northwest National Laboratory
Kevin Kadooka - Pacific Northwest National Laboratory
Casey Spitz - Pacific Northwest National laboratory
James Fitzpatrick - Pacific Northwest National Laboratory

Large-Scale Parametric Modeling of Spent Nuclear Fuel Dynamics in the 30 cm Package Drop Scenario, {PVP2022-84747}
Technical Paper Publication
Kevin Kadooka - Pacific Northwest National Laboratory
Nicholas Klymyshyn - Pacific Northwest National Laboratory
James Fitzpatrick - Pacific Northwest National Laboratory

Fracture Mechanical Analyses of a Welding Seam of a Thick-Walled Transport Package, {PVP2022-85535}
Technical Paper Publication
Tobias Gleim - Federal Institute for Materials Research and Testing
Martin Neumann - Federal Institute for Materials Research and Testing
Konrad Linnemann - Federal Institute for Materials Research and Testing
Steffen Komann - Federal Institute for Materials Research and Testing
Frank Wille - Federal Institute for Materials Research and Testing

SESSION 2.1J (CS-13-01): High Temperature Codes and Standards
Leon, 8:15 am - 10:00 am

Session Developer/Session Chair: ***Anees Udyawar - Westinghouse***

Session Developer/Session Co-Chair: ***Valery Lacroix - Tractebel Engie***

Extrapolation of High Temperature Material Properties of Inconel 617 for Molten Chloride Reactor Experiment Applications, {PVP2022-82286}
Technical Paper Publication
Ramesh Rajasekaran - Terrapower, LLC
Hsu-Kuang Ching - Terrapower, LLC
Francesco Deleo - Terrapower, LLC

Assessment of the Impact of Elevated Temperature Design Code Revisions on Creep Damage Estimation, {PVP2022-82890}
Technical Paper Publication
Masanori Ando - Japan Atomic Energy Agency
Satoshi Okajima - Japan Atomic Energy Agency
Hideki Takasho - Ascend Co., ltd

Demystifying the 1.1 Factor for Tensile Strength Above Room Temperature in Development of the Boiler Code Stress Tables the 1.1 Factor for BPVC Ultimate Tensile Strength Values Above the Room Temperature, {PVP2022-84248}
Technical Paper Publication
Weiju Ren - Oak Ridge National Laboratory

Guidance on the Suitability of Design Codes and Assessment Procedures for Deploying High Temperature Advanced Modular Reactors in the UK, {PVP2022-84897}
Technical Paper Publication
Marc Chevalier - EDF
Peter James - Jacobs Clean Energy
Nick Underwood - National Nuclear Laboratory

SESSION 2.1K (TW-02-03): Technical Tutorial--ASME Post Construction Standards - Part 1
Catalunia AB, 8:15 am - 10:00 am

Session Chair: ***Brent Ray - Marathon Petroleum Company***

Session Co-Chair: ***Jaan Taagepera - Chevron Tech Center***

Session Developer/Session Co-Chair: ***Maher Younan - American University in Cairo, New Cairo, Egypt***

Presented by:
Clay Rodery - C&S Technology LLC
Brent Ray - Marathon Petroleum Company
Scott Hamilton - Hex Technology
Jaan Taagepera - Chevron Tech Center
Steve Roberts - Shell Global Solutions (US), Inc.

FORUM SESSION 2.1L (TDF-2-1): Technology Demonstration Forum – V
Marquis 4/5, 8:15 am - 10:00 am

Block 2.2: Tuesday, July 19, 2022 (10:15 am – 12:00 pm)

SESSION 2.2A (CS-03-02): The David Jones Memorial Symposium on Environmental Fatigue Issues (Joint with M&F)
Marquis 1, 10:15 am - 12:00 pm

Session Developer/Session Chair: ***Seiji Asada - Mitsubishi Heavy Industries Ltd.***

Session Developer/Session Co-Chair: ***Subhasish Mohanty - Argonne National Laboratory***

Session Developers:
Claude Faidy - CF Integrity Engineering
Peter Gill - Jacobs
Thomas Metais - EDF

EPR Piping Material Study: Basic Characterization and Low Cycle Fatigue at Room Temperature, {PVP2022-84007}
Technical Paper Publication
Tommi Seppanen - VTT Technical Research Centre of Finland Ltd.
Jouni Alhainen - VTT Technical Research Centre of Finland Ltd.
Esko Arilahti - VTT Technical Research Centre of Finland Ltd.
Jussi Solin - VTT Technical Research Centre of Finland Ltd.
Rami Vanninen - TVO Oyj
Erkki Pulkkinen - TVO Oyj

The Development of a New Method to Compare the Fatigue Crack Growth Rates of Austenitic Stainless Steel Operating in a PWR Primary Coolant Subjected to Plant Realistic Temperature Loading, {PVP2022-84208}
Technical Paper Publication
Benjamin Howe - University of Manchester

Fabio Scenini - University of Manchester
Grace Burke - University of Manchester
Jonathan Mann - Rolls Royce

Modeling Electric-Potential for a Crack Subjected to Corrosion Under Static and Cyclic Loading {PVP2022-85773}
Technical Paper Publication
Raghu Prakash - Indian Institute of Technology Madras
Anish C - Indian Institute of Technology Madras
Dhinakaran Sampath - Tata Steel Port Talbot

A TensorFlow Based AI-ML Approach for Estimating Time-Evolving Cyclic-Plasticity Material Parameters of 82/182 DMW From Variable-Amplitude-Fatigue-Test Based Time-Evolving Hysteresis Curves, {PVP2022-85719}
Technical Paper Publication
Subhasish Mohanty - Argonne National Laboratory
Joseph Listwan - Argonne National Laboratory

SESSION 2.2B (FSI-02-02): Flow-Induced Vibration

Marquis 2, 10:15 am - 12:00 pm

Session Developer/Session Chair: ***Marwan Hassan - University of Guelph***

Session Developer/Session Co-Chair: ***Atef Mohany - Ontario Tech University***

Session Developer: ***Trey Walters - Applied Flow Technology***

Fluid-Structure Simulations of Vortex Shedding Induced Vibrations on Two In-Line Cylinders in Water Cross-Flow, {PVP2022-81751}
Technical Paper Publication
Daniele Vivaldi - IRSN

Assessment of an Euler-Bernoulli Beam Model Coupled to CFD in Order to Perform Fluid-Structure Simulations, {PVP2022-81755}
Technical Paper Publication
Daniele Vivaldi - IRSN
Ricciardi Guillaume - Commissariat à l'énergie atomique et aux énergies alternatives

Multiphase Flow Induced Forces for Horizontal and Vertical Systems, {PVP2022-84631}
Technical Paper Publication
Hajo Pereboom - TNO
Stefan Belfroid - TNO

Combining Acoustic Induced Vibration and Flow Induced Vibration, {PVP2022-84921}
Technical Paper Publication
Hisao Izuchi - Chiyoda Corporation
Rob Swindell - Wood
Adin Mann - Middough Inc.

SESSION 2.2C (HT-07-02): Design and Analysis of High Pressure Hydrogen Equipment – 2

Marquis 3, 10:15 am - 12:00 pm

Session Developer/Session Chair: ***Sean Berg - BakerRisk***

Session Developer/Session Co-Chair: ***Melanie Sarzynski - Wiss, Janney, Elstner Associates, Inc.***

Session Developer: ***Kannan Subramanian - Structural Integrity Associates***

Evaluation of the Hydrogen Barrier Properties of Chromium Oxide Films Deposited on SUS304 Austenitic Stainless Steels, {PVP2022-80128}
Technical Paper Publication
Kazuyoshi Kawami - Asahimekki Co. Ltd
Atsushi Kinoshita - Asahimekki Co. Ltd
Hisashi Yamanaka - Asahimekki Co. Ltd
Yoji Fukuda - Asahimekki Co. Ltd.,
Hirotoshi Enoki - AIST
Takashi Iijima - AIST
Seiji Fukuyama - eSep Inc
Ryo Tsukane - TIIT
Toshiyuki Tanaka - TIIT
Takeshi Fukutani - TIIT
Yoshiaki Suzuki - TIIT
Hiroyasu Tamai - TIIT
Takashi Ogi - Hiroshima Univ.,
Motonori Tamura - Yokohama Professional Engineers Office

Study on the Manufacturing and Failure Modes of Type Ⅳ High-Pressure Hydrogen Vessel Liner, {PVP2022-84560}
Technical Paper Publication
Qiubing Kang - Institute of Process Equipment, Zhejiang University
Jiyong Kuang - Institute of Process Equipment, Zhejiang University

Zhengli Hua - Zhejiang University
Yifan Li - Institute of Process Equipment, Zhejiang University
Weifeng Chen - Institute of Process Equipment, Zhejiang University
Wenzhu Peng - Institute of Process Equipment, Zhejiang University

On the Elastoplastic Dynamic Response of Steel Belt Staggered Multi-Layer Cylindrical Shell Subjected to External Blast Loading, {PVP2022-84467}
Technical Paper Publication
Yuanqi Liu - China University of Petroleum(East China)
Yang Du - China University of Petroleum(East China)
Zhaoteng Zhang - China University of Petroleum(East China)
Fan Zhou - China University of Petroleum(East China)

SESSION 2.2D (MF-05-02): Fitness-For-Service and Failure Assessment

Marquis 6, 10:15 am - 12:00 pm

Session Developer: ***Marvin Cohn - Intertek***

Session Chair: ***Carl Jaske - HSI Group, Inc.***

Session Co-Chair: ***Graeme Horne - Frazer-Nash Consultancy***

Technical Justification to Extend Girth Weld Examination Intervals, {PVP2022-85728}
Technical Paper Publication
Marvin Cohn - Intertek

Fracture Toughness Behavior of Welded Service Aged Carbon Steels in Mildly Sour Waters, {PVP2022-85807}
Technical Paper Publication
Brandon Rollins - DNV
Jorge Penso - Shell Projects and Technology

Effects of Strain Rate on Strain-Based Failure Assessment of Cask 1m-Puncture Drop for 304 Stainless Steel, {PVP2022-83765}
Technical Paper Publication
Hune-Tae Kim - Korea University
Jun-Min Seo - Korea University
Yun-Jae Kim - Korea University
Ji-Hye Kim - Korea University

Effect Of The Mean Temperature of Storage Site on Chloride-Induced Stress Corrosion Cracking Rate in ASME Code Case N-860: Case Study, {PVP2022-83766}
Technical Paper Publication
Jae-Yoon Jeong - Korea University
Yun-Jae Kim - Korea University
Poh-Sang Lam - Fellow of ASME
Seunghyun Kim - Korea Institute of Materials Science
Gi-Dong Kim - Korea Institute of Materials Science

SESSION 2.2E (MF-22-01): 3D Crack Growth Simulation Using FEA

Marquis 7, 10:15 am - 12:00 pm

Session Developer/Session Chair: ***Do Jun Shim - EPRI***

Session Developers:
Yinsheng Li - Japan Atomic Energy Agency
Sureshkumar Kalyanam - Engg. Mech. Corp. of Columbus
Yifan Huang - GE Hitachi Nuclear Energy

Crack Growth Simulation Using Iterative Crack-Tip Modeling Technique, {PVP2022-84684}
Technical Paper Publication
Gi-Bum Lee - Seoul National University of Science and Technology
Youn-Young Jang - Korea Institute of Nuclear Safety
Nam-Su Huh - Seoul National University of Science and Technology
Sunghoon Park - VENG
Noh-Hwan Park - VENG
Jun Park - VENG
Kyoungsoo Park - Yonsei University

Crack Growth Modeling and Constraint Behavior Observations in Complex Crack Geometries, {PVP2022-84841}
Technical Paper Publication
Sureshkumar Kalyanam - Engg. Mech. Corp. of Columbus
Lance Hill - Engg. Mech. Corp. of Columbus
Gery Wilkowski - Engg. Mech. Corp. of Columbus
Frederick Brust - Engg. Mech. Corp. of Columbus

Natural Crack Growth of Nozzle Corner Crack Using Extended Finite Element Method (XFEM), {PVP2022-84876}
Technical Paper Publication
Garivalde Dominguez - Structural Integrity Associates, Inc.
Mohammed Uddin - Structural Integrity Associates, Inc.
Minh Tran - Structural Integrity Associates, Inc.

Do Jun Shim - EPRI

Determination of Johnson-Cook Fracture Strain Model for Austenitic Stainless Steel 304, {PVP2022-83772}
Technical Paper Publication
Jun-Min Seo - Korea University
Hune-Tae Kim - Korea University
Yun-Jae Kim - Korea University
Hiroyuki Yamada - National Defense Academy
Tomohisa Kumagai - Central Research Institute of Electric Power Industry
Hayato Tokunaga - Central Research Institute of Electric Power Industry
Naoki Miura - Central Research Institute of Electric Power Industry

SESSION 2.2F (SE-09-01): Advanced Seismic Evaluation and Code – 1

Marquis 8, 10:15 am - 12:00 pm

Session Developer: ***Akira Maekawa - Osaka Sangyo University***

Session Co-Developer/Session Chair: ***Izumi Nakamura - National Research Institute for Earth Science and Disaster Prevention***

Session Co-Chair: ***Keisuke Minagawa - Saitama Institute of Technology***

Session Co-Developer: ***Akihito Otani - IHI Corporation***

Simplified Elastic-Plastic Analysis Method for Piping Systems Based on Linear Time History Analysis, {PVP2022-81651}
Technical Paper Publication
Yohei Ono - Central Research Institute of Electric Power Industry
Michiya Sakai - Central Research Institute of Electric Power Industry
Ryuya Shimazu - Central Research Institute of Electric Power Industry
Fumio Inada - Central Research Institute of Electric Power Industry
Ryo Morita - Central Research Institute of Electric Power Industry
Yuta Uchiyama - Central Research Institute of Electric Power Industry

Seismic Test Result (Static Load Test) of the Dynamic Functional Demand Valve for Nuclear Power Plant, {PVP2022-81652}
Technical Paper Publication
Yoshitaka Tsutsumi - CHUBU Electric Power Co.,Inc.
Yoshinao Matsubara - Toshiba Energy Systems & Solutions Corporation
Urara Watanabe - Toshiba Energy Systems & Solutions Corporation
Shota Tanemura - Hitachi-GE Nuclear Energy, Ltd.
Yoshiaki Takemoto - Mitsubishi Heavy Industries, Ltd.

Low Cycle Fatigue Behavior and Failure Probability of Elbow Pipes Based on High Acceleration Vibration Test, {PVP2022-84128}
Technical Paper Publication
Ryuya Shimazu - Central Research Institute of Electric Power Industry
Michiya Sakai - Central Research Institute of Electric Power Industry
Yohei Ono - Central Research Institute of Electric Power Industry

New Evaluation Method for Seismic Fatigue Damage of Plant Pipeline (Quantitative Performance and Consideration of Application), {PVP2022-84154}
Technical Paper Publication
Fumio Inada - CRIEPI
Michiya Sakai - Central Research Institute of Electric Power Industry
Ryo Morita - Central Research Institute of Electric Power Industry
Ichiro Tamura - The Chugoku Electric Power Co.

SESSION 2.2G (DA-02-02): Design and Analysis of Piping and Components – 2

Andalucia, 10:15 am - 12:00 pm

Session Developer/Session Chair: ***Bing Li - Kinectrics***

Session Developer/Session Co-Chair: ***Bhaskar Shitole - Woodley***

Session Developer: ***Chakrapani Basavaraju - U.S. Nuclear Regulatory Commission***

Numerical Analysis on the Blast Field From Gas Pipeline Burst Considering Fluid-Structure Interaction, {PVP2022-84465}
Technical Paper Publication
Yi Ren - China University of Petroleum(East China)
Yang Du - China University of Petroleum(East China)
Fan Zhou - China University of Petroleum(East China)

Experimental Study of Fluid Forces on Direct-Acting Relief Valves, {PVP2022-84469}
Technical Paper Publication
Qingye Li - Dalian University of Technology
Chaoyong Zong - Dalian University of Technology
Weihao Zhou - Dalian University of Technology
Fuwen Liu - Dalian University of Technology
Xueguan Song - Dalian University of Technology

Research on the Laws of Soil Subsidence Range on the Response of Buried Pipelines, {PVP2022-84585}
Technical Paper Publication
Feng Xu - China Special Equipment Inspection and Research Institute
Yongsheng Xu - China Special Equipment Inspection and Research Institute
Jianfei Song - China University Of Petroleum(Beijing)
Cenfan Liu - China Special Equipment Inspection and Research Institute
Xin Liu - China Special Equipment Inspection and Research Institute

Analysis of Plastic Deformation of Pipes Due to Deflagration to Detonation Transition Using Static Equivalent Pressure, {PVP2022-84790}
Technical Paper Publication
Matthias Müller - Hochschule Karlsruhe – University of Applied Sciences
Otto-Ernst Bernhardi - Hochschule Karlsruhe – University of Applied Sciences
Hans-Peter Schildberg - BASF SE
Jürgen Schmidt - CSE – Center of Safety Excellence
Jens Denecke - Hochschule Karlsruhe – University of Applied Sciences

SESSION 2.2H (NDE-01-01): Emerging Non-Destructive Evaluation and Prognostic Techniques and Applications

Murcia, 10:15 am - 12:00 pm

Session Developer/Session Chair: ***Vivek Agarwal - Idaho National Laboratory***

Session Developer/Session Chair: ***Anne Juengert - Materialprüfungsanstalt Universität Stuttgar***

Classification Recognition of Long Distance Oil and Gas Pipeline Girth Welds MFL Signal Diagrams Based on VGG16 Network, {PVP2022-79842}
Technical Paper Publication
Liyuan Geng - China University of Petroleum, PipeChina Company
Shaohua Dong - China University of Petroleum
Li Zheng - Beijing Huahang Radio Survey Institute
Shengwei Li - Beijing Huahang Radio Survey Institute

Algorithm and Application of Pipeline In-Line Inspection Data Alignment, {PVP2022-84011}
Technical Paper Publication
Kaiyan CUI - Dalian Research Institute of Petroleum & Petrochemicals, SINOPEC

Research on Defect Detection of Fully-Wrapped Carbon Fiber Reinforced Hydrogen Storage Cylinder With an Aluminum Liner by Industrial Computed Tomography, {PVP2022-84132}
Technical Paper Publication
Yan Shi - Zhejiang Academy of Special Equipment Science; Key Laboratory of Special Equipment Safety Testing Technology of Zhejiang Province
Ping Tang - Zhejiang Academy of Special Equipment Science; Key Laboratory of Special Equipment Safety Testing Technology of Zhejiang Province
Cunjian Miao - Zhejiang Academy of Special Equipment Science; Key Laboratory of Special Equipment Safety Testing Technology of Zhejiang Province
Zhangwei Ling - Zhejiang Academy of Special Equipment Science; Key Laboratory of Special Equipment Safety Testing Technology of Zhejiang Province
Weican Guo - Zhejiang Academy of Special Equipment Science; Key Laboratory of Special Equipment Safety Testing Technology of Zhejiang Province
Xuefen Yu - Zhejiang Academy of Special Equipment Science; Key Laboratory of Special Equipment Safety Testing Technology of Zhejiang Province

The Study of Impact Damage of Carbon Fiber Wrapped Cylinder With Aluminum Liner Based on X-Ray Digital Radiography, {PVP2022-84458}
Technical Paper Publication
Sen Chai - China Special Equipment Inspection and Research Institute
Liang Huang - China Special Equipment Inspection and Research Institute
Huaibei Dai - China Special Equipment Inspection and Research Institute
Ke Bo - China Special Equipment Inspection and Research Institute

Xiang Li - China Special Equipment Inspection and Research Institute
Guide Deng - China Special Equipment Inspection and Research Institute
Qianghua Huang - China Special Equipment Inspection and Research Institute

SESSION 2.2I (OAC-04-02): The Ronald S. Hafner Memorial Symposium on Storage and Transportation of Radioactive and Other Hazardous Materials – 2

Castilla AB, 10:15 am - 12:00 pm

Session Developer/Session Chair: ***David Tamburello - Savannah River National Lab***

Session Developer/Session Co-Chair: ***Oscar Martinez - Oak Ridge National Laboratory***

Computational Fluid Dynamics Modeling of Dry Cask Simulator With Crosswind, {PVP2022-84090}
Technical Paper Publication
Ben Jensen - Pacific Northwest National Laboratory
Sarah Suffield - Pacific Northwest National Laboratory
Megan Higley - Pacific Northwest National Laboratory

Simulation of Compression Set of EPDM O-Rings During Aging, {PVP2022-84214}
Technical Paper Publication
Maha Zaghdoudi - Bundesanstalt fuer Materialforschung und -pruefung
Mike Weber - Bundesanstalt fuer Materialforschung und -pruefung
Anja Kömmling - Bundesanstalt fuer Materialforschung und -pruefung
Matthias Jaunich - Bundesanstalt fuer Materialforschung und -pruefung
Dietmar Wolff - Bundesanstalt fuer Materialforschung und -pruefung

Coefficients of Friction in Dependence on Aging State of Elastomers – Experimental Identification and Numerical Simulation of the Experiment, {PVP2022-84624}
Technical Paper Publication
Mike Weber - Bundesanstalt fuer Materialpruefung und -forschung
Maha Zaghdoudi - Bundesanstalt fuer Materialpruefung und -forschung
Guido Brandt - Bundesanstalt fuer Materialpruefung und -forschung
Matthias Jaunich - Bundesanstalt fuer Materialpruefung und -forschung
Anja Kömmling - Bundesanstalt fuer Materialpruefung und -forschung
Dietmar Wolff - Bundesanstalt fuer Materialpruefung und -forschung

Thermal Modeling of Hanford Lead Canister's Heater Bench Tests, {PVP2022-83737}
Technical Paper Publication
Sarah Suffield - Pacific Northwest National Laboratory
Christopher Grant - Pacific Northwest National Laboratory
Nicholas Klymyshyn - Pacific Northwest National Laboratory

SESSION 2.2J (CS-13-02): High Temperature Codes and Standards

Leon, 10:15 am - 12:00 pm

Session Developer/Session Chair: ***Anees Udyawar - Westinghouse***

Session Developer/Session Co-Chair: ***Valery Lacroix - Tractebel Engie***

Analysis of Piping Components for High Temperature, {PVP2022-84602}
Technical Paper Publication
Reza Adibi-Asl - Kinectrics

Development of the Buckling Evaluation Method for Large Scale Vessel in Fast Reactors by the Testing of Austenitic Stainless Steel Vessel With Severe Initial Imperfection Subjected to Horizontal and Vertical Loading, {PVP2022-84605}
Technical Paper Publication
Takashi Okafuji - Mitsubishi Heavy Industries, LTD.
Kazuhiro Miura - Mitsubishi Heavy Industries, LTD.
Hiromi Sago - Mitsubishi Heavy Industries, LTD.
Hisatomo Murakami - Mitsubishi FBR Systems, Inc.
Masanori Ando - Japan Atomic Energy Agency
Satoshi Okajima - Japan Atomic Energy Agency

Developments for AMR Design: Creep-Fatigue Assessment Methods and Impact of Constraint on Defect Tolerance, {PVP2022-84901}
Technical Presentation Only
Marc Chevalier - EDF

Sarah Spindler - EDF
Jacob Knight - EDF
David Dean - EDF

High Temperature Flaw Evaluation Code Case: Technical Basis and Examples, {PVP2022-85957}
Technical Paper Publication
Frederick (Bud) Brust - Engineering Mechanics Corp of Columbus
Cedric Sallaberry - Engineering Mechanics Corporation of Columbus
Mark Messner - Argonne National Laboratory

SESSION 2.2K (TW-02-04): Technical Tutorial--ASME Post Construction Standards - Part 2
Catalunia AB, 10:15 am - 12:00 pm

Session Chair: ***Brent Ray - Marathon Petroleum Company***

Session Co-Chair: ***Jaan Taagepera - Chevron Tech Center***

Session Developer/Session Co-Chair: ***Maher Younan - American University in Cairo, New Cairo, Egypt***

Presented by:
Clay Rodery - C&S Technology LLC
Brent Ray - Marathon Petroleum Company
Scott Hamilton - Hex Technology
Jaan Taagepera - Chevron Tech Center
Steve Roberts - Shell Global Solutions (US), Inc.

FORUM SESSION 2.2L (TDF-2-2): Technology Demonstration Forum – VI
Marquis 4/5, 10:15 am - 12:00 pm

Block 2.3: Tuesday, July 19, 2022 (2:15 pm – 4:00 pm)

SESSION 2.3A (CT-04-01): Assembly of Bolted Joints – 1
Marquis 1, 2:15 pm - 4:00 pm

Session Developer/Session Chair: ***Abdel-Hakim Bouzid - Ecole Supérieure de Technologie***

Session Developer/Session Co-Chair: ***Hubert Lejeune - CETIM***

Session Developer: ***Satoshi Nagata - Toyo Engineering Corporation***

Evaluation of Pipe Flange Connection Assembly Efficiencies Using Common Tools and Patterns, {PVP2022-78696}
Technical Paper Publication
Scott Hamilton - Hex Technology
Shane Szemanek - Marathon Pipe Line, LLC

ASME PCC-1 Moving From a Guideline to a Standard, {PVP2022-82751}
Technical Presentation Only
Scott Hamilton - Hex Technology
Clay Rodery - C&S Technology LLC.

Numerical Approaches for Bolt Interactions in Flange Gasket Assemblies, {PVP2022-84816}
Technical Paper Publication
José Carlos Veiga - TEADIT
Carlos D. Girão - TEADIT
Igor Meira - TEADIT
Leonardo De La Roca - TEADIT

Stud Bolt Thread Engagement - a Fitness for Service Approach, {PVP2022-84722}
Technical Paper Publication
Colton Cranford - The Dow Chemical Company

An Improved Fixture to Quantify Corrosion in Bolted Flanged Gasketed Joints Subjected to Service Conditions, {PVP2022-82668}
Technical Paper Publication
Soroosh Hakimian - École de Technologie Supérieure
Hakim A. Bouzid - École de Technologie Supérieure
Lucas Hof - École de Technologie Supérieure

SESSION 2.3B (FSI-02-03): Flow-Induced Vibration
Marquis 2, 2:15 pm - 4:00 pm

Session Developer/Session Chair: ***Marwan Hassan - University of Guelph***

Session Developer/Session Co-Chair: ***Atef Mohany - Ontario Tech University***

Session Developer: ***Trey Walters - Applied Flow Technology***

Control of Vortex Shedding and Acoustic Resonance of a Circular Cylinder in Cross-Flow, {PVP2022-84907}
Technical Paper Publication

Rasha Noufal - Ontario Tech University
Mohammed Alziadeh - Ontario Tech University
Atef Mohany - Ontario Tech University

Effect of Pitch Ratio and Flat Bar Support Conditions on FEI Threshold for Low MDP Parallel Triangular Array – Single-Phase Water-Flow, {PVP2022-86694}
Technical Paper Publication
Amro Elhelaly - University of Guelph
Soha Eid Moussa - University of Guelph
David S. Weaver - McMaster University
Marwan Hassan - University of Guelph

Shape Effects of Octagonal Cross Sections on Vortex-Induced Vibration Characteristics, {PVP2022-80382}
Technical Paper Publication
Kazutoshi Matsuda - Kyushu Institute of Technology
Kusuo Kato - Kyushu Institute of Technology
Kenta Shigetomi - Kyushu Institute of Technology
Nade Cao - Kyushu Institute of Technology

An Investigation on Vortex Induced Vibration and Wake Induced Galloping in Tandem Cylinders System, {PVP2022-84537}
Technical Paper Publication
Kai Guo - Yanshan University
Yuxuan Cheng - Yanshan University
Xiantao Fan - Tianjin University
Hongsheng Zhang - Yanshan University
Wei Tan - Tianjin University

SESSION 2.3C (MF-02-01): Materials for Hydrogen Service (Joint with C&S): High Alloy Metals for Gaseous Hydrogen Service

Marquis 3, 2:15 pm - 4:00 pm

Session Developer/Session Chair: ***Timothy Krentz - Savannah River National Laboratory***

Session Developer/Session Co- Chair: ***Joe Ronevich - Sandia National Laboratories***

Session Developers:
Steven Xu - Kinectrics
Chris San Marchi - Sandia National Laboratories
Paul Korinko - Savannah River National Laboratory
Laurent Briottet - French Alternative Energies & Atomic Energy Commission
Sylvain Pillot - ArcelorMittal

The Effect of Temperature on the Ratcheting Behavior of 304/304 L in Air and Hydrogen Gas, {PVP2022-84834}
Technical Presentation Only
Fassett Hickey - Southwest Research Institute
Carl Popelar - Southwest Research Institute

Gaseous Hydrogen Charging and Fatigue Testing on IN718, {PVP2022-84184}
Technical Paper Publication
Fabien Ebling - Fraunhofer Institute for Mechanics of Materials IWM
Ken Wackermann - Fraunhofer Institute for Mechanics of Materials IWM

Influence of High-Pressure Hydrogen Gas and Pre-Charged Hydrogen on Fatigue Crack Initiation and Fatigue Life of 255 Super Duplex Stainless Steel, {PVP2022-84797}
Technical Paper Publication
Brian Kagay - Sandia National Laboratories
Joseph Ronevich - Sandia National Laboratories
Chris San Marchi - Sandia National Laboratories

Low Temperature Tensile Properties of Hydrogen Charged 304 and 316l Stainless Steels, {PVP2022-84626}
Technical Presentation Only
Jaeyeong Park - Korea Research Institute of Standards and Science
Thanh Tuan Nguyen - Korea Research Institute of Standards and Science
Seung-Hoon Nahm - Korea Research Institute of Standards and Science
Un Bong Baek - Korea Research Institute of Standards and Science

Development of Material Mechanical Properties Testing Platform for Liquid Hydrogen Temperature Zone, {PVP2022-84452}
Technical Paper Publication
Yufeng Feng - Institute of Process Equipment, Zhejiang University
Yingzhe Wu - Shanghai HyMaster Technology Ltd. Co.
Jiyong Kuang - Institute of Process Equipment, Zhejiang University
Chaohua Gu - Institute of Process Equipment, Zhejiang University
Jinyang Zheng - Institute of Process Equipment, Zhejiang University
Zhengli Hua - Zhejiang University
Ruizhe Gao - Institute of Process Equipment, Zhejiang University

SESSION 2.3D (MF-16-01): Creep and Creep-Fatigue Interaction

Marquis 6, 2:15 pm - 4:00 pm

Session Developer/Session Chair: ***Catrin Mair Davies - Imperial College***

Session Developers:
Mark Messner - Argonne National Laboratory
Peter Gill - Jacobs
Frederick (Bud) Brust - Emc-sq
Rita Kirchhofer - Exponent

A Datum Temperature Calibration Approach for Long-Term Minimum-Creep-Strain-Rate and Stress-Rupture Prediction Using Sine-Hyperbolic Creep-Damage Model, {PVP2022-82064}
Technical Paper Publication
Md Abir Hossain - The University of Texas At El Paso
Mohammad Shafinul Haque - Angelo State University
Calvin M. Stewart - The University of Texas at El Paso

Development of Life Estimation Method for Nozzle Welds in Large Scale Piping of Modified 9Cr-1Mo Steel -Part II: Analytical Study-, {PVP2022-84126}
Technical Paper Publication
Yukio Takahashi - Central Res Inst Elec Pwr Ind
Haruhisa Shigeyama - CRIEPI
Masatsugu Yaguchi - CRIEPI

Development of Life Estimation Method for Nozzle Welds in Large Scale Piping of Modified 9Cr-1Mo Steel -Part I: Experimental Study, {PVP2022-84220}
Technical Paper Publication
Haruhisa Shigeyama - Central Research Institute of Electric Power Industry
Yukio Takahashi - Central Research Institute of Electric Power Industry
Koji Tamura - Central Research Institute of Electric Power Industry
Masatsugu Yaguchi - Central Research Institute of Electric Power Industry
Satoshi Nishinoiri - Central Research Institute of Electric Power Industry

Creep Crack Growth Testing on 316l Steel Manufactured by Laser Powder Bed Fusion, {PVP2022-84784}
Technical Paper Publication
Jorge De Andres - Imperial College London
Vignesh Sriram - imperial college london
Catrin Davies - Imperial College London

SESSION 2.3E (CS-36-01): Master Curve Method and Applications – 1

Marquis 7, 2:15 pm - 4:00 pm

Session Developer/Session Chair: ***William Server - ATI Consulting***

Session Developer/Session Co-Chair: ***Sergio Cicero González, University of Cantabria***

Session Co-Developer: ***Mark Kirk - Phoenix Engineering Associates Inc.***

A Remembrance of John Merkle by Russ Cipolla

Impact of Elevated Loading Rates on the Shape of the Master Curve (ASTM E1921) for a German RPV Steel, {PVP2022-83867}
Technical Paper Publication
Johannes Tlatlik - Fraunhofer Institute For Mechanics of Materials
Uwe Mayer - MPA University Stuttgart

Obtaining Low-Cost Estimates of the Master Curve Index Temperature T_0 From Existing Information, {PVP2022-83905}
Technical Paper Publication
Mark Kirk - CRIEPI
Naoki Miura - CRIEPI
Tomoki Skinko - CRIEPI
Masato Yamamoto - CRIEPI

Development of a Technical Basis for Code Case N-914, "Accounting for the Effect of Embrittlement on Fracture Toughness Properties Used in Evaluations of Pressure Boundary Materials in Class 1 Ferritic Steel Components, Section XI, Division 1", {PVP2022-83909}
Technical Paper Publication
Mark Kirk - Phoenix Engineering Associates Inc.
Marjorie Erickson - Phoenix Engineering Associates Inc.
Elliot Long - EPRI

Validation of the Models in ASME CC N-830-1 {PVP2022-83921}
Technical Paper Publication
Marjorie Ann Erickson - PEAI
Mark Kirk - Phoenix Engineering Associates, Inc.
Elliot Long - Electric Power Research Institute

SESSION 2.3F (SE-09-02): Advanced Seismic Evaluation and Code – 2

Marquis 8, 2:15 pm - 4:00 pm

Session Co-Developer/Session Chair: ***Izumi Nakamura - National Research Institute for Earth Science and Disaster Prevention***

Session Co-Chair: ***Keisuke Minagawa - Saitama Institute of Technology***

Session Developer: ***Akira Maekawa - Osaka Sangyo University***

Session Co-Developer: ***Akihito Otani - IHI Corporation***

Seismic Test Results of the Main Steam Isolation Valve for Japanese Boiling Water Reactor Nuclear Power Plants (Part 2), {PVP2022-84190}
Technical Paper Publication
Hideaki Itabashi - Toshiba Energy Systems & Solutions Co.
Yoshitaka Tsutsumi - CHUBU Electric Power Co.,Inc.
Koji Nishino - Toshiba Energy Systems & Solutions Corporation
Shin Kumagai - Hitachi-GE Nuclear Energy, Ltd.
Ryo Kubota - Hitachi-GE Nuclear Energy, Ltd.
Shota Tanemura - Hitachi-GE Nuclear Energy, Ltd.

Study on Mitigation of Sliding Motion of Cask-Canister Coupled System Subjected to Seismic Excitation Using Highly Viscous Fluid, {PVP2022-84516}
Technical Paper Publication
Atsuhiko Shintani - Osaka Prefecture Univ.
Chihiro Nakagawa - Osaka Prefecture Univ.
Tomohiro Ito - Independent Author

Energy-Based Very Low Cycle Fatigue Crack Growth Simulation for Seismic Application, {PVP2022-84686}
Technical Paper Publication
Jin-Ha Hwang - Korea University
Yun-Jae Kim - Korea University
Jin-Weon Kim - Chosun University

SESSION 2.3G (DA-02-03): Design and Analysis of Piping and Components – 3

Andalucia, 2:15 pm - 4:00 pm

Session Developer/Session Chair: ***Chakrapani Basavaraju - U.S. Nuclear Regulatory Commission***

Session Developer/Session Co-Chair: ***Bing Li - Kinectrics***

Performing Under Pressure – Design Guidance for High-Pressure, High Cycle Piping System, {PVP2022-84824}
Technical Paper Publication
Jaehee Chae - Wood

Assessment of Safety Valve Escape Pipework, {PVP2022-84858}
Technical Paper Publication
Willem JJ Vorster - EDF
Jonathan Roy - Frazer Nash Consultancy
Dan Gilroy - FNC
Andrew Beveridge - FNC
Alistair Strong - FNC
Jack Pollock - FNC
David Clarkson - FNC

Fatigue Analysis of Nuclear Class-1 Small-Bore Piping Connections in CANDU Reactors, {PVP2022-84938}
Technical Paper Publication
Sameer Abdul Rehman - Next Structural Integrity
Ahmed Alian - Next Structural Integrity
Najmul Abid - Next Structural Integrity

SESSION 2.3H (CS-15-01): Probabilistic and Risk-Informed Methods for Structural Integrity Assessment - 1 (Joint with MF-14)

Murcia, 2:15 pm - 4:00 pm

Session Developer/Session Chair: ***Steven Xu - Kinectrics***

Session Developer/Session Co-Chair: ***David Rudland - USNRC***

Session Developer: ***Yinsheng Li - Japan Atomic Energy Agency***

Can Inservice Inspections Be Eliminated for Passive Components in the U.S. Nuclear Fleet?, {PVP2022-78318}
Technical Paper Publication
David Rudland - US NRC

Probabilistic Structural Integrity Analysis for Advanced Modular Reactors, {PVP2022-81135}
Technical Paper Publication
James Finley - Frazer-Nash Consultancy
Henry Cathcart - Frazer-Nash Consultancy

Development of Probabilistic Analysis Code for Evaluating Seismic Fragility of Aged Pipes With Wall-Thinning, {PVP2022-84009}
Technical Paper Publication
Yoshihito Yamaguchi - Japan Atomic Energy Agency
Akemi Nishida - Japan Atomic Energy Agency
Yinsheng Li - Japan Atomic Energy Agency

Direct Method-Based Probabilistic Structural Integrity Assessment for High-Temperature Components Considering Uncertain Load Conditions, {PVP2022-84423}
Technical Paper Publication
Xiaoxiao Wang - University of Strthaclyde
Zhiyuan Ma - University of Strathclyde
Haofeng Chen - University of Strathclyde
Weiling Luan - East China University of Science and Technology

SESSION 2.3I (HT-02-01): Structures Under Extreme Loading Conditions – 1

Castilla AB, 2:15 pm - 4:00 pm

Session Developer/Session Chair: ***David Gross - Dominion Engineering Inc.***

Session Developer/Session Co-Chair: ***Jihui Geng - BakerRisk***

Pseudo-Ratcheting and Shakedown in Impulsively Loaded Vessels, {PVP2022-78698}
Technical Paper Publication
Thomas A. Duffey - T.A. Duffey, Consulting Engineer
Kevin R. Fehlmann - Los Alamos National Laboratory
Joshem C. Gibson - Los Alamos National Laboratory

Predicting the Projectile Velocity of a Two-Stage Gas Gun Using Machine Learning, {PVP2022-79815}
Technical Paper Publication
Pouya Shojaei - University of Nevada Las Vegas
Mohamed Trabia - University of Nevada Las Vegas
Brendan O'toole - University of Nevada Las Vegas
Richard Jennings - University of Nevada Las Vegas

Baseline Design of High-Pressure Confinement Vessel for Proton Radiography of Shock Physics Experiments, {PVP2022-84092}
Technical Paper Publication
Dusan Spernjak - Los Alamos National Laboratory
Matthew Fister - Los Alamos National Laboratory
Kevin Fehlmann - Los Alamos National Laboratory
Jesse Scarafiotti - Los Alamos National Laboratory
Matthew Lakey - Los Alamos National Laboratory
Gerald Bustos - Los Alamos National Laboratory
Devin Cardon - Los Alamos National Laboratory

Flange Design for High Temperature - Material Selection, Functionality Challenges and Design Process Explained on Example, {PVP2022-84215}
Technical Paper Publication
Przemyslaw Lutkiewicz - Freudenberg Oil & Gas Technologies

SESSION 2.3J (OAC-04-03): The Ronald S. Hafner Memorial Symposium on Storage and Transportation of Radioactive and Other Hazardous Materials – 3

Leon, 2:15 pm - 4:00 pm

Session Developer/Session Chair: ***Zenghu Han - Argonne National Laboratory***

Session Developer/Session Co-Chair: ***Steffen Komann - Federal Institute For Materials Research***

Determination of the Airborne Release Fraction of a 3013 Container Subjected to a Fire, {PVP2022-80936}
Technical Paper Publication
Steve Hensel - SRNS
John Norkus - Savannah River Site

Overview of Particle Deposition Models for Spent Nuclear Fuel Storage Systems, {PVP2022-83982}
Technical Paper Publication
Sarah Suffield - Pacific Northwest National Laboratory
Philip Jensen - Pacific Northwest National Laboratory
William Perkins - Pacific Northwest National Laboratory
Ben Jensen - Pacific Northwest National Laboratory
Christopher Grant - Pacific Northwest National Laboratory
Casey Spitz - Pacific Northwest National Laboratory

Regulatory Testing and 3D Scanning Methodology of the DPP-1 Type Shipping Container for NCT and HAC Tests, {PVP2022-86807}
Technical Paper Publication
Oscar Martinez - Oak Ridge National Lab.
Abiodun Adeniyi - Oak Ridge National Laboratory
Paul Nogradi - Oak Ridge National Laboratory
Blake Vanhoy - Oak Ridge National Laboratory

Prediction of Radiological Materials Packaging Temperatures Within a Generic Staging Building, {PVP2022-85244}
Technical Presentation Only
Joel Kaderka - University of Nevada Reno
Matthew Murphy-Sweet - University of Nevada Reno
Frank Pulciano - University of Nevada Reno
Miles Greiner - University of Nevada Reno
Mustafa Hadj-Nacer - University of Nevada, Reno

SESSION 2.3K (CS-07-04): Panel Session--Case Studies and Future Needs in ASME Post Construction Standards
Catalunia AB, 2:15 pm - 4:00 pm

Session Chair: ***Brent Ray - Marathon Petroleum Corporation***

Session Developers/Panelists:
Brent Ray - Marathon Petroleum Corporation
Clay Rodery - C&S Technology LLC
Jaan Taagepera - Chevron
Scott Hamilton - Hex Technology LLC
Steve Roberts-– Shell Global Solutions (US), Inc.

FORUM SESSION 2.3L (TDF-2-3): Technology Demonstration Forum – VII
Marquis 4/5, 2:15 pm - 4:00 pm

Block 2.4: Tuesday, July 19, 2022 (4:15 pm – 6:00 pm)

SESSION 2.4A (CT-04-02): Assembly of Bolted Joints – 2
Marquis 1, 4:15 pm - 6:00 pm

Session Developer/Session Chair: ***Anita Bausman - VSP Technologies***

Session Developer/Session Co-Chair: ***Stefano Fini - University of Bologna***

Session Developer: ***Satoshi Nagata - Toyo Engineering Corporation***

Frequency of Torque Tool Calibrations and Field Torque Verifications, {PVP2022-79350}
Technical Paper Publication
Scott Hamilton - Hex Technology

Best Practices for Tightening Bolted Flange Connections Utilizing a Torque Wrench With an Extension, {PVP2022-83963}
Technical Paper Publication
Ross Dupre - VSP Technologies
Jeffery Wilson - VSP Technologies
Steve Benet - VSP Technologies

Bolt Load Relaxation Behavior of Knurled Faced Washers at Elevated Temperatures, {PVP2022-85528}
Technical Presentation Only
Michael Dolan - HYTORC Corporation
Emmanuel Derillac - HYTORC Corporation

An Investigation About the Ageing Behaviour of Pre-Applied Threadlockers, {PVP2022-84216}
Technical Paper Publication
Dario Croccolo - University of Bologna
Massimiliano De Agostinis - University of Bologna
Stefano Fini - University of Bologna
Giorgio Olmi - University of Bologna
Francesco Robusto - University of Bologna
Chiara Scapecchi - University of Bologna

SESSION 2.4B (DA-09-01): Piping and Equipment Dynamics and Dynamic Response Analysis
Marquis 2, 4:15 pm - 6:00 pm

Session Developer/Session Chair: ***Phillip Wiseman - Lisega, Inc.***

Session Developer/Session Chair: ***Pieter Van Beek - TNO***

Dynamic Strains in Anisotropic Tubes Under a Moving Pressure, {PVP2022-84070}
Technical Presentation Only
Xin-Lin Gao - Southern Methodist University
Andrew Littlefield - US Army CCDC AC Benét Labs

Verification and Applicability of a Simplified Method for Analyzing Blast Overpressure in Vertical Pressure Vessels, {PVP2022-84746}
Technical Paper Publication
Jacob Hundl - Fluor Enterprises, Inc.
Barry Millet - Fluor Enterprises, Inc.
Kenneth Kirkpatrick - Fluor Enterprises, Inc.
Bryan Mosher - Fluor Enterprises, Inc.

Diagnosis, Modelling and Assessment of Transient Pressure Events Based on Observed In-Field Evidence, {PVP2022-85658}

Technical Paper Publication
Thomas Prewitt - DNV
Michael Bednorz - DNV

Evaluating and Mitigating Fatigue Risk of Choked Flow, {PVP2022-84074}
Technical Paper Publication
Yuqing Liu - Bechtel Oil, Gas, and Chemical
Philip Diwakar - Bechtel Energy Inc.
Ismat El Jaouhari - Bechtel Energy Inc.
Dan Lin - Bechtel Energy Inc.

Algorithm Improvement of Transfer Matrix Method for Vibration Propagation of Periodic Pipeline Structure, {PVP2022-85297}
Technical Paper Publication
Qingna Zeng - Nuclear Power Institute of China
Donghui Wang - Science and Technology on Reactor System Design Technology Laboratory
Fenggang Zang - Science and Technology on Reactor System Design Technology Laboratory
Yixiong Zhang - Science and Technology on Reactor System Design Technology Laboratory

SESSION 2.4C (MF-02-02): Materials for Hydrogen Service (Joint with C&S): Hydrogen-Assisted Fatigue

Marquis 3, 4:15 pm - 6:00 pm

Session Developers:
Joe Ronevich - Sandia National Laboratories
Steven Xu - Kinectrics
Chris San Marchi - Sandia National Laboratories
Timothy Krentz - Savannah River National Laboratory
Paul Korinko - Savannah River National Laboratory
Laurent Briottet - French Alternative Energies & Atomic Energy Commission
Sylvain Pillot - ArcelorMittal

Session Chair: ***Paolo Bortot - Tenaris Dalmine***

Session Co-Chair: ***Milan Agnani - Sandia National Laboratories***

Strain-Life Performance in Hydrogen of a Dot Pressure Vessel Steel, {PVP2022-81492}
Technical Paper Publication
May Martin - National Institute of Standards and Technology
Peter Bradley - National Institute of Standards and Technology
Damian Lauria - National Institute of Standards and Technology
Robert Amaro - Advanced Materials Testing & Technologies
Matthew Connolly - National Institute of Standards and Technology
Andrew Slifka - National Institute of Standards and Technology

Modelling the Effects of Hydrogen Pressure on Fatigue Crack Growth Behavior in SA372 Pressure Vessel Steels, {PVP2022-83958}
Technical Paper Publication
Ashok Saxena - WireTough Cylinders, LLC
Kip Findley - Colorado School of Mines

Fatigue and Fracture of Pipeline Steels in High-Pressure Hydrogen Gas, {PVP2022-84757}
Technical Paper Publication
Chris San Marchi - Sandia National Laboratories
Joseph Ronevich - Sandia National Laboratories, CA

Effect of Trace Water Vapor on Measurement of Fatigue Crack Growth Rates in Hydrogen Gas at Low Delta K, {PVP2022-84879}
Technical Paper Publication
Kevin Nibur - Hy-Performance Materials Testing, LLC.
Brian Somerday - Somerday Consulting, LLC

SESSION 2.4D (MF-16-02): Creep and Creep-Fatigue Interaction

Marquis 6, 4:15 pm - 6:00 pm

Session Developer/Session Chair: ***Catrin Mair Davies - Imperial College***

Session Developer: ***Peter Gill - Jacobs***

Comparison of a Datum Temperature Calibration Method With Traditional Approach for Norton Power Law, {PVP2022-84415}
Technical Paper Publication
Mohammad Shafinul Haque - Angelo State University

Damage Evaluations for BWR Lower Head in Severe Accident Based on Multi-Physics Simulations Evaluations for BWR Lower Head in Severe Accident Based on Multi-Physics Simulations, {PVP2022-84609}
Technical Paper Publication
Jinya Katsuyama - Japan Atomic Energy Agency
Yoshihito Yamaguchi - Japan Atomic Energy Agency
Yoshiyuki Nemoto - Japan Atomic Energy Agency
Takuya Furuta - Japan Atomic Energy Agency
Yoshiyuki Kaji - Japan Atomic Energy Agency

Creep Fatigue Damage Assessment of the Welded Structures of High-Temperature Pressure Equipment Based on DIC Technology, {PVP2022-84700}
Technical Paper Publication
Zhichao Fan - Hefei General Machinery Research Institute Co. Ltd.
Yu Zhou - Hefei General Machinery Research Institute Co. Ltd.
Xuedong Chen - Hefei General Machinery Research Institute Co. Ltd.

Grain Engineered Predictive Modelling Under High Temperature Surface Oxidation Conditions in Steels, {PVP2022-86536}
Technical Presentation Only
Kamran Nikbin - Imperial College

SESSION 2.4E (CS-36-02): Master Curve Method and Applications – 2

Marquis 7, 4:15 pm - 6:00 pm

Session Developer/Session Chair: ***Masato Yamamoto - CRIEPI***

Session Developer/Session Co-Chair: ***William Server - ATI Consulting***

Session Developer: ***Mark Kirk - Phoenix Engineering Associates Inc.***

Development of Generic Unirradiated Values of T_0 and RT_{To} for Use in ASME Code Applications, {PVP2022-84048}
Technical Paper Publication
Marjorie Ann Erickson - PEAI
Mark Kirk - Phoenix Engineering Associates, Inc.
Elliot Long - Electric Power Research Institute

Fracture Toughness Evaluation of Inhomogeneous Reactor Pressure Vessel Steels Using Miniaturized Specimens, {PVP2022-84502}
Technical Paper Publication
Dongyang Jiang - Paul Scherrer Institute
Philippe Spatig - Paul Scherrer Institute
Markus Niffenegger - Paul Scherrer Institute
Hans-Peter Seifert - Paul Scherrer Institute

Specimen Size and Geometry Effects on the Master Curve Fracture Toughness Measurements of EUROFER97 and F82H Steels, {PVP2022-84514}
Technical Paper Publication
Xiang Chen - ORNL
Mikhail Sokolov - Oak Ridge National Laboratory
Sehila Gonzalez De Vicente - International Atomic Energy Agency
Yutai Katoh - Oak Ridge National Laboratory

Master Curve Evaluation Using the Fracture Toughness Data at Low Test Temperature of T_{To}< -50 °C, {PVP2022-85289}
Technical Paper Publication
Masato Yamamoto - CRIEPI
Mark Kirk - Central Research Institute of Electric Power Industry
Tomoki Shinko - Central Research Institute of Electric Power Industry

SESSION 2.4F (CS-21-01): Fatigue Monitoring and Related Assessment Method

Marquis 8, 4:15 pm - 6:00 pm

Session Developer/Session Chair: ***Jürgen Rudolph - Framatome GmbH***

Practical Methodology of Multiaxial Dynamic Strain Measurement and Stress Calculation for Fatigue Evaluation of Small Bore Connection Due to Vibration, {PVP2022-79676}
Technical Paper Publication
Tsunemichi Takahama - Nuclear Engineering, Ltd.

CPS – an Advanced Tool for Monitoring Fatigue and Fracture on Pipes and Other Mechanical Components, {PVP2022-84753}
Technical Paper Publication
Georg Wackenhut - Material Testing Institute, University of Stuttgart (MPA)
Robert Lammert - Material Testing Institute, University of Stuttgart (MPA)
Fabian Silber - Material Testing Institute, University of Stuttgart (MPA)
Stefan Weihe - Material Testing Institute, University of Stuttgart (MPA)

Study on Alternative Bounding Approach for ASME Code Section XI Appendix L, {PVP2022-84782}
Technical Paper Publication
Do Jun Shim - Electric Power Research Institute (EPRI)
Minh Tran - Structural Integrity Associates, Inc.

Inverse Conduction Method for Complex Thermal Loading, {PVP2022-84913}
Technical Paper Publication

Timothy Gilman - Structural Integrity Associates, Inc.

Direct Analysis of Elastic-Plastic Strain Ranges and Accumulated Strains Considering Stress Stiffening, {PVP2022-84241}
Technical Paper Publication
Bastian Vollrath - Brandenburg University of Technology Cottbus - Senftenberg
Hartwig Hübel - Brandenburg University of Technology Cottbus Senftenberg

SESSION 2.4G (DA-02-04): Design and Analysis of Piping and Components – 4

Andalucia, 4:15 pm - 6:00 pm

Session Developer/Session Chair: ***Bhaskar Shitole - Woodley***

Session Developer/Session Co-Chair: ***Chakrapani Basavaraju - U.S. Nuclear Regulatory Commission***

Leak Testing When Revising Operating, Upset, and Design Pressures in Pressure Piping, {PVP2022-85641}
Technical Paper Publication
Trevor Seipp - Becht Canada
Dina Kudzhak - Becht Canada
Boyd Mckay - Syncrude Canada, Ltd.

Case Study of a FCC Overhead Line Crack Failure, {PVP2022-85748}
Technical Paper Publication
Nathan Barkley - Becht
Nadarajah Chithranjan - Becht
David Anthony - Becht

Design Modification Implementations for Mitigating the Reactor Inner Zone Inlet Header Temperature in CANDU Reactor Units, {PVP2022-85985}
Technical Paper Publication
Preston Tang - Bruce Power
Bing Li - Kinectrics NSS
Akash Bhatia - Bruce Power
Leon Cramer - Bruce Power

SESSION 2.4H (CS-15-02): Probabilistic and Risk-Informed Methods for Structural Integrity Assessment - 2 (Joint with MF-14)

Murcia, 4:15 pm - 6:00 pm

Session Developer/Session Chair: ***David Rudland - USNRC***

Session Developer/Session Co-Chair: ***Steven Xu - Kinectrics***

Session Developer: ***Yinsheng Li - Japan Atomic Energy Agency***

Data-Centric Structural Integrity Assessment and Risk-Informed Asset Management Using Operational Data and Probabilistic Updating, {PVP2022-84526}
Technical Paper Publication
Michael Martin - Rolls-Royce plc
Robert Marshall - Rolls-Royce plc
Peter Reed - Rolls-Royce plc

Probabilistic Control Rod Failure Analysis for a Nominal Molten Salt Reactor, {PVP2022-84742}
Technical Paper Publication
James Finley - Frazer-Nash Consultancy
John Taylor - Frazer-Nash Consultancy Ltd.
Alexander Frost - Frazer-Nash Consultancy Ltd.
Henry Cathcart - Frazer-Nash Consultancy

Case Study of Probability of Loss of Containment Due to Overpressure, {PVP2022-84710}
Technical Paper Publication
Joseph Nunez - ExxonMobil Research and Engineering
Clifford Hay - ExxonMobil Research and Engineering

Residual Stress in Probabilistic Structural Integrity Assessment, {PVP2022-84769}
Technical Presentation Only
Matthew Weltevreden - University of Bristol
Harry Coules - University of Bristol
Isabel Hadley - TWI
Simon Mckendry - University of Bristol

SESSION 2.4I (HT-02-02): Structures Under Extreme Loading Conditions – 2

Castilla AB, 4:15 pm - 6:00 pm

Session Developer/Session Chair: ***David Gross - Dominion Engineering Inc***

Session Developer/Session Co-Chair: ***Jihui Geng - BakerRisk***

Development Testing of High-Pressure Confinement Vessel for Proton Radiography of Explosively Driven Shock Physics Experiments, {PVP2022-85995}
Technical Paper Publication
Devin Cardon - Los Alamos National Laboratory
Dusan Spernjak - Los Alamos National Laboratory
Kevin Fehlmann - Los Alamos National Laboratory
Matthew Fister - Los Alamos National Laboratory
Jesse Scarafiotti - Los Alamos National Laboratory
Matthew Lakey - Los Alamos National Laboratory
Morgan Biel - Los Alamos National Laboratory
Mark Marr-Lyon - Los Alamos National Laboratory
Keith Mashburn - Los Alamos National Laboratory
Kirk Webber - Los Alamos National Laboratory

Finite Element Analysis of Piping System Under Blast Load Due to Accidental Explosion, {PVP2022-84812}
Technical Paper Publication
Ozer Dereli - Thornton Tomasetti
Sudipta Basu - Wood Group
Mehmet Ozbey - Thornton Tomasetti
Rudraprasad Bhattacharyya - Thornton Tomasetti

Assessment of Gaseous Detonations in Pressure Vessels, {PVP2022-84269}
Technical Paper Publication
Derrick Pease - Becht
George Abatt - Former Becht Employee
Keith Clutter - SciRisq, Inc.

Deflagration & Venting Scenarios on Lab-Scale for the High-Pressure Polymerization Technology Process, {PVP2022-84839}
Technical Presentation Only
Markus Busch - TU Darmstadt

SESSION 2.4J (OAC-07-01): Plant Life Extension: Aging and Life Management

Leon, 4:15 pm - 6:00 pm

Session Developer/Session Chair: ***Franciska H. E. De Haan-De Wilde - NRG***

Session Developer/Session Co-Chair: ***Georges Bezdikian - Georges Bezdikian Consulting***

An Update of the Assessment Methodology for Civil Ageing Management: Damage Development in Concrete Structures of a Reactor due to Ageing Mechanisms, {PVP2022-84008}
Technical Paper Publication
F.H.E De Haan -de Wilde - NRG
Ledia Hasa - NRG

Environmentally Assisted Fatigue Screening Process Application, {PVP2022-84194}
Technical Paper Publication
Jia Li - Framatome
Laurent De Baglion - Framatome

Platform Life Extension – Assessment Methodology for Pressure Vessel and Piping, {PVP2022-84437}
Technical Paper Publication
Khaled Oubella - TotalEnergies

In Service Repair Challenges With Pyrolysis and Steam Methane Reformers High Temperature Metallurgy, {PVP2022-85600}
Technical Paper Publication
Jorge Penso - Shell Projects and Technology
Mitul Dalal - Shell Global Solutions US Inc
Sophia Zhu - Shell Global Solutions (US) inc.

SESSION 2.4K (NDE-02-01): NDE Techniques and Applications for Petrochemical and Power Plant Components

Catalunia AB, 4:15 pm - 6:00 pm

Session Developer/Session Chair: ***Vivek Agarwal - Idaho National Laboratory***

Session Developer/Session Chair: ***Anne Juengert - Materialprüfungsanstalt Universität Stuttgar***

Experiment Study on Acoustic Emission of Different Energy of Impact-Damaged Fully-Wrapped Composite Gas Cylinders With Non-Metallic Liner, {PVP2022-84490}
Technical Paper Publication
Liang Cheng - China Special Equipment Inspection and Research Institute
Qinghua Li - China Special Equipment Inspection and Research Institute
Dongliang Cui - China Special Equipment Inspection and Research Institute
Ke Bo - China Special Equipment Inspection and Research Institute
Xiang Li - China Special Equipment Inspection and Research Institute

Identification and Quantitative Analysis of Defect in Plates Based on Remote-Field Eddy Current Method, {PVP2022-84511}
Technical Paper Publication
Hongsheng Zhang - Yanshan University
Jinpeng Chang - Yanshan University
Wenjie Pan - Zhejiang Academy of Special Equipment Science
Chencan Sun - Yanshan University
Kai Guo - Yanshan University

Study on Ultrasonic Phased Array Imaging Technique for Direct Contact Inspection on Double Curved Surface, {PVP2022-84678}
Technical Paper Publication
Jingwei Cheng - Hefei General Machinery Research Institute Co. Ltd.
Xuedong Chen - Hefei General Machinery Research Institute Co., Ltd.
Zhichao Fan - Hefei General Machinery Research Institute Co., Ltd.
Yangguang Bu - Hefei General Machinery Research Institute Co., Ltd.
Haibin Wang - Hefei General Machinery Research Institute Co., Ltd.
Zhe Wang - Hefei General Machinery Research Institute Co., Ltd.

Optimization Design of Focusing Electromagnetic Acoustic Transducer for Crack Detection of Pressure Structure, {PVP2022-84685}
Technical Paper Publication
Zhe Wang - Hefei General Machinery Research Institute Co., Ltd
Zhichao Fan - Hefei General Machinery Research Institute Co., Ltd.
Yuanlian Su - Hefei General Machinery Research Institute Co., Ltd.
Jingwei Cheng - Hefei General Machinery Research Institute Co., Ltd.
Haibin Wang - Hefei General Machinery Research Institute Co., Ltd.
Yangguang Bu - Hefei General Machinery Research Institute Co., Ltd.

FORUM SESSION 2.4L (TDF-2-4): Technology Demonstration Forum – VIII

Marquis 4/5, 4:15 pm - 6:00 pm

SESSION 3.1A (CT-04-03): Assembly of Bolted Joints – 3

Marquis 1, 8:15 am - 10:00 am

Session Developer/Session Chair: ***Massimiliano De Agostinis - University of Bologna***

Session Co-Chair: ***Ross Dupré - VSP Technologies***

Session Developers:
Satoshi Nagata - Toyo Engineering Corporation
Dale Rice - VSP Technologies

A Novel Method to Predict the Concentricity of Aero-Engine Rotor Considering the Assembly Process of Bolted Flange Joints, {PVP2022-84924}
Technical Paper Publication
Linbo Zhu - Xi'An Jiaotong University
Yilong Yang - Xi'an Jiaotong University
Hongwei Huang - Xi'an Jiaotong University
Abdel-Hakim Bouzid - École de Technologie Supérieure
Jun Hong - Xi'an Jiaotong University

The Follow Up Development and on the Usage of the Profiled Wire Gasket, {PVP2022-80855}
Technical Paper Publication
Anthony Currie - Flexitallic Canada
Erik Sullivan - Tidewater Midstream and Infrastructure

A Critical Understanding of "Low-Stress" Spiral Wound Gaskets, {PVP2022-84739}
Technical Paper Publication
Alton Jamison - Branham Corporation

Experimental Investigation on the Fatigue Strength for Different Tightening Procedures and Materials in Metric Screws, {PVP2022-84644}
Technical Paper Publication
Stefano Fini - University of Bologna
Dario Croccolo - University of Bologna
Massimiliano De Agostinis - University of Bologna
Giorgio Olmi - University of Bologna
Francesco Robusto - University of Bologna
Chiara Scapecchi - University of Bologna

SESSION 3.1B (DA-01-01): The G.E.O. (Otto) Widera Memorial Symposium on Design and Analysis of Pressure Vessels, Heat Exchangers, and Components – 1

Marquis 2, 8:15 am - 10:00 am

Session Developer/Session Chair: ***Clay Rodery - C&S Technology LLC***

Session Developer/Session Co-Chair: ***Nathan Barkley - Becht***

Session Developers:
Tasnim Hassan - North Carolina State University
Jaan Taagepera - Chevron Tech. Center

Simplified Formulas for External Pressure Design, {PVP2022-78354}
Technical Paper Publication
William Kirkland - Oak Ridge National Laboratory
Christopher Bett - National Resource Management, LLC

Study on Skirt Base Ring Reinforcement for Tailing of Vertical Vessels, {PVP2022-84499}
Technical Paper Publication
Yuki Mihara - JGC Corporation
Kyohei Takahashi - JGC Corporation
Shunji Kataoka - JGC Corporation
Atsushi Okami - JGC Corporation

Bifurcation Buckling Analysis and Non-Linear Collapse Analysis of Teardrop Shaped Vacuum Chamber, {PVP2022-82187}
Technical Paper Publication
Hao Jiang - Oak Ridge National Lab
Charlotte Barbier - Oak Ridge National Lab
Bernie Riemer - Oak Ridge National Lab

An Active Magnetic Saddle Based on Electro-Permanent Magnetic Adhesion Mechanism, {PVP2022-84528}
Technical Paper Publication
Hongsheng Zhang - Yanshan University
Yanbin Li - Yanshan University
Kai Guo - Yanshan University
Jianxv Jiang - Yanshan University

SESSION 3.1C (MF-02-03): Materials for Hydrogen Service (Joint with C&S): Hydrogen Infrastructure

Marquis 3, 8:15 am - 10:00 am

Session Developers:
Joe Ronevich - Sandia National Laboratories
Steven Xu – Kinectrics
Chris San Marchi - Sandia National Laboratories
Timothy Krentz - Savannah River National Laboratory
Paul Korinko-– Savannah River National Laboratory
Laurent Briottet - French Alternative Energies & Atomic Energy Commission
Sylvain Pillot -ArcelorMittal

Session Chair: ***Hisao Matsunaga - Kyushu University***

Session Co-Chair: ***Robert Wheeler III - Sandia National Laboratories***

A Comparison of Mechanical Performance of API X42, X65, X70 Pipeline Steels Under Hydrogen/methane Gas Mixture, {PVP2022-84157}
Technical Presentation Only
Un Bong Baek - Korea Research Institute of Standard and Science
Thanh Tuan Nguyen - Korea Research Institute of Standard and Science
Kyung-Oh Bae - Korea Research Institute of Standard and Science
Seung-Hoon Nahm - Korea Research Institute of Standard and Science
Jae-Yeoung Park - Korea Research Institute of Standard and Science

Investigating the Role of Ferritic Steel Microstructure and Strength in Fracture Resistance in High-Pressure Hydrogen Gas, {PVP2022-83915}
Technical Paper Publication
Joe Ronevich - Sandia National Laboratories
Brian Kagay - Sandia National Laboratories
Chris San Marchi - Sandia National Laboratories
Yiyu Wang - Oak Ridge National Laboratory
Zhili Feng - Oak Ridge National Laboratory
Yanli Wang - Oak Ridge National Laboratory
Kip Findley - Colorado School of Mines

Compatibility of Medium Density Polyethylene (MDPE) for Distribution of Gaseous Hydrogen, {PVP2022-84791}
Technical Paper Publication
Rakish Shrestha - Sandia National Laboratories
Joseph Ronevich - Sandia National Laboratoies
Lisa Fring - Pacific Northwest National Laboratory
Kevin Simmons - Pacific Northwest National Laboratory
Noah Meeks - Southern Company Services
Zachary Lowe - Southern Company Gas

Timothy Harris - Southern Company Gas
Chris San Marchi - Sandia National Laboratories

Hydrogen Permeability of Self-Healing Copolymers for Use in Hydrogen Delivery Applications, {PVP2022-84051}
Technical Paper Publication
Dale Hitchcock - Savannah River National Laboratory
Timothy Krentz - Savannah River National Laboratory
Anastasia Mullins - Savannah River National Laboratory
Charles James - Savannah River National Laboratory
Qianhui Liu - Clemson University
Siyang Wang - Clemson University
Samruddhi Gaikwad - Clemson University
Marek Urban - Clemson University

SESSION 3.1D (MF-06-01): Materials and Technologies for Nuclear Power Plants

Marquis 6, 8:15 am - 10:00 am

Session Developer/Session Chair: ***Weiju Ren - Oak Ridge National Laboratory***

Session Developer/Session Co-Chair: ***Xiang Chen - Oak Ridge National Laboratory***

Enhanced Mechanical Properties of Iron-Chromium-Aluminum Cladding for Light Water Reactor Fuels Mechanical Properties of Fecral Cladding for Light Water Reactor Fuels, {PVP2022-80557}
Technical Paper Publication
Raul Rebak - GE Research
Evan Dolley - GE Research
Wanming Zhang - GE Research
Rajnikant Umretiya - GE Research
Andrew Hoffman - GE Research

Mitigating Light Water Reactor Iron-Clad Fuel Cladding Dissolution Using Zinc Water Chemistry, {PVP2022-80559}
Technical Paper Publication
Raul Rebak - GE Research
Liang Yin - GE Research
Michael Larsen - GE Research
Rajnikant Umretiya - GE Research
Andrew Hoffman - GE Research

Fracture Toughness and Fatigue Crack Growth Rate Testing of Baffle-Former Bolts Harvested From a Westinghouse Two-Loop Downflow Type PWR, {PVP2022-84519}
Technical Presentation Only
Xiang Chen - ORNL
Mikhail Sokolov - Oak Ridge National Laboratory

Study on Ductile Crack Extension and Fracture Behavior in Plate Specimen With a Semi-Elliptical Surface Crack Using a BWR Reactor Pressure Vessel Material, {PVP2022-84606}
Technical Paper Publication
Takahiro Hayashi - Toshiba Energy Systems and Solutions Corporation
Takuya Ogawa - Toshiba Energy Systems and Solutions Corporation
Shuichi Yoshida - Toshiba Energy Systems and Solutions Corporation
Masao Itatani - Toshiba Energy Systems and Solutions Corporation
Toshiyuki Saito - Toshiba Energy Systems and Solutions Corporation

SESSION 3.1E (HT-01-01): Design, Analysis and Life Prediction of High-Pressure Vessels and Equipment

Marquis 7, 8:15 am - 10:00 am

Session Developer/Session Chair: ***Melanie Sarzynski - Wiss, Janney, Elstner Associates, Inc.***

Session Developer/Session Co-Chair: ***Kannan Subramanian - Structural Integrity Associates***

The Preliminary Design and Dynamic Simulation of a Large Confinement Vessel for Explosive Charge Detonation Events, {PVP2022-82063}
Technical Paper Publication
Robert Valdiviez - Applied Mechanics Engineering, LLP

Numerical Simulation on Hydrogen Induced Cracking Behavior of 4130X Hydrogen Storage Vessel With Defect, {PVP2022-84572}
Technical Paper Publication
Haotian Wei - Institute of Process Equipment, Zhejiang University
Baihui Xing - Institute of Process Equipment, Zhejiang University
Tiancheng Cui - Key Laboratory of Interfacial Physics and Technology, Shanghai Institute of Applied Physics, Chinese Academy of Sciences
Juan Shang - Institute of Process Equipment, Zhejiang University
Zhengli Hua - Zhejiang University
Chaohua Gu - Institute of Process Equipment, Zhejiang University

Prediction of Residual Strength for Type iii Composite Pressure Vessels With External Surface Cut, {PVP2022-84531}
Technical Paper Publication
Qinan Li - Zhejiang University
Yifan Li - Zhejiang University
Chunyong Hao - Zhejiang University
Chaohua Gu - Zhejiang University
Qiubing Kang - Zhejiang University

The Combined Effect of Swage/hydraulic Autofrettage and Internal Pressure on the Fatigue Life of an Internally Cracked Smooth Tank Gun Barrel, {PVP2022-97157}
Technical Presentation Only
Mordechai Perl - Ben Gurion Univo of the Negev
Tomer Saley - Ben-Gurion University of the Negev

SESSION 3.1F (CS-11-01): Recent Developments in Chinese Codes and Standards – 1

Marquis 8, 8:15 am - 10:00 am

Session Developer/Session Chair: ***Jianfeng Shi - Zhejiang University***
Session Developer/Session Chair: ***Jinyang Zheng - Zhejiang University***

Session Developer/Session Chair: ***Yinghua Liu - Tsinghua University***

Review on Non-Metallic Pressure Vessels for Cryogenic Applications, {PVP2022-83990}
Technical Paper Publication
Yutong Yuan - Zhejiang University
Zhoutian Ge - Zhejiang University
Jiangkun Bai - Shandong AUYAN New Energy Technology Co., Ltd.
Guoying Wang - Shandong AUYAN New Energy Technology Co., Ltd.
Jianfeng Shi - Zhejiang University

Numerical Simulation Research on Heat Transfer Characteristics of On-Board Type 4 Hydrogen Storage Cylinders Under Localized Fire, {PVP2022-84582}
Technical Paper Publication
Jitian Song - Tianjin University of Science and Technology
Chaoyang Zhu - Tianjin University of Science and Technology
Xiang Li - China Special Equipment Inspection and Research Institute
Chunlin Gu - China Special Equipment Inspection and Research Institute
Liang Huang - China Special Equipment Inspection and Research Institute
Jiepu Li - China Special Equipment Inspection and Research Institute

Research on Standard Comparison of Hydrogen Cycling Test Method for On-Board Composite Hydrogen Storage Cylinders, {PVP2022-84610}
Technical Paper Publication
Jun Shi - Wuhan Institute of Technology
Biao Cheng - Wuhan Institute of Technology
Jiepu Li - China Special Equipment Inspection and Research Institute
Mingdao Sun - Wuhan Institute of Technology
Xin Li - Bayannaoer City Product Quality Measurement Testing Center
Xiang Li - China Special Equipment Inspection & Research Institute

Overview of Standards on Pressure Cycling Test for On-Board Composite Hydrogen Storage Cylinders, {PVP2022-84646}
Technical Paper Publication
Qianghua Huang - China Special Equipment Inspection and Research Institute
Xiang Li - China Special Equipment Inspection and Research Institute
Jiepu Li - China Special Equipment Inspection and Research Institute
Yitao Liu - China Special Equipment Inspection and Research Institute
Xin Li - Bayannaoer City Product Quality Measurement Testing Center
Chaoyang Zhu - Tianjin University of Science and Technology

SESSION 3.1G (FSI-01-01): Thermal Hydraulic Phenomena with Vessels, Piping and Components

Andalucia, 8:15 am - 10:00 am

Session Developer/Session Chair: **Arris Tijsseling - Eindhoven University of Technology**

Session Developer/Session Co-Chair: **Trey Walters - Applied Flow Technology**

Dancing Manhole-Cover Basics, {PVP2022-84546}
Technical Paper Publication
Niels van de Meulenhof - Eindhoven University of Technology
Arris Tijsseling - Eindhoven University of Technology
Jose Vasconcelos - Auburn University

A Critique of Steam Hammer Load Analysis Methods, {PVP2022-83715}
Technical Paper Publication
Trey Walters - Applied Flow Technology

Improved Method of Estimating Steam Hammer Loads, {PVP2022-83717}
Technical Paper Publication
Trey Walters - Applied Flow Technology

Study on Leakage Monitoring Method of Supercritical CO2 Long-Distance Pipeline, {PVP2022-84698}
Technical Paper Publication
Xiaolu Guo Hefei - General Machinery Research Institute Co., Ltd
Zhichao Fan Hefei - General Machinery Research Institute Co., Ltd
Shuangqing Xu Hefei - General Machinery Research Institute Co., Ltd

SESSION 3.1H (OAC-06-01): Continued Safe Operation of Existing Assets

Murcia, 8:15 am - 10:00 am

Session Developer/Session Chair: ***Ayman Cheta - Shell Global Solutions (US)***

Session Developer/Session Co-Chair: ***Alton Reich - Streamline Automation, LLC***

Root Cause Failure Investigation of MSCV Drain Failures, {PVP2022-84282}
Technical Paper Publication
Peter Jackson - Tetra Engineering Group Inc
Alexandria Wholey - Tetra Engineering Group, Inc.
Eric Tsai - Tetra Engineering Group Inc.
Darby Burns - Tetra Engineering Group Inc.

Piping Snubber Failure Experience and Mitigation, {PVP2022-85167}
Technical Paper Publication
Kenneth Saunders - Argos Engineers
Michael Onorato - Argos Engineers

Piping Vibration Mitigation Comparison Using Snubbers and Struts, {PVP2022-85172}
Technical Paper Publication
Kenneth Saunders - Argos Engineers
Michael Onorato - Argos Engineers

SESSION 3.1I (NDE-03-01): Reliability - Modeling and Experimental Analysis

Castilla AB, 8:15 am - 10:00 am

Session Developer/Session Chair: ***Min Zhang - Praxair, Inc., Tonawanda, NY***

Session Developer/Session Chair: ***Vivek Agarwal - Idaho National Laboratory***

Session Developer/Session Chair: ***Ju Ding - Shanghai Institute of Special Equipment Inspection and Technical Research***

Inner Inspection of Butt Welds in Layered High-Pressure Hydrogen Vessels Using the Phased Array Ultrasonic Total Focusing Method, {PVP2022-83639}
Technical Paper Publication
Teng Guoyang - Zhejiang Academy of Special Equipment Science; Key Laboratory of Special Equipment Safety Testing Technology of Zhejiang Province
Miao Cunjian - Zhejiang Academy of Special Equipment Science; Key Laboratory of Special Equipment Safety Testing Technology of Zhejiang Province
Guo Weican - Zhejiang Academy of Special Equipment Science; Key Laboratory of Special Equipment Safety Testing Technology of Zhejiang Province
Tao Yangji - Zhejiang Academy of Special Equipment Science; Key Laboratory of Special Equipment Safety Testing Technology of Zhejiang Province
Tang Ping - Zhejiang Academy of Special Equipment Science; Key Laboratory of Special Equipment Safety Testing Technology of Zhejiang Province
Ling Zhangwei - Zhejiang Academy of Special Equipment Science; Key Laboratory of Special Equipment Safety Testing Technology of Zhejiang Province
Jin Ying - Zhejiang Academy of Special Equipment Science; Key Laboratory of Special Equipment Safety Testing Technology of Zhejiang Province

Research on X-Ray Digital Imaging Inspection Method of Carbon Fiber Wrapped Cylinder With Aluminum Liner for Vehicle, {PVP2022-83897}
Technical Paper Publication
Zhaojiang Gao - China Special Equipment Inspection & Research Institute
Chai Sen - China Special Equipment Inspection & Research Institute
Qian Wang - China Special Equipment Inspection & Research Institute
Liang Huang - China Special Equipment Inspection & Research Institute
Xiang Li - China Special Equipment Inspection & Research Institute
Guide Deng - China Special Equipment Inspection & Research Institute

Evaluation Techniques of Hydrogen Permeation Characteristics in Sealing Rubbers, {PVP2022-84682}
Technical Presentation Only
Jae Kap Jung - Korea Research Institute of Standards and Science
Ji Hun Lee - Korea Research Institute of Standards and Science
Sang Koo Jeon - Korea Research Institute of Standards and Science
Un Bong Baek - Korea Research Institute of Standards and Science
Seung Hoon Nahm - Korea Research Institute of Standards and Science
Kwon Sang Ryu - Korea Research Institute of Standards and Science

Artificial Intelligence for the Output Processing of Phased-Array Ultrasonic Test Applied to Materials Defects Detection in the ITER Vacuum Vessel Welding Operations, {PVP2022-84654}
Technical Paper Publication
Maria Ortiz de Zuniga - Fusion for Energy - UNED
Nawal Prinja - Prinja and Partners
Cristian Casanova - Fusion for Energy
Andres Dans Alvarez De Sotomayor - Fusion for Energy
Max Febvre - Fusion for Energy
Ana Maria Camacho Lopez - UNED
Alvaro Rodriguez Prieto - UNED

SESSION 3.1J (CT-08-01): New and Emerging Methods of Analysis and Applications – 1

Leon, 8:15 am - 10:00 am

Session Developer/Session Chair: ***Reza Adibi-Asl - Kinectrics***

Session Developer/Session Co-Chair: ***Don Metzger - SNC Lavalin***

Session Developer: ***Satoshi Nagata - Toyo Engineering Corporation***

Numerical Simulation Comparative Analysis of Pipe Soil Interaction in Buried Pipeline, {PVP2022-84573}
Technical Paper Publication
Feng Xu - China Special Equipment Inspection and Research Institute
Yongsheng Xu - China Special Equipment Inspection and Research Institute
Jianfei Song - China University Of Petroleum(Beijing)
Hongchao Suo - China Special Equipment Inspection and Research Institute
Xin Liu - China Special Equipment Inspection and Research Institute

Metal Additive Manufacturing Simulation Using Sequentially Coupled Thermo-Mechanical Analysis, {PVP2022-84612}
Technical Paper Publication
Joshuah Nakai-Chapman - New Mexico State University
Carter Fietek - New Mexico State University
James Sakai - New Mexico State University
Youngho Park - New Mexico State Univ

Analysis to Relate Data From Radial Compression Tests on Helical Springs to Tensile Material Properties, {PVP2022-84892}
Technical Paper Publication
Andre Gagnon - SNC-Lavalin
Donald Metzger - SNC-Lavalin

How Data Point Numbers in Material Curve Affect ANSYS Mechanical Simulation, {PVP2022-84254}
Technical Paper Publication
Qi Li - TDW
Rafal Sulwinksi - TDW

Research on the Influence of Girth Weld Joint Matching Degree on the Safety Performance of High Steel Grade Pipeline Based on ASME Local Strain Limit Criterion, {PVP2022-84636}
Technical Paper Publication
Xin Liu - China Special Equipment Inspection and Research Institute
Liang Sun - China Special Equipment Inspection and Research Institute

Haitao Wang - China Special Equipment Inspection and Research Institute
Guide Deng - China Special Equipment Inspection and Research Institute
Yongsheng Xu - China Special Equipment Inspection and Research Institute

SESSION 3.1K (TW-02-05): Technical Tutorial--Fracture Mechanics Applications for Piping - Part 1
Catalunia AB, 8:15 am - 10:00 am

Session Chair: ***Gery M. Wilkowski - Engineering Mechanics Corporation of Columbus, Columbus, OH, USA***

Session Co-Chair: ***Sureshkumar Kalyanam - Engineering Mechanics Corporation of Columbus, Columbus, OH, USA***

Session Developer/Session Co-Chair: ***Maher Younan - American University in Cairo, New Cairo, Egypt***

Presented by:
Gery M. Wilkowski - Engineering Mechanics Corporation of Columbus, Columbus, OH, USA
Sureshkumar Kalyanam - Engineering Mechanics Corporation of Columbus, Columbus, OH, USA

Contributor:
Frederick W. (Bud) Brust - Engineering Mechanics Corporation of Columbus, Columbus, OH, USA

FORUM SESSION 3.1L (TDF-3-1): Technology Demonstration Forum – IX
Marquis 4/5, 8:15 am - 10:00 am

Block 3.2: Wednesday, July 20, 2022 (10:15 am – 12:00 pm)

SESSION 3.2A (DA-10-01): Design and Analysis of Bolted Joints
Marquis 1, 10:15 am - 12:00 pm

Session Developer/Session Chair: ***Gysbert van Zyl - Integrity Engineering Solutions***

Session Developer/Session Chair: ***Clay Rodery - C&S Technology LLC***

Session Developer/Session Chair: ***Warren Brown - Integrity Engineering Solutions***

Design of B16 Standard and Non-Standard Ring Type Joint Flange and Gasket, {PVP2022-84883}
Technical Paper Publication
Shunji Kataoka - JGC Corporation

Analysis on the Evolution Process of Dynamic Performance of Single Bolt Connection, {PVP2022-84145}
Technical Paper Publication
Mingpo Zheng - Beijing University of Technology
Zhifeng Liu - Jilin University
Xing Yan - Beijing University of Technology
Wentao Chen - Beijing University of Technology
Ming Li - Beijing University of Technology

New Breech-Lock Exchanger Design to Ensure Gasket Sealing Under All Conditions, {PVP2022-84713}
Technical Paper Publication
Roberto Groppi - Lummus Technology Heat Transfer BV
Richard Jibb - Lummus Technology Heat Transfer BV
David Creech - CB&I

SESSION 3.2B (DA-01-02): The G.E.O. (Otto) Widera Memorial Symposium on Design and Analysis of Pressure Vessels, Heat Exchangers, and Components – 2
Marquis 2, 10:15 am - 12:00 pm

Session Developer/Session Chair: ***Nathan Barkley - Becht***

Session Co-Chair: ***Heramb Mahajan - Idaho National Laboratory***

Session Developers:
Clay Rodery - C&S Technology LLC
Tasnim Hassan - North Carolina State University
Jaan Taagepera - Chevron Tech. Center

Finite Element Analysis of Outer Pressure Containment Vessel and Proton Beam Pipe for Proton Radiography Under Operational Loads, {PVP2022-83987}
Technical Paper Publication
Ryan Holguin - Los Alamos National Labs
Dallas Hill - Los Alamos National Lab
Heidi Reichert - Los Alamos National Lab
Kyle Deines - Los Alamos National Labs
Gerald Bustos - Los Alamos National Lab

On API-661 and Assessment Procedures of Header Boxes and Nozzles for Air-Cooled Heat Exchangers, {PVP2022-80413}
Technical Paper Publication
Mingxin Zhao - Enterprise Products

Modified Screw Plug Heat Exchanger, {PVP2022-80680}
Technical Paper Publication
Haresh Sippy - Tema India Ltd

Thermoelastic Analysis of Cylindrical Panels by Hyperbolic Heat Conduction, {PVP2022-84966}
Technical Paper Publication
Aminallah Pourasghar - University of Pittsburgh
John Brigham - University of Pittsburgh

SESSION 3.2C (MF-02-04): Materials for Hydrogen Service (Joint with C&S): Test Methods for Evaluating Hydrogen Embrittlement

Marquis 3, 10:15 am - 12:00 pm

Session Developers:
Joe Ronevich - Sandia National Laboratories
Steven Xu - Kinectrics
Chris San Marchi - Sandia National Laboratories
Timothy Krentz - Savannah River National Laboratory
Paul Korinko - Savannah River National Laboratory
Laurent Briottet - French Alternative Energies & Atomic Energy Commission
Sylvain Pillot - ArcelorMittal

Session Chair: ***May Martin – National Institute of Standards and Technology (NIST)***

Session Co-Chair: ***Rakish Shrestha – Sandia National Laboratories***

Testing for the Effects of Pressurized Hydrogen on Polymeric Elastomers, {PVP2022-81859}
Technical Paper Publication
Jeff Ellis - EWI
Jessica Whitman - EWI
Laura Zoller - EWI

The Influence of Hydrogen on the Elastic Modulus of 316L and XM-19 Austenitic Stainless Steels, {PVP2022-84717}
Technical Paper Publication
Kevin Scott - Colorado School on Mines
Patricio Mendez - University of Alberta
Sridhar Seetharaman - Arizona State University

Development of Screening Technology for Hydrogen Embrittlement Compatibility of Pipeline Steels and Welds Using Simple In-Situ Tests in High-Pressure Environments, {PVP2022-84647}
Technical Paper Publication
Hyung-Seop Shin - Andong National University
Eunsu Min - Andong National University
Sungbeom Kang - Andong National University
Un-Bong Baek - KRISS

Evaluation of Hydrogen Embrittlement Sensitivity of 4130x Material Based on the Disc Method, {PVP2022-84745}
Technical Paper Publication
Jian-Ming Zhai - China Special Equipment Inspection and Research Institute

SESSION 3.2D (MF-06-02): Materials and Technologies for Nuclear Power Plants

Marquis 6, 10:15 am - 12:00 pm

Session Developer/Session Chair: ***Weiju Ren - Oak Ridge National Laboratory***

Session Developer/Session Co-Chair: ***Xiang Chen – Oak Ridge National Laboratory***

Post-Irradiation Fracture Toughness Characterization of Generation II Fecral Alloys, {PVP2022-84517}
Technical Paper Publication
Xiang Chen - ORNL
Kevin Field - University of Michigan
Richard Howard - Idaho National Laboratory
Caleb Massey - Oak Ridge National Laboratory
Andrew Nelson - Oak Ridge National Laboratory

Metallurgical Characterization of a 114,000-Hour Service-Aged Forge 91-Pipe 91 Steel Header Weldment, {PVP2022-85319}
Technical Paper Publication
Yiyu Wang - Oak Ridge National Laboratory
Wei Zhang - Oak Ridge National Laboratory
Yanli Wang - Oak Ridge National Laboratory
John Siefert - Electric Power Research Institute
Alex Bridges - Electric Power Research Institute
Steven Kung - Electric Power Research Institute
Zhili Feng - Oak Ridge National Laboratory

High Temperature Mechanical Performance of Type 316L Austenitic Stainless Steels Manufactured by the Powder Metallurgy Hot Isostatic Pressing Process, {PVP2022-84656}
Technical Paper Publication
Mark Callaghan - Jacobs
Mark Chatterton - Jacobs
David Coon - Jacobs
William Kyffin - Nuclear AMRC, University of Sheffield
Andrew Wisbey - Jacobs

Fretting Corrosion Behavior of 316L Stainless Steel Heat Exchanger Tube in NaCl Solution, {PVP2022-84442}
Technical Paper Publication
Xu Ma - School of Chemical Engineering and Technology
Shengzan Zhang - School of Chemical Engineering and Technology
Wei Tan - School of Chemical Engineering and Technology
Guorui Zhu - Tianjin University

SESSION 3.2E (MF-24-01): Materials and Fabrication for Refining

Marquis 7, 10:15 am - 12:00 pm

Session Developer/Session Chair: ***Cathleen Shargay - Fluor***
Session Developer/Session Co-Chair: ***Sylvain Pillot - Arcelormittal***

Evaluation of Stainless Steels Welds Produced by Gas Tungsten Arc Welding With High Silicon Containing Solid Welding Filler Rod to Omit Back Shielding, {PVP2022-80246}
Technical Paper Publication
Atsushi Takahashi - JGC Corporation

Mechanism of High Temperature Stability on Microstructures of 25Cr35NiNb Alloy Prepared by Laser Mechanism of High Temperature Stability on Microstructures of 25cr35ninb Alloy Prepared by Laser Additive Manufacturing, {PVP2022-84663}
Technical Paper Publication
Jizhan Li - Hefei General Machinery Research Institute Co., Ltd
Zhichao Fan - Hefei General Machinery Research Institute Co. LTD
Tao Chen - Hefei General Machinery Research Institute Co. LTD
Yu Zhou - Hefei General Machinery Research Institute Co. LTD

Duplex Stainless Steel – Learning From Field Experience in Oil & Gas and Petrochemical Services, {PVP2022-84889}
Technical Paper Publication
Jorge Penso - Shell Projects and Technology
Mitul Dalal - Shell Global Solution US Inc

Case History of Hydrotreater Prefeed Heater Fire Recovery, {PVP2022-84863}
Technical Paper Publication
Jorge Penso - Shell Projects and Technology
Neil Park - Shell Canada Limited
Mitul Dalal - Shell Global Solutions US Inc
Allie Hosack - Shell Scotford Refinery

SESSION 3.2F (CS-11-02): Recent Developments in Chinese Codes and Standards – 2

Marquis 8, 10:15 am - 12:00 pm

Session Developer/Session Chair: ***Jianfeng Shi - Zhejiang University***

Session Developer/Session Chair: ***Xuedong Chen - Hefei General Machinery Research Institute***

Session Developer/Session Chair: ***Zhichao Fan - Hefei General Machinery Research Institute***

Technological Progress on Safety Assurance for Hydrogen Storage and Transportation Pressure Equipments in China, {PVP2022-84658}
Technical Paper Publication
Xuedong Chen - Hefei General Machinery Research Institute Co. Ltd., National Technical Research Center on Safety Engineering of Pressure Vessels and Pipelines
Zhichao Fan - Hefei General Machinery Research Institute Co. Ltd., National Technical Research Center on Safety Engineering of Pressure Vessels and Pipelines
Shuangqing Xu - Hefei General Machinery Research Institute Co. Ltd., National Technical Research Center on Safety Engineering of Pressure Vessels and Pipelines
Peng Xu - Hefei General Machinery Research Institute Co. Ltd., National Technical Research Center on Safety Engineering of Pressure Vessels and Pipelines
Xiaoliang Liu - Hefei General Machinery Research Institute Co. Ltd., National Technical Research Center on Safety Engineering of Pressure Vessels and Pipelines

Review on Inspection Status of Pressure Equipment in LNG Receiving Station in China, {PVP2022-84715}
Technical Paper Publication

Zhixiang Duan - China Special Equipment Inspection and Research Institute
Kun Shi - China Special Equipment Inspection and Research Institute
Hangjian Hu - China Special Equipment Inspection and Research Institute
Yunyi Zhou - China Special Equipment Inspection and Research Institute

Experimental Investigation on the Pull-Out Strength of Flexibly Expanded Tube-To-Tubesheet Joints, {PVP2022-84912}
Technical Paper Publication
Xin Ma - Jiangsu Province Special Equipment Safety Supervision Inspection Institute
Wenli Dong - Jiangsu Province Special Equipment Safety Supervision Inspection Institute
Xiaoliang Wang - Jiangsu Province Special Equipment Safety Supervision Inspection Institute (Nantong Branch)

SESSION 3.2G (FSI-01-02): Thermal Hydraulic Phenomena with Vessels, Piping and Components

Andalucia, 10:15 am - 12:00 pm

Session Developer/Session Chair: ***Arris Tijsseling - Eindhoven University of Technology***

Session Developer/Session Co-Chair: ***Trey Walters - Applied Flow Technology***

Accurately Predicting Transient Fluid Forces in Piping Systems Part 1: Fundamentals, {PVP2022-84740}
Technical Paper Publication
Scott Lang - Applied Flow Technology
Trey Walters - Applied Flow Technology

Accurately Predicting Transient Fluid Forces in Piping Systems Part 2: Applications, {PVP2022-84748}
Technical Paper Publication
Scott Lang - Applied Flow Technology
Trey Walters - Applied Flow Technology

The Impact of Perforation on the Fracture Propagation of Horizontal Well Multistage Fracturing in the Roof of Broken Soft Coal Seams, {PVP2022-84407}
Technical Paper Publication
Xuejiao Li - China University of Petroleum (Beijing)
Haifeng Zhao - China University of Petroleum (Beijing)
Changsong Liu - China University of Petroleum (Beijing)
Junbing Zhong - China University of Petroleum (Beijing)
Chaowei Wang - China University of Petroleum (Beijing)
Yalong He - China University of Petroleum (Beijing)

Numerical Simulation of Complex Fracture Network Propagation in Shallow Bright-Type Coal Seams in Hancheng Block, China, {PVP2022-84411}
Technical Paper Publication
Haifeng Zhao - China University of Petroleum (Beijing)
Xuejiao Li - China University of Petroleum (Beijing)
Xiaohua Wang - Tongji University
Pengyue Li - China University of Petroleum (Beijing)
Likai Zhu - China University of Petroleum (Beijing)
Qingjiu Zhang - PetroChina Yumen Oilfield Branch

SESSION 3.2H (OAC-06-02): Continued Safe Operation of Existing Assets

Murcia, 10:15 am - 12:00 pm

Session Developer/Session Chair: ***Ayman Cheta - Shell Global Solutions (US)***

Session Developer/Session Co-Chair: ***Nicholas Klymyshyn - Pacific Northwest National Laboratory***

Managing Dissimilar Metal Welding in Hydrogen Rich and Low Temperature Petrochemical Applications, {PVP2022-85401}
Technical Paper Publication
Jorge Penso - Shell Projects and Technology
Allie Hosack - Shell Scotford Refinery
Mitul Dalal - Shell Global Solutions US Inc
Neil Park - Shell Canada

Reheat Cracking of Low Alloy Steel During Fabrication and in Service in Oil and Gas Facilities, {PVP2022-85406}
Technical Paper Publication
Jorge Penso - Shell Projects and Technology
Mitul Dalal - Shell Global Solution US Inc

Reliability Improvement Concept on Welded Lip-Seal Heat Exchanger Flange Joints, {PVP2022-84153}
Technical Paper Publication
Simon Yuen - Suncor Energy Inc.
John Fernando - Zachry Integrity Engineering Inc
Jorge Penso - Shell Global Solutions
Henry Kwok - Zachry Integrity Engineering Inc
Duane Serate - Suncor Energy Inc.

SESSION 3.2I (NDE-04-01): Predictive Non-Destructive Evaluation and Structural Health Monitoring of Complex Materials and Structures

Castilla AB, 10:15 am - 12:00 pm

Session Developer/Session Chair: ***Vivek Agarwal - Idaho National Laboratory***

Session Developer/Session Chair: ***Min Zhang - Praxair, Inc., Tonawanda, NY***

Session Developer/Session Chair: ***Ju Ding - Shanghai Institute of Special Equipment Inspection and Technical Research***

Whole Life Cycle Safety Mechanism and Active Regulation for Lithium-Ion Battery System, {PVP2022-83856}
Technical Presentation Only
Weiling Luan - East China Univ of Sci & Tech

Impact Damage Evaluation of Large Volume Glass Fiber Wrapped Gas Cylinder Based on Acoustic Emission Technology, {PVP2022-84010}
Technical Paper Publication
Hui Luo - China Special Equipment Inspection and Research Institute
Tong Li - China Special Equipement Inspection and Rsearch Institute
Ke Bo - China Special Equipment Inspection and Research Institute
Sen Chai - China Special Equipment Inspection and Research Institute
Xiang Li - China Special Equipment Inspection and Research Institute
Guide Deng - China Special Equipment Inspection and Research Institute

Practical Application of Inline Inspection Tool With Combination of Eddy Current and Deformation Technology Application of Composite Internal Detector With Eddy Current and Deformation, {PVP2022-84628}
Technical Paper Publication
Liyuan Geng - PipeChina Company
Qingshan Feng - PipeChina Company
Jinglong Chang - PipeChina Company
Xiaotong Huo - PipeChina Company
Jie Qu - ROSEN Technologies(Beijing) Co. Ltd

Study on Fatigue Life of Vehicle Fuel Tank Under Random Vibration Environment, {PVP2022-84692}
Technical Paper Publication
Yuanzhang Tang - School of Energy and Power Engineering, Wuhan University of Technology
Zhi Rong Yang - China Special Equipment Inspection and Research Institute
Hai Bo Gao - Wuhan University of Technology
Zhi Guo Lin - Wuhan University of Technology
Qin Du - Beijing North Vehicle Group Co., Ltd

SESSION 3.2J (CT-08-02): New and Emerging Methods of Analysis and Applications – 2

Leon, 10:15 am - 12:00 pm

Session Developer/Session Chair: ***Young Ho Park - New Mexico State Univ***

Session Developer/Session Co-Chair: ***Don Metzger - SNC Lavalin***

Session Developer: ***Satoshi Nagata - Toyo Engineering Corporation***

A Reduced Order Modeling in Finite Element for Rapid Qualification of Creep-Resistant Alloys, {PVP2022-82065}
Technical Paper Publication
Md Abir Hossain - The University of Texas At El Paso
Calvin M. Stewart - The University of Texas at El Paso

Numerical Study of Hydrogen Leakage and Explosion in Hydrogen Refueling Station With Large Volume Hydrogen Storage Vessels, {PVP2022-84464}
Technical Paper Publication
Chen Lu - Zhejiang University
Jieyi Hu - Zhejiang University
Sheng Ye - Zhejiang University
Chaohua Gu - Zhejiang University
Zhengli Hua - Zhejiang University

Mesh Morphing Based on Standard FEA Software Features and Application to Crack Propagation, {PVP2022-78445}
Technical Paper Publication
Eric Feulvarch - Centrale Lyon ENISE
Divjot Jolly - Framatome
Andrew Wasylyk - Framatome
Abdelhak Benrabia - Framatome
Pascal Duranton - Framatome

Combined Effect of Pressure, Temperature & Soil Stiffness on Pipeline Strain Demand in Geohazard Zones, {PVP2022-83754}
Technical Paper Publication
Ismael Allouche - University of Alberta
Qian Zheng - University of Alberta
Nader Yoosef - Enbridge Inc.
Matthew Fowler - Enbridge Inc.
Samer Adeeb - University of Alberta

SESSION 3.2K (TW-02-06): Technical Tutorial--Fracture Mechanics Applications for Piping - Part 2
Catalunia AB, 10:15 am - 12:00 pm

Session Chair: ***Gery M. Wilkowski - Engineering Mechanics Corporation of Columbus, Columbus, OH, USA***

Session Co-Chair: ***Sureshkumar Kalyanam - Engineering Mechanics Corporation of Columbus, Columbus, OH, USA***

Session Developer/Session Co-Chair: ***Maher Younan - American University in Cairo, New Cairo, Egypt***

Presented by:
Gery M. Wilkowski - Engineering Mechanics Corporation of Columbus, Columbus, OH, USA
Sureshkumar Kalyanam - Engineering Mechanics Corporation of Columbus, Columbus, OH, USA

Contributor:
Frederick W. (Bud) Brust - Engineering Mechanics Corporation of Columbus, Columbus, OH, USA

FORUM SESSION 3.2L (TDF-3-2): Technology Demonstration Forum – X
Marquis 4/5, 10:15 am - 12:00 pm

Block 3.3: Wednesday, July 20, 2022 (2:15 pm – 4:00 pm)

SESSION 3.3A (DA-12-01): Fracture
Marquis 1, 2:15 pm - 4:00 pm

Session Developer/Session Chair: ***Shane Finernan - DNV***

Session Developer/Session Co-Chair: ***Shunji Kataoka - JGC***

Reliability-Based Assessment of Cracked Pipelines Using Monte Carlo Simulation Technique With CorLAS™, {PVP2022-80412}
Technical Paper Publication
Xinfang Zhang - University of Alberta
Qian Zheng - University of Alberta
Juliana Leung - University of Alberta
Samer Adeeb - University of Alberta

Thick-Walled Cylindrical Specimens Under Pts Loading: Crack Propagation Analysis With XFEM-IGA, {PVP2022-83771}
Technical Paper Publication
Diego Fernando Mora Mendez - Paul Scherrer Institute
Markus Niffenegger - Paul Scherrer Institute
Gaojun Mao - Paul Scherrer Institute

Investigations on the Failure Behavior of Specimens Containing Crack Fields Made by Additive Manufacturing, {PVP2022-84666}
Technical Paper Publication
Ludwig Stumpfrock - MPA University of Stuttgart
Ulrich Weber - MPA University of Stuttgart
Stefan Weihe - MPA University of Stuttgart
Michael Seidenfuss - Institute for Materials Testing, Materials Science and Strength of Materials (IMWF)
Linda Mally - Institute for Materials Testing, Materials Science and Strength of Materials (IMWF)

Probabilistic Fracture Mechanics Codes for Piping International Benchmark – Part 1: Deterministic Comparisons, {PVP2022-84724}
Technical Paper Publication
Matthew Homiack - U.S. Nuclear Regulatory Commission

SESSION 3.3B (DA-01-03): The G.E.O. (Otto) Widera Memorial Symposium on Design and Analysis of Pressure Vessels, Heat Exchangers, and Components – 3
Marquis 2, 2:15 pm - 4:00 pm

Session Chair: ***Heramb Mahajan - Idaho National Laboratory***

Session Developer/Session Co-Chair: ***Nathan Barkley - Becht***

Session Developers:
Clay Rodery - C&S Technology LLC
Tasnim Hassan - North Carolina State University
Jaan Taagepera - Chevron Tech. Center

FEA Validation and Refinement of Alternative Nozzle Reinforcement Rules for Gasketed Plate Heat Exchangers, {PVP2022-84592}
Technical Paper Publication
Milan Nikic - Canadian Natural Resources Limited
Djordje Srnic - ABSA - the pressure equipment safety authority

Stress Evaluation of a Three-Point Supported Heat Exchanger, {PVP2022-84588}
Technical Paper Publication
Senthil Kumar Raman - Unconventional Gas Solutions

High-Temperature Design of 700°C Heat Exchanger in a Large Scale High-Temperature Thermal Energy Storage Performance Test Facility, {PVP2022-84895}
Technical Paper Publication
Hyeong-Yeon Lee - Korea Atomic Energy Research Institute
Jung Yoon - KAERI
Jewhan Lee - KAERI
Jaehyuk Eoh - KAERI

Mechanical Performance Evaluation of the Printed Circuit Heat Exchanger Core Under Tension and Pressure Loading, {PVP2022-81247}
Technical Paper Publication
Heramb Mahajan - Idaho National Laboratory
Lucas Maciel - North Carolina State University
Gracious Ngaile - North Carolina State University
Tasnim Hassan - North Carolina State University

SESSION 3.3C (MF-02-06): Materials for Hydrogen Service (Joint with C&S)

Marquis 3, 2:15 pm - 4:00 pm

Session Developer/Session Chair: ***Chris San Marchi - Sandia National Laboratories***

Session Developer/Session Co-Chair: ***Joe Ronevich - Sandia National Laboratories***

Session Developers:
Steven Xu - Kinectrics
Timothy Krentz - Savannah River National Laboratory
Paul Korinko - Savannah River National Laboratory
Laurent Briottet - French Alternative Energies & Atomic Energy Commission
Sylvain Pillot - ArcelorMittal

Finite Element Numerical Simulation of Hydrogen Storage Vessel Under Dynamic Load Impact, {PVP2022-84473}
Technical Paper Publication
Zhou Fang - Beijing University of Chemical Technology(BUCT)
Puan Shi - Beijing University of Chemical Technology
Zhe Wang - Beijing Institute of Architectural Design （BIAD）
Gang Wu - Beijing University of Chemical Technology
Qia Liu - Beijing University of Chemical Technology
Yongming Wang - Beijing University of Chemical Technology

Characteristic of Nitrile Butadiene Rubber With Different Filler and Content and Rapid Gas Decompression Resistance to High-Pressure Hydrogen, {PVP2022-85296}
Technical Presentation Only
Sang Koo Jeon - Korea Research Institute of Standards and Science
Nae Hyung Tak - Korea Research Institute of Standards and Science
Nak Kwan Chung - Korea Research Institute of Standards and Science
Un Bong Baek - Korea Research Institute of Standards and Science
Seung Hoon Nahm - Korea Research Institute of Standards and Science

SESSION 3.3D (CS-22-01): Fracture Toughness and Other Small Specimen Mechanical Properties (Joint with MF-11)

Marquis 6, 2:15 pm - 4:00 pm

Session Developer/Session Chair: ***Xiang (Frank) Chen - ORNL***

Session Developer/Session Co-Chair: ***Mark Kirk - PEAI Consulting***

Practical Procedure of Test Temperature Selection for Mini-C(T) Master Curve Evaluation, {PVP2022-82754}
Technical Paper Publication
Masato Yamamoto - Nippon Nuclear Fuel Development
Seiji Sakuraya - Nippon Nuclear Fuel Development
Yuji Kitsunai - Nippon Nuclear Fuel Development
Mark Kirk - Central Research Institute of Electric Power Industry

Fractesus Project: Final Selection of RPV Materials for Unirradiated and Irradiated Round Robins, {PVP2022-83871}
Technical Paper Publication
Tomasz Brynk - SCK CEN
Pentti Arffman - VTT
Eberhard Altstadt - HZDR

Radim Kopriva - ÚJV Řež
Florian Obermeier - Framatome GmbH
Marta Serrano - CIEMAT
Inge Uytdenhouwen - SCK CEN

Effect of Neutron Irradiation on the Mechanical Properties of Large Cladded and Uncladded Blocks From an A508 Cl.2 Forging Irradiated in the Nomad_1 and Nomad_2 Rigs in the Br2 Cooling Water, {PVP2022-83872}
Technical Presentation Only
Inge Uytdenhouwen - SCK CEN
Rachid Chaouadi - SCK CEN

Use of Mini-CT Specimens for Fracture Toughness Characterization of Irradiated Highly Embrittled Weld, {PVP2022-84827}
Technical Paper Publication
Mikhail Sokolov - Oak Ridge National Laboratory

SESSION 3.3E (MF-25-01): High Strength Steels for Pressure Vessels and Piping Applications

Marquis 7, 2:15 pm - 4:00 pm

Session Developer/Session Chair: ***Sylvain Pillot - Arcelormittal***

Session Developer/Session Co-Chair: ***Cathleen Shargay - Fluor***

Assessment of the Methodology for Calculating the Minimum Pressurization Temperature of Hydroprocessing Reactors in 2¼Cr 1Mo ¼V Low Alloy Steel, {PVP2022-84640}
Technical Paper Publication
Jan-Willem Rensman - Fluor BV
Davide Frittitta - Belleli Energy CPE S.r.l.
Fausto Fusari - Belleli Energy CPE S.r.l.
Nicola Ronchi - Belleli Energy CPE S.r.l.

Mechanical Properties and the Effect of Hydrogen on Base Metal and Welds of 9Cr-1Mo-V Steel, {PVP2022-84862}
Technical Paper Publication
Ian Zuazo Rodriguez - ArcelorMittal - Industeel
Stefano Alberini - Belleli Energy CPE S.r.l.
Claude Bouillot - Voest Alpine Bohler Welding
Dany Cornut - ArcelorMittal - Industeel
Fausto Fusari - Belleli Energy CPE S.r.l

Low-Alloy SA-533 Steels as Alternative to ASME SA-516 Carbon Steel for Fabrication of Lightweight FPSO Vessels, {PVP2022-84672}
Technical Paper Publication
Valery Ngomo - Industeel ArcelorMittal
Evelyne Guyot - Industeel ArcelorMittal
Dany Cornut - Industeel ArcelorMittal
Ivan Lancini - Officine LUIGI RESTA S.p.A.

High Strength Heavy Wall HY-80 Flux Cored Arc Welding, {PVP2022-84987}
Technical Paper Publication
Dongmei Sun - Liburdi Group of Companies
Brent Johnstone - Babcock Canada, Babcock International Group

SESSION 3.3F (CS-11-03): Recent Developments in Chinese Codes and Standards – 3

Marquis 8, 2:15 pm - 4:00 pm

Session Developer/Session Chair: ***Jianfeng Shi – Zhejiang University***

Session Developer/Session Chair: ***Guodong Jia - State Administration for Market Regulation of China***

Session Developer/Session Chair: ***Guangxu Cheng - Xi'an Jiaotong University***

Session Developer/Session Chair: ***Xiang Li - China Special Equipment Inspection and Research Institute***

Study on Test and Evaluation Methods of Assembly Valve on High Pressure Hydrogen Storage Cylinder for HFCV, {PVP2022-85133}
Technical Paper Publication
Chunlin Gu - China Special Equipment Inspection & Research Institute
Jun Li - China Special Equipment Inspection & Research Institute
Ming Zhu - China Special Equipment Inspection & Research Institute
Baodi Zhao - China Special Equipment Inspection & Research Institute
Jiepu Li - China Special Equipment Inspection & Research Institute
Xiang Li - China Special Equipment Inspection & Research Institute

Challenges in Developing Linerless Composite Gas Cylinder for On-Board Hydrogen Storage, {PVP2022-85852}
Technical Paper Publication
Zhoutian Ge - Zhejiang University

Yutong Yuan - Zhejiang University
Jianfeng Shi - Zhejiang University

The Standardization Work Status and Development Trend of High Pressure Hydrogen Storage Technology, {PVP2022-85908}
Technical Paper Publication
Xiaoliang Jia - China Special Equipment Inspection And Research Institute
Zhiwei Chen - China Special Equipment Inspection And Institute
Ke Bo - China Special Equipment Inspection And Institute
Xiang Li - China Special Equipment Inspection And Institute
Fang Ji - China Special Equipment Inspection And Institute

SESSION 3.3G (MF-10-1): Pipeline Integrity – 1

Andalucia, 2:15 pm - 4:00 pm

Session Developer/Session Chair: ***Xian-Kui Zhu - Savannah River National Lab***

Session Developer/Session Co-Chair: ***Dong-Yeob Park - CanMetMaterials***

Fatigue Crack Growth Assessment of Pipeline Steels and Girth Welds, {PVP2022-80320}
Technical Paper Publication
Dong-Yeob Park - Canmetmaterials, Natural Resources Canada
Jie Liang - Canmetmaterials, Natural Resources Canada
Jean-Philippe Gravel - Canmetmaterials, Natural Resources Canada

Calibration and Verification of XFEM Model to Predict Ductile Fracture, {PVP2022-84341}
Technical Paper Publication
Diego F. B. Sarzosa - Universidade de São Paulo
Israel Pereira - Universidade de São Paulo

New Strength Theory and Its Application to Determine Burst Pressure of Thick-Wall Pressure Vessels, {PVP2022-84902}
Technical Paper Publication
Xian-Kui Zhu - Savannah River National Lab
Bruce Wiersma - Savannah River National Lab
Robert Sindelar - Savannah River National Lab
William Johnson - Savannah River National Lab

Data-Driven Stress Intensity Factor Solutions for Axial Outside Surface Cracks in Thick-Wall Cylinders, {PVP2022-86164}
Technical Paper Publication
Xian-Kui Zhu - Savannah River National Lab
Jesse Zhu - Cornell Tech NYC
Andrew Duncan - Savannah River National Lab

SESSION 3.3H (OAC-06-03): Continued Safe Operation of Existing Assets

Murcia, 2:15 pm - 4:00 pm

Session Developer/Session Chair: ***Ayman Cheta - Shell Global Solutions (US)***

Session Developer/Session Co-Chair: ***Alton Reich - Streamline Automation, LLC***

Localized Damage in Pressurized Components, {PVP2022-84099}
Technical Paper Publication
Ana Benz - IRISNDT
Matthew Bell - IRISNDT

Real Time Mechanical Integrity for Pressure Vessels and Other Critical Assets, {PVP2022-84348}
Technical Paper Publication
Simon Sierra - Akselos
Kent Dawson - Akselos
Mat Podskarbi - Akselos
Jerry Wong - Akselos
David Knezevic - Akselos

Residual Stress Modeling and Advanced Diffraction Measurements of 347H Steel Weldments, {PVP2022-85608}
Technical Paper Publication
Yi Yang - University of Tennessee
Zhili Fenng - Oak Ridge National Laboratory
Yanfei Gao - The University of Tennessee
Jorge Penso - Shell Projects and Technology
Wei Zhang - Oak Ridge National Laboratory
Dong Han - The University of Tennessee, Knoxville
Jeffrey Bunn - Oak Ridge National Laboratory
Andrew Payzant - Oak Ridge National Laboratory

SESSION 3.3I (NDE-04-02): Predictive Non-Destructive Evaluation and Structural Health Monitoring of Complex Materials and Structures

Castilla AB, 2:15 pm - 4:00 pm

Session Developer/Session Chair: ***Vivek Agarwal - Idaho National Laboratory***

Session Developer/Session Chair: ***Min Zhang - Praxair, Inc., Tonawanda, NY***

Non-Destructive Evaluation and Correlation With the Mechanical Properties to Obtain Embrittlement Degradation of RPV Materials Within the NOMAD Project, {PVP2022-83815}
Technical Paper Publication
Inge Uytdenhouwen - SCK CEN
James Griffin - Coventry University
Tuomas Koskinen - VTT
Markus Niffenegger - PSI
Rachid Chaouadi - SCK CEN

Fiber-Optic Sensing for Seating Stress Quantification in Semi-Metallic Gaskets, {PVP2022-83913}
Technical Paper Publication
Ben Cloostermans - ERIKS & Vrije Universiteit Brussel
Dick Pronk - ERIKS
Björn Bruckenburg - ERIKS
Thomas Geernaert - Vrije Universiteit Brussel, Brussels Photonics

A Random-Forest Based AI/ML Modeling Framework for Multi-Time-Series Temperature Predictions at Thousands of 3D Inside/Outside-Thickness Locations of a Heat-Exchanger Component for Real-Time Damage States Predictions, {PVP2022-85736}
Technical Paper Publication
Subhasish Mohanty - Argonne National Laboratory
Richard Vilim - Argonne National Laboratory

SESSION 3.3J (FSI-03-01): Structures Under Extreme Loading Conditions

Leon, 2:15 pm - 4:00 pm

Session Developer/Session Chair: ***David Gross - Dominion Engineering Inc***

Session Developer/Session Co-Chair: ***Jihui Geng - BakerRisk***

A Fragment Impact Simulation for a Turbomolecular Vacuum Pump Blade Failure Event, {PVP2022-82066}
Technical Paper Publication
Robert Valdiviez - Applied Mechanics Engineering, LLP

Assessment of Gaseous Detonations in Piping Systems and Pipelines, {PVP2022-84291}
Technical Paper Publication
Keith Clutter - SciRisq, Inc.
Derrick Pease - Becht
George Antaki - Becht

Clearing Effect of Blast Loads from PVBs, {PVP2022-84288}
Technical Paper Publication
Jihui Geng - BakerRisk
Kelly Thomas - BakerRisk

Towards a Probabilistic Analysis of Pressurized Thermal Shock, {PVP2022-84287}
Technical Paper Publication
C.D. Versteylen - NRG
H.J. Uitslag-Doolaard - NRG
F. Brigante - NRG
F.H.E. De Haan - De Wilde - NRG
E. Pallaoro - NRG
N.B. Siccama - NRG

SESSION 3.3K (TW-02-07): Technical Tutorial--Fracture Mechanics Applications for Piping - Part 3

Catalunia AB, 2:15 pm - 4:00 pm

Session Chair: ***Gery M. Wilkowski - Engineering Mechanics Corporation of Columbus, Columbus, OH, USA***

Session Co-Chair: ***Sureshkumar Kalyanam - Engineering Mechanics Corporation of Columbus, Columbus, OH, USA***

Session Developer/Session Co-Chair: ***Maher Younan - American University in Cairo, New Cairo, Egypt***

Presented by:
Gery M. Wilkowski - Engineering Mechanics Corporation of Columbus, Columbus, OH, USA
Sureshkumar Kalyanam - Engineering Mechanics Corporation of Columbus, Columbus, OH, USA

Contributor:
Frederick W. (Bud) Brust - Engineering Mechanics Corporation of Columbus, Columbus, OH, USA

Block 4.1: Thursday, July 21, 2022 (8:15 am – 10:00 am)

SESSION 4.1B (DA-15-01): 6th International Symposium on Coke Drum Life Cycle Management – 1

Marquis 2, 8:15 am - 10:00 am

Session Developer/Session Chair: ***Kannan Subramanian - Structural Integrity Associates***

Session Co-Chair: ***Andrew Owens - Koch Engineered Solutions***
1.4g
Session Developers:
Clay Rodery - C&S Technology LLC
Jorge A. Penso - Shell Projects and Technology
Antonio Seijas - P66

Investigating Weld Interface Cracking of 1.25Cr-0.5Mo Steel External Weld Repair with Alloy 625 Filler Metal due to Low-cycle Fatigue Failure, {PVP2022-84764}
Technical Paper Publication
Shutong Zhang - The Ohio State University
Rafael Arthur Giorjao - The Ohio State University
Jacque W. Berkson - The Ohio State University
Jorge A. Penso - Shell Global Solutions (US) Inc.
Haixia Guo - Suncor Energy Inc.
Simon Yuen - Suncor Energy Inc.
Lisa Ely - Stress Engineering Services, Inc.
Antonio J. Ramirez - The Ohio State University

On the Effect of Hot-Box Size on Coke Drum Skirt Fatigue Life, {PVP2022-84068}
Technical Paper Publication
John Fernando - Zachry Integrity Engineering Ltd
Henry Kwok - Zachry Integrity Engineering Ltd
Leanne Wong - Zachry Integrity Engineering Ltd
Luke Chan - Zachry Integrity Engineering Ltd

Coke Drum Keyhole Optimization to Improve Fatigue Life, {PVP2022-78705}
Technical Paper Publication
John Fernando - Zachry Integrity Engineering Ltd
Henry Kwok - Zachry Integrity Engineering Ltd
Simon Yuen - Suncor Energy
Enzo Falo - Suncor Energy
Millar Iverson - Suncor Energy
Leanne Wong - Zachry Integrity Engineering Ltd
Luke Chan - Zachry Integrity Engineering Ltd

Longitudinal Cracking Failure at the Skirt-To-Cone Joint of Large Coke Drum In Delayed Coking Unit, {PVP2022-84988}
Technical Paper Publication
Xin Ma - Jiangsu Province Special Equipment Safety Supervision Inspection Institute
Yining Wang - Jiangsu Province Special Equipment Safety Supervision Inspection Institute
Xiaoliang Wang - Jiangsu Province Special Equipment Safety Supervision Inspection Institute (Nantong Branch)
Yi Xie - Jiangsu Province Special Equipment Safety Supervision Inspection Institute

SESSION 4.1C (MF-03-01): Welding Residual Stress and Distortion Simulation and Measurement – 1

Marquis 3, 8:15 am - 10:00 am

Session Developer/Session Chair: ***David Rudland - USNRC***

Session Developer: ***Frederick (Bud) Brust - Emc-sq***

Effect of Welding Direction and Bead Pattern in Alloy 52 / SA508 Repair Weld, {PVP2022-84662}
Technical Paper Publication
Noora Hytönen - VTT Technical Research Centre of Finland
Heikki Keinänen - VTT Technical Research Centre of Finland
Juha Kuutti - VTT Technical Research Centre of Finland
Pekka Nevasmaa - VTT Technical Research Centre of Finland
Caitlin Huotilainen - VTT Technical Research Centre of Finland
Iikka Virkkunen - Aalto University
Suprit Bhusare - Tampere University
Aloshious Lambai - Tampere University
Gaurav Mohanty - Tampere University

Electron Beam Welds in 316L Part 1: Weld Production, Residual Stress Measurements and Predictions, {PVP2022-84779}
Technical Paper Publication
Graeme Horne - Frazer-Nash Consultancy
Andrew Moffat - Solar Turbines Europe S A

Electron Beam Welds in 316L Part 2: A Methodology and Example for Parameterised Residual Stress Profiles, {PVP2022-84798}
Technical Paper Publication
Graeme Horne - Frazer-Nash Consultancy
Ben Elliott - Frazer-Nash Consultancy
Andrew Moffat - Solar Turbines Europe S A

NeT Project Task Group 8 – An International Benchmark on Residual Stress Assessment for Welding Repair, {PVP2022-85083}
Technical Paper Publication
Vincent Robin - EDF
Josselin Delmas - EDF

Sofiane Hendili - EDF
Jefri Draup - EDF Energy UK Center
Alexandre Paget - University of Manchester
Mike Smith - University of Manchester
Qingrong Xiong - University of Manchester

SESSION 4.1D (MF-11-01): Small-Scale and Miniature Mechanical Testing (Joint with CS-22) – 1

Marquis 6, 8:15 am - 10:00 am

Session Developer/Session Chair: ***Masato Yamamoto - CRIEPI***

Session Developer/Session Co-Chair: ***Mark Kirk - PEAI Consulting***

Evaluation of Validity Criteria for Subsize Compact Tension Specimens Using a Bending Modified J-A2 Solution, {PVP2022-81773}
Technical Paper Publication
Kenneth Bagnoli - ExxonMobil Research and Engineering
Greg Thorwald - Quest Integrity USA, LLC
Ryan Holloman - ADVIntegrity
Y Hioe - Engineering Mechanics Corporation of Columbus

AM Deposited Multi-Material Parts Fracture Properties Assessment, {PVP2022-84752}
Technical Presentation Only
Jan Dzugan - COMTES FHT a.s.
Daniel Melzer - COMTES FHT a.s.
Martina Koukolikova - COMTES FHT a.s.
Libor Kraus - COMTES FHT a.s.

Determination of Irradiated Stainless Steel Properties and Its Effects on Reactor Vessel Internals, {PVP2022-84936}
Technical Paper Publication
Dong-Hyeon Kwak - Department of Nuclear Engineering, Kyung Hee University
Jae Min Sim - Department of Nuclear Engineering, Kyung Hee University
Yoon-Suk Chang - Department of Nuclear Engineering, Kyung Hee University
Byeong Seo Kong - Department of Nuclear and Quantum Engineering, Korea Advanced Institute of Science and Technology
Changheui Jang - Department of Nuclear and Quantum Engineering, Korea Advanced Institute of Science and Technology

Investigation on Mechanical Properties of X80 Pipeline Girth Weld Welded by Semi-Automatic and Automatic Welding, {PVP2022-83663}
Technical Paper Publication
Wei Ren - China University of Petroleum-Beijing
Jian Shuai - China University of Petroleum-Beijing

SESSION 4.1E (CS-45-01): Constraint Effects on Codes and Standards

Marquis 7, 8:15 am - 10:00 am

Session Developer/Session Chair: ***Kiminobu Hojo - MHI***

Session Developer/Session Co-Chair: ***Steven Xu - Kinectrics***

Session Co-Developers:
Pierre Dulieu - Tractebel Engie
Claude Faidy - CF Integrity Engineering
Valery Lacroix - Tractebel Engie

Constraint Effect on Fracture in Ductile-Brittle Transition Temperature Region (Report 2), {PVP2022-84186}
Technical Paper Publication
Kiminobu Hojo - Mitsubishi Heavy Industries Ltd
Takatoshi Hirota - Mitsubishi Heavy Industries
Takuya Fukahori - Mitsubishi Heavy Industries
Yasuto Nagoshi - Mitsubishi Heavy Industries
Kimihisa Sakima - Mitsubishi Heavy Industries
Mitsuru Ohata - Osaka University
Fumiyoshi Minami - Osaka University

A Review of Constraint Effects on Fracture Toughness for Structural Integrity Assessment in Fitness-for-Service Codes, {PVP2022-86188}
Technical Paper Publication
Kim Wallin - Kw-solutions LTD
Steven Xu - Kinectrics

On the Validity of the Weibull Parameters Used in the Master Curve in Ferritic Steels Containing Notches, {PVP2022-78263}
Technical Paper Publication
Sergio Cicero - University of Cantabria
Sergio Arrieta - University of Cantabria

Fatigue Crack Growth: A Numerical Comparison Between ASME BPVC Section XI Appendix A and Appendix C, {PVP2022-83041}

Technical Paper Publication
Carlos Martin Brusconi Musso - Nucleoelectrica Argentina S.A.
Fernando Schroeter - Nucleoelectrica Argentina
Gaston Bourguigne - Nucleoelectrica Argenitna
Andrés Fittipaldi - Nucleoeléctrica Argentina SA

SESSION 4.1G (MF-10-2): Pipeline Integrity – 2
Andalucia, 8:15 am - 10:00 am

Session Developer/Session Chair: ***Dong-Yeob Park - CanMetMaterials***

Session Developer/Session Co-Chair: ***Xian-Kui Zhu - Savannah River National Lab***

Machine Learning Models of Burst Strength for Defect-Free Pipelines, {PVP2022-84908}
Technical Paper Publication
Xian-Kui Zhu - Savannah River National Lab
William Johnson - Savannah River National Lab
Robert Sindelar - Savannah River National Lab
Bruce Wiersma - Savannah River National Lab

Numerical Investigation of Ductile Crack Propagation of Circumferentially Cracked Pipes Subjected to Multiaxial Loading at Room and Low Temperatures, {PVP2022-84788}
Technical Paper Publication
Yuhao Li - Texas A&M University
Marcelo Paredes - Texas A&M University

An Optimal Approach on Acceptance Criteria for Mild Ripples in Pipeline Field Bends Under Internal Pressures, {PVP2022-85895}
Technical Paper Publication
Enyang Wang - BMT Canada
Aaron Dinovitzer - BMT Canada
Rick Gailing - BMT Canada
Abdelfettah Fredj - BMT Canada
Bingyan Fang - Baker Hughes
Jing Ma - Exxon Mobil

SESSION 4.1H (CS-30-01): Fatigue Assessment and Management - A Probabilistic Perspective
Murcia, 8:15 am - 10:00 am

Session Developer/Session Chair: ***Yogendra Garud - SIMRAND, LLC***

Fatigue-Life Prediction and Design for Uncracked and Cracked Components: Deterministic, A- and B-Basis Probabilistic, and Reliability Target Approaches, {PVP2022-84851}
Technical Paper Publication
Jeffrey T Fong - National Inst. of Standards & Tech.
Pedro V. Marcal - MPACT Corp.
Stephen W. Freiman - Freiman Consulting
N. Alan Heckert - Nat. Inst. of Stand. & Tech.
James J. Filliben - Nat. Inst. of Stand. & Tech.

An Assessment of the Significance of Design Factors in Cuf-Based Fatigue Performance and Related Margins, {PVP2022-84994}
Technical Paper Publication
Yogendra Garud - SIMRAND, LLC

Fatigue Damage Estimation From Pseudo-Random Load Sequence Generated for Metals and Fiber Reinforced Composites, {PVP2022-85051}
Technical Paper Publication
Raghu Prakash - Indian Institute of Technology Madras
Anurag Jeevan Patil - Indian Institute of Technology Madras

State of the Art in CUF-Based Fatigue Assessment & Related Issues From Regulatory and Code Perspectives for Long-Term Operation, {PVP2022-86189}
Technical Paper Publication
Yogendra Garud - SIMRAND, LLC

SESSION 4.1I (DA-17-01): Composite Materials and Structures
Castilla AB, 8:15 am - 10:00 am

Session Developer/Session Chair: ***Mo Uddin - Structural Integrity Associates, Inc.***

Session Developer/Session Co-Chair: ***Pierre Mertiny - University of Alberta***

Session Developer/Session Chair: ***Phillip Wiseman - Lisega, Inc.***

Filament Wound Composite Pipes Subject to Torsion and Bending Loads, {PVP2022-84680}
Technical Paper Publication
Nicole Farrugia - University of Malta
Duncan Camilleri - University of Malta
Brian Ellul Grech - University of Malta
Martin Muscat - University of Malta

Research on Flexural Performance of Curved Carbon Fiber Laminate Composites, {PVP2022-84397}
Technical Paper Publication
Hongfei Li - Zhejiang University
Zhiping Chen - Zhejiang University
Peng Ge - Zhejiang University
Hao Miao - Zhejiang University

Optimal Design and Sealing Performance Analysis of the Boss Structure of Type IV Cylinder for High-Pressure Hydrogen Storage, {PVP2022-84673}
Technical Paper Publication
Jiahui Tao - Hefei General Machinery Research Institute Co., Ltd.
Zhichao Fan - Hefei General Machinery Research Institute Co., Ltd.
Lu Wang - Hefei General Machinery Research Institute Co., Ltd.
Jilin Xue - Hefei General Machinery Research Institute Co., Ltd.
Peng Xu - Hefei General Machinery Research Institute Co., Ltd.

Mechanical Performance of Aged Long Fibers: Direct Water Exposure and Temperature Effect, {PVP2022-83931}
Technical Paper Publication
Hadi Nazaripoor - Shawcor
John Sunny - University of Alberta
Ahmed Hammami - Shawcor
Pierre Mertiny - University of Alberta

SESSION 4.1J (DA-11-01): Computational Fluid Dynamics in Design and Analysis

Leon, 8:15 am - 10:00 am

Session Developer/Session Chair: ***Sean McGuffie - Porter McGuffie Inc.***

Session Developer/Session Chair: ***Seena Abu - SST Systems, Inc.***

Session Developer/Session Chair: ***Phillip Wiseman - Lisega, Inc.***

CFD Study of Cooking Liquor Blow for Piping Thrust Force and Water Hammering Analysis, {PVP2022-79373}
Technical Paper Publication
Andrew Carlson - AFRY
Chidambaram Narayanan - AFRY
Djamel Lakehal - AFRY
Timo Hermonen - AFRY
Noora Jokinen - AFRY
Juho Ikävalko - AFRY

Evaluation of Flashing Jet Impact on Surroundings Due to Leakage of High Pressure Pipes, {PVP2022-80253}
Technical Paper Publication
Tomohisa Yuasa - Central Research Institute of Electric Power Industry
Shun Watanabe - Central Research Institute of Electric Power Industry
Ryo Morita - Central Research Institute of Electric Power Industry

CFD Based Relief Valve Design: Accuracy Requirements and CFD Capability, {PVP2022-83579}
Technical Paper Publication
Steven Taggart - TUV SUD National Engineering Laboratory
Christopher Doyle - University of Strathclyde
William Dempster - University of Strathclyde

Numerical Simulation on the Influence of Elbow Structure on Hydrogen Flame Propagation Process in Pipes, {PVP2022-84144}
Technical Paper Publication
Yuan Mei - China University of Petroleum, Beijing
Jian Shuai - China University of Petroleum, Beijing
Sheng Qi - China University of Petroleum, Beijing
Zhonghong Huang - China University of petroleum, Beijing

SESSION 4.1K (NPPS-01): Introduction to the New Nonmetallic Pressure Piping System (NPPS) Standards - Part 1 – Introduction and ASME NM.1: Design and Fabrication/Erection Standard Requirements

Catalunia AB, 8:15 am - 10:00 am

Session Developer/Session Chair: ***Charles Henley - Kiewit Engineering Group Inc.***

Session Co-Developer/Session Co-Chair: ***Carlton Ramcharran - ASME***

Session Co-Developer: ***Maher Younan - American University in Cairo, New Cairo, Egypt***

Presented by:
Charles Henley - Kiewit Engineering Group Inc.
Don McGriff - ISCO Industries, Inc.
Jeff Eisenman - Maverick Applied Science
Carlton Ramcharran - ASME
Constance Eastman - Kiewit Corporation
Tim Adams - Jensen Hughes

Block 4.2: Thursday, July 21, 2022 (10:15 am – 12:00 pm)

SESSION 4.2B (DA-15-02): 6th International Symposium on Coke Drum Life Cycle Management - 2 [Forum Session: What's next for the industry?]
Marquis 2, 10:15 am - 12:00 pm

Session Developer/Session Chair: ***Kannan Subramanian - Structural Integrity Associates***

SESSION 4.2C (MF-03-02): Welding Residual Stress and Distortion Simulation and Measurement – 2
Marquis 3, 10:15 am - 12:00 pm

Session Developer: ***Frederick (Bud) Brust - Emc-sq***

Session Chair: ***Graeme Horne - Frazer-Nash Consultancy***

Session Developer/Session Co-Chair: ***David Rudland - USNRC***

Root Weld W/ No Stress Riser? Yes. and in Uniform Compression, {PVP2022-83835}
Technical Presentation Only
Paul Cheng - Fusering

Combining Weld Residual Stress Predictions and Measurement for Use in Probabilistic Structural Integrity Assessments, {PVP2022-84741}
Technical Paper Publication
Harry Coules - University of Bristol
Chris Simpson - Perceptual Robotics Limited
Mahmoud Mostafavi - University of Bristol

Residual Stress Map for 75ni13.5cr2.7b-3.5si Clad 316 Stainless Steel, {PVP2022-84773}
Technical Presentation Only
Behrooz Tafazzolimoghaddam - The Open University
Hemant Kumar - Indira Gandhi Centre for Atomic Research
M Krishnamoorthy - Indira Gandhi Centre for Atomic Research
Prince Joseph - Homi Bhabha National Institute
Harish Chandra Dey - Indira Gandhi Centre for Atomic Research
Chitta Ranjan Das - Indira Gandhi Centre for Atomic Research, Homi Bhabha National Institute
Shaju K. Albert - Homi Bhabha National Institute
Richard Moat - The Open University

Development of a Phased Array Ultrasonic System for Residual Stress Measurement in Welding and Additive Manufacturing, {PVP2022-85023}
Technical Paper Publication
Yashar Javadi - University of Strathclyde
Alistair Hutchison - University of Strathclyde
Rastislav Zimermann - University of Strathclyde
David Lines - University of Strathclyde
Nina E. Sweeney - University of Strathclyde
Momchil Vasilev - University of Strathclyde
Ehsan Mohseni - University of Strathclyde
Randika K.W. Vithanage - University of Strathclyde
Charles N. Macleod - University of Strathclyde
Gareth Pierce - University of Strathclyde
Jorn Mehnen - University of Strathclyde
Anthony Gachagan - University of Strathclyde

Weld Residual Stress Modeling of and Fracture Assessment of Layered Pressure Vessels, {PVP2022-85958}
Technical Paper Publication
Frederick (Bud) Brust - Engineering Mechanics Corp of Columbus

SESSION 4.2D (MF-11-02): Small-Scale and Miniature Mechanical Testing (Joint with CS-22) – 2
Marquis 6, 10:15 am - 12:00 pm

Session Developer/Session Chair: ***Masato Yamamoto - CRIEPI***

Session Developer/Session Co-Chair: ***Mark Kirk - PEAI Consulting***

Session Developer: ***Radim Kopriva, UJV***

Round Robin Analysis of Small Punch Testing on 15Kh2NMFA Reference Material, {PVP2022-83811}
Technical Paper Publication
Romy Welschen - NRG
Murthy Kolluri - NRG
Ferenc Gillemot - Centre for Energy Research
Igor Simonovski - European Commission
Jana Petzova - VUJE
Marek Adamech - VUJE
Rebeca Hernandez - CIEMAT
Frederiki Naziris - NRG
Boy Molenaar - NRG
Radim Kopriva - UJV
Oliver Martin - European Commission

Application of Small Punch Testing Methods for Thermal Ageing Assessment at Steam-Generators Materials From Decommissioned V1 NPP to LTO Support on VVER Type Units in Slovakia, {PVP2022-83875}
Technical Paper Publication
Jana Petzova - VUJE, A.S.
Marek Adamech - VUJE, a.s.
Slnek David - VUJE

Overview of Suitable Methodologies for Threshold Stress Determination by Small Punch in Aggressive Environments, {PVP2022-84744}
Technical Paper Publication
Borja Arroyo Martinez - LADICIM - University of Cantabria
Laura Andrea Calvo - University of Cantabria
Jose Alberto Álvarez Laso - University of Cantabria
Federico Gutiérrez-Solana - University of Cantabria
Sergio Cicero González - University of Cantabria
Roberto Lacalle Calderón - University of Cantabria

SESSION 4.2E (CS-37-01): Improvement of Flaw Characterization Rules for FFS

Marquis 7, 10:15 am - 12:00 pm

Session Developer/Session Chair: ***Pierre Dulieu - Tractebel Engie***

Session Developer/Session Chair: ***Valery Lacroix - Tractebel Engie***

Failure Bending Stresses for Small Diameter Thick-Wall Pipes, {PVP2022-84598}
Technical Paper Publication
Yoshihito Yamaguchi - Japan Atomic Energy Agency
Kunio Hasegawa - Japan Atomic Energy Agency
Yinsheng Li - Japan Atomic Energy Agency
Valery Lacroix - Tractebel Engineering S.A.

3D Simulation of Propagation Induced by Primary Water Stress Corrosion Cracking for Defect Tolerance Analysis of Dissimilar Metal Welds, {PVP2022-84667}
Technical Paper Publication
Pierre Dulieu - Tractebel Engie
Valéry Lacroix – Tractebel Engie

Improvement of the ASME B&PV Code Resolution of Nonplanar Flaws in Pressure Retaining Components, {PVP2022-84957}
Technical Paper Publication
Valery Lacroix - Tractebel (ENGIE)
Pierre Dulieu - Tractebel (ENGIE)
Kunio Hasegawa - Japan Atomic Energy Agency
Vratislav Mares - CAIT-VSB-Technical University of Ostrava

Empirical Correction Factor to Estimate the Plastic Collapse Bending Moment of Pipes With Circumferential Surface Flaw, {PVP2022-84958}
Technical Paper Publication
Valery Lacroix - Tractebel (ENGIE)
Kunio Hasegawa - Japan Atomic Energy Agency
Yinsheng Li - Japan Atomic Energy Agency
Yoshihito Yamaguchi - Japan Atomic Energy Agency

SESSION 4.2G (DA-14-01): Risk Informed Design Considering Beyond Design Basis Events

Andalucia, 10:15 am - 12:00 pm

Session Developer/Session Chair: ***Bing Li - Kinectrics***

Session Developer/Session Co-Chair: ***Naoto Kasahara - Univ of Tokyo***

Study on Post Buckling Behaviors of Lower Heads for Fracture Control of Reactor Vessels Under BDBE, {PVP2022-84449}
Technical Paper Publication
Naoto Kasahara - The University of Tokyo
Masato Murohara - The University of Tokyo
Takuya Sato - The University of Tokyo

Plan of a Shaking Table Test on a Piping System Model for Verifying the Fracture-Control Concept, {PVP2022-84266}
Technical Paper Publication
Izumi Nakamura - National Res Inst
Naoto Kasahara - The University of Tokyo

Prediction Concept of Ratchet-Induced Collapse Under Deadweight and Seismic Loading, {PVP2022-84508}
Technical Paper Publication
Satoru Kai - The University of Tokyo
Masakazu Ichimiya - The University of Tokyo
Naoto Kasahara - The University of Tokyo

SESSION 4.2H (CS-24-01): International Session for GEN IV Reactors Design and Construction

Murcia, 10:15 am - 12:00 pm

Session Developer/Session Chair: ***Ting-Leung Sham - Idaho National Laboratory***

Session Developer/Session Co-Chair: ***Jorge Munoz - CEA Saclay***

An Experimental and Analytical Study on the Development of Extrapolation Method for the Creep-Fatigue Life of Alloy 617 to Low Strain Ranges and Long Hold Times at 950°C, {PVP2022-84783}
Technical Paper Publication
Peijun Hou - Imtech Corporation, Knoxville
Ting-Leung Sham - Idaho National Laboratory
Yanli Wang - Oak Ridge National Laboratory

Experimental Basis for the Extension of Elastic-Perfectly Plastic Strain Limits Evaluation Procedure of ASME Section III, Division 5 Code Case N-861 to Grade 91, Alloy 800H and 2.25Cr-1Mo, {PVP2022-84817}
Technical Paper Publication
Yanli Wang - Oak Ridge National Laboratory
Peijun Hou - Imtech Corporation
Ting-Leung Sham - Idaho National Laboratory

Adaptation of Standards to Innovative Reactors, {PVP2022-85479}
Technical Paper Publication
Jorge Enrique Muñoz Garcia - CEA: French Alternative Energies and Atomic Energy Commission
Thierry Lebarbé - CEA: French Alternative Energies and Atomic Energy Commission
Cecile Petesch - CEA: French Alternative Energies and Atomic Energy Commission

Nickel Cladded Structural Components for Advanced Reactors, {PVP2022-84811}
Technical Paper Publication
Bipul Barua - Argonne National Laboratory
Mark C. Messner - Argonne National Laboratory
Ting-Leung Sham - Idaho National Laboratory

SESSION 4.2I (DA-19-01): Special Considerations in the Design and Analysis of Supports, Restraints, and Welded Attachments

Castilla AB, 10:15 am - 12:00 pm

Session Developer/Session Chair: ***Phillip Wiseman - Lisega, Inc.***

Session Developer: ***Kshitij Gawande - Lisega Inc.***

Session Co-Chair: ***Shunji Kataoka - JGC Corporation***

Disorders in Periodic Support for Pipeline Conveying Fluid, {PVP2022-83606}
Technical Paper Publication
Qingna Zeng - Science and Technology on Reactor system Design Technology Laboratory
Donghui Wang - Science and Technology on Reactor system Design Technology Laboratory
Fenggang Zang - Science and Technology on Reactor system Design Technology Laboratory
Yixiong Zhang - Science and Technology on Reactor system Design Technology Laboratory

Pipe Clamps and Welding to the Pipe, {PVP2022-83692}
Technical Paper Publication
Phillip Wiseman - Lisega, Inc.
Kshitij Gawande - LISEGA INC.

Frame Structure Design of 40-Foot High Pressure and Large Capacity Hydrogen Storage Tube Bundle Container for Road Transportation, {PVP2022-84398}
Technical Paper Publication
Mengjie Liu - Zhejiang University
Zhiping Chen - Zhejiang University
Zhi Cheng - Zhejiang University
Haiyang Ou - Zhejiang University

Evaluation of Localized Stresses at Spherical Pressure Vessel-to-Column Support Junction Using Closed-Form Equations, {PVP2022-84890}
Technical Paper Publication
Vivek Manjrekar - Bechtel Energy

SESSION 4.2J (CS-18-01): Developments in HDPE and Non-Metallic Pipe Codes and Standards

Leon, 10:15 am - 12:00 pm

Session Developer/Session Chair: ***Sureshkumar Kalyanam - Engg. Mech. Corp. of Columbus***

Session Developers
Jianfeng Shi - Zhejiang University
Phil Rush -Consultant

Design of an Intelligent Butt-Fusing Welding Machine for HDPE Pipes, {PVP2022-84456}
Technical Paper Publication

Zhenchao Wang - (1) School of Mechanical Engineering Jiangnan University (2) Rothenberger (Wuxi) Pipe Technologies Co., Ltd.
Lu Xu - Rothenberger (Wuxi) Pipe Technologies Co., Ltd.
Qijiang You - Rothenberger (Wuxi) Pipe Technologies Co., Ltd.
Yijuan Peng - School of Mechanical Engineering Jiangnan University
Qiuju Zhang - School of Mechanical Engineering Jiangnan University

Comparison of Technical Standards Between Buried and Above Ground Polyethylene Pipe in the Application of Nuclear Power Plant, {PVP2022-84477}
Technical Paper Publication
Jianfeng Shi - Zhejiang University
Yuhua Cao - Zhejiang University
Jinyang Zheng - Zhejiang University
Fa Yu - Chinaust Group Corporation
Yu Li - Chinaust Group Corporation
Jiayin Jiang - China Nuclear Power Engineering Co., Ltd.
Di Jiao - China Nuclear Power Engineering Co., Ltd.

A Novel Real-Time Evaluation Method for the Temperature Field in the Electrofusion Welding of Polyethylene Pipe, {PVP2022-84645}
Technical Paper Publication
Weican Guo - Zhejiang Academy of Special Equipment Science
Yangji Tao - Zhejiang Academy of Special Equipment Science
Cunjian Miao - Zhejiang Academy of Special Equipment Science

Technical Basis for Proposed Code Case on Evaluation of Flaws in Butt Fusion Joints in Class 3 High Density Polyethylene Piping, {PVP2022-84835}
Technical Paper Publication
Cheng Liu - Kinectrics Inc.
Douglas Scarth - Kinectrics Inc
Douglas Munson - Munson & Associates

SESSION 4.2K (NPPS-02): Introduction to the New Nonmetallic Pressure Piping System (NPPS) Standards - Part 2 – ASME NM.1: Jointing Demonstration
Catalunia AB, 10:15 am - 12:00 pm

Session Developer/Session Chair: ***Charles Henley - Kiewit Engineering Group Inc.***

Session Co-Developer/Session Co-Chair: ***Carlton Ramcharran - ASME***

Session Co-Developer: ***Maher Younan - American University in Cairo, New Cairo, Egypt***

Presented by:
Don McGriff - ISCO Industries, Inc.
Constance Eastman - Kiewit Corporation
Tim Adams - Jensen Hughes

Block 4.3: Thursday, July 21, 2022 (2:15 pm – 4:00 pm)

SESSION 4.3K (NPPS-03): Introduction to the New Nonmetallic Pressure Piping System (NPPS) Standards - Part 3 - ASME NM.2: Composite Materials
Catalunia AB, 2:15 pm - 4:00 pm

Session Developer/Session Chair: ***Charles Henley - Kiewit Engineering Group Inc.***

Session Co-Developer/Session Co-Chair: ***Carlton Ramcharran - ASME***

Session Co-Developer: ***Maher Younan - American University in Cairo, New Cairo, Egypt***

Presented by:
Bruce Colley - Ineos Composites
Phil Gilbert - Fiber Glass Systems NOV,
Gerald VanBeek - Southern Company Services

Block 4.4: Thursday, July 21, 2022 (4:15 pm – 6:00 pm)

SESSION 4.4K (NPPS-04): Introduction to the New Nonmetallic Pressure Piping System (NPPS) Standards - Part 4 - ASME NM.2: Design Part 1, Design Methods and Allowable Stresses
Catalunia AB, 4:15 pm - 6:00 pm

Session Developer/Session Chair: ***Charles Henley - Kiewit Engineering Group Inc.***

Session Co-Developer/Session Co-Chair: ***Carlton Ramcharran - ASME***

Session Co-Developer: ***Maher Younan - American University in Cairo, New Cairo, Egypt***

Presented by:
Bruce Hebb - RPS Composites Inc.

Shahin Shadlou - RPS Composites Inc.

Block 5.1: Friday, July 22, 2022 (8:15 am – 10:00 am)

SESSION 5.1K (NPPS-05): Introduction to the New Nonmetallic Pressure Piping System (NPPS) Standards - Part 5 - ASME NM.2: Design Part 2, Pipe Stress Analysis and Supports
Catalunia AB, 8:15 am - 10:00 am

Session Developer/Session Chair: ***Charles Henley - Kiewit Engineering Group Inc.***

Session Co-Developer/Session Co-Chair: ***Carlton Ramcharran - ASME***

Session Co-Developer: ***Maher Younan - American University in Cairo, New Cairo, Egypt***

Presented by:
Darryl Mikulec - Maverick Applied Science
Jeff Eisenman - Maverick Applied Science

Block 5.2: Friday, July 22, 2022 (10:15 am – 12:00 pm)

SESSION 5.2K (NPPS-06): Introduction to the New Nonmetallic Pressure Piping System (NPPS) Standards - Part 6 - ASME NM.2: Fabrication and Examination
Catalunia AB, 10:15 am - 12:00 pm

Session Developer/Session Chair: ***Charles Henley - Kiewit Engineering Group Inc.***

Session Co-Developer/Session Co-Chair: ***Carlton Ramcharran - ASME***

Session Co-Developer: ***Maher Younan - American University in Cairo, New Cairo, Egypt***

Presented by:
Tom Haber - Maverick Applied Science
Alex Yuen - Fiber Glass Systems NOV

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AUTHOR INDEX

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