

EASTERN TIME ZONE								
-1 hr for Central, +5 hr for UK, +6 hr for Europe, +12 hr for China, +13 hr for Japan								
Start	End	Duration	DAY 1 - TUESDAY, OCTOBER 19, 2021					
			Welcome / Opening Remarks: Thomas Costabile - ASME Executive Director/CEO, Perry Y. Li - University of Minnesota, General Chair					
			ROOM 1		ROOM 2			
			Video Session 1A: Control 1 Chair: Kazushi Sanada - Yokohama University		Video Session 1B: Digital Fluid Power Chair: Min Pan - University of Bath			
			Paper #	Presentation Title	Authors	Paper #	Presentation Title	Authors
9:10 AM	9:22 AM	0:12:00	FPMC-68658	Noise Attenuation in a Secondary Controlled Electro-Hydraulic Actuator Using an Extended Kalman Filter	Niklas Simonsen, Emil Munk Sørensen, Mikkel van Binsbergen-Galán, Stine Flindt Hornemann Kleine, Mikkel Hvid Nielsen, Lasse Schmidt. Aalborg University, Denmark	FPMC-68590	A Novel Design Concept of Digital Hydraulic Drive for Knee Exoskeleton	Rituraj Rituraj, Rudolf Scheidl, Johannes Kepler University, Austria. Peter Ladner, Martin Lauber. Linz Center of Mechatronics GmbH, Austria
9:22 AM	9:34 AM	0:12:00	FPMC-66665	Model-Based Control of a Mobile Platform with Independently Controlled In-Wheel Hydraulic Motors	Lionel Hulttinen and Jouni Mattila. Tampere University, Finland	FPMC-68682	Hydraulic Control of a Buck Converter	Rudolf Scheidl, Johannes Kepler University, Austria
9:34 AM	9:46 AM	0:12:00	FPMC-68861	Design and Efficiency Analysis of Closed Loop Pump Controlled Circuit Hydraulic Lifting System of Wheel Loaders Based on Gravity Self-Balancing Hydraulic Cylinder	Xiangyu Wang, Hongjuan Zhang, Xiaogang Zhang, Long Quan. Taiyuan University of Technology, China	FPMC-68923	Modeling and Analysis of a Digital Hydraulic Actuator for Flight Control Surfaces	Rodrigo Lopes Jr., M.P. Nostrani, L.A. Carvalho, A. Dell'Amico, P. Krus, V.J. De Negri. Federal University of Santa Catarina, Brazil and Linköping University, Sweden
9:46 AM	9:58 AM	0:12:00	FPMC-70293	Real-time Flow Optimization of hydraulic Manipulator with One Degree of redundancy Considering Joint limit Constraint	Linan Li, Min Cheng, Ruqi Ding, Junhui Zhang, Bing Xu. Chongqing University, East China Jiatong University, and Zhejiang University	FPMC-70569	Investigating the Influence of Design Parameters on the Fluid-Structure Interaction in Fast Switching Valves	Henrik Pedersen, Torben O. Andersen, Niels C. Bender. Aalborg University and R&D A/S, Denmark
9:58 AM	10:10 AM	0:12:00	FPMC-68058	Using Extremum Seeking Control to Improve the Power Capture of Midsize Hydrostatic Wind Turbines	Daniel Escobar-Naranjo, Biswaranjan Mohanty, and Kim A. Stelson. University of Minnesota, USA	FPMC-69045	Incorporating Valve Switching Losses Into a Static Optimal Control Algorithm for the Hybrid Hydraulic-Electric Architecture (HHEA)	Aditya Khandekar, Jackson Wills, Meng (Rachel) Wang, Perry Y. Li. University of Minnesota and Eaton Corp., USA
10:10 AM	10:22 AM	0:12:00	FPMC-68263	Analysis of Pressure Response Characteristics and Influencing Factors of the Automatic Pressure Regulating Valve in Electronic-Controlled Pneumatic Braking System of Commercial Vehicle	Hanwei Bao, Zaiyu Wang, Xiaoxu Wei, Gangyan Li. Wuhan University of Technology, China	FPMC-68832	Efficient Control of a Switched Inertance Hydraulic Converter With a Time-Varying Load	Chenggang Yuan, Andrew Plummer, and Min Pan. University of Bath, UK
			Discussion 1: (Control 1 and Digital Fluid Power) Chair: Rudolf Scheidl - Johannes Kepler University Co-Chairs: Kazushi Sanada - Yokohama University, Min Pan - University of Bath					
10:25 AM	11:25 AM	1:00:00						
11:25 AM	11:45 AM	0:20:00	Break / Virtual Social (20 mins)					
			ROOM 1		ROOM 2			
			Video Session 2A: Components 1 Chair: Lizhi Shang - Purdue University		Video Session 2B: Modeling and Simulation Chair: Travis Wiens - University of Saskatchewan			
			Paper #	Presentation Title	Authors	Paper #	Presentation Title	Authors
11:45 AM	11:57 AM	0:12:00	FPMC-68604	Experimental Validation of Subsystem Models for a Novel Variable Displacement Hydraulic Motor	Jacob Larson, Jonatan Pozo-Palacios, Grey Boyce-Erickson, Nathan Fulbright, Jaichen Dai, John Voth, Ninaad Gajghate, Jordan Saikia, Paul Michael, Thomas Chase, James Van de Ven. University of Minnesota and Milwaukee School of Engineering, USA	FPMC-68690	Model Updating of a Hydraulic Chain Oscillator	Paul Tremli, Gudrun Mikota, Bernhard Manhartgruber. Johannes Kepler University, Austria
11:57 AM	12:09 PM	0:12:00	FPMC-69937	The Effect of Slotted Hole on Minimum Oil Film Thickness of Piston of Radial Piston Hydraulic Motor	Xiaolong Zhang, Junhui Zhang, Bing Xu, Zhixian Yang, Qi Zhao, Hongjuan Zhang. Zhejiang University and STF Hydraulic Transmissions, China	FPMC-66944	Consideration of Air Bubble Dynamics in 1D Hydraulic Pipeline Simulation: Source Term Development and Verification Utilizing Transmission Line Theory	Fabian Guse, Enrico Pasquini, Katharina Schmitz. RWTH Aachen University, Germany
12:09 PM	12:21 PM	0:12:00	FPMC-68788	Dynamic Modeling and Design of a Radial Hydrostatic Piston Pump for Integrated Pump-Motor	Md. Minal Nahin, Garrett R. Bohach, F.N.U. Nishanth, Eric L. Severson, James D. Van de Ven. University of Minnesota and University of Wisconsin - Madison, USA	FPMC-68676	Prediction of Flow Path Pressure Drops in Curved Galleries for Additively Manufactured Hydraulic Manifolds	L.D. Hashan Peiris, Andrew Plummer, Jens Roesner, Vimal Dhokia, Wesley Essink. University of Bath and Gen3D, United Kingdom
12:21 PM	12:33 PM	0:12:00	FPMC-67416	Modelling of the Cross Angle and Its Impact on Pump Performance	Andris Rambaks, Katharina Schmitz. RWTH-Aachen University, Germany	FPMC-69927	Pressure Loss and Multi-Objective Optimization of Three-Way Spatial Flow Channel Based on Additive Manufacturing	Jing Yao, Yiman Duan, Yingzhe Song, Hao Zhang, Mandi Li, Jianqi Zhang. Yanshan University, China
12:33 PM	12:45 PM	0:12:00	FPMC-70568	Exhaustive Regressor Search (XRS) for Creating Models of Hydraulic Pumps and Motors	Jack Johnson, John Montague, Jose Garcia-Bravo. IDAS Electrohydraulics, Bosch-Rexroth, Purdue University, USA	FPMC-70304	Real-Time Simulation of Fluid Power Systems	Matthias Liermann, Christian Feller, Florian Lindinger. Danfoss Power Solutions, Germany
12:45 PM	12:57 PM	0:12:00	FPMC-68277	Commutation Loss in Hydrostatic Pumps and Motors	Robin Mommers, Peter Achten, Jasper Achten and Jeroen Potma. Innas, BV., Netherlands	FPMC-68817	Double-Input Multi-Output Pressure Control System Based on Addressable Pressure Component	Qiandao Wei, He Xu, Siqing Chen, Weiwang Fan. Harbin Engineering University, China
			Discussion 2: (Components 1 and Modeling & Simulation) Chairs: Nigel Johnston - University of Bath Co-Chairs: Lizhi Shang - Purdue University, and Travis Wiens - University of Saskatchewan					
1:00 PM	2:00 PM	1:00:00						
			End of Day 1 / Virtual Social					
EASTERN TIME ZONE								
-1 hr for Central, +5 hr for UK, +6 hr for Europe, +12 hr for China, +13 hr for Japan								
Start	End	Duration	DAY 2 - WEDNESDAY, OCTOBER 20, 2021					
			Koski Lecture: Development of Intelligent Tunnel Boring Machine Professor Huayong Yang, Zhejiang University, China Chair: Nariman Sepehri - University of Manitoba					
9:00 AM	10:00 AM	1:00:00						
10:00 AM	10:30 AM	0:30:00	Break / Virtual Social (30 mins)					
			ROOM 1		ROOM 2			
			Video Session 3A: Control 2 Chair: Eric Barth - Vanderbilt University		Video Session 3B: Design and Analysis Chair: Matthias Liermann, Danfoss Power Solutions			
			Paper #	Presentation Title	Authors	Paper #	Presentation Title	Authors
10:30 AM	10:42 AM	0:12:00	FPMC-68665	Composite Adaptive Dynamic Surface Control for a Multi-DOF Hydraulic Manipulator With Disturbance Observer	Xiaofu Zhang, Guanglin Shi. Shanghai Jiao Tong University, China	FPMC-68674	Comparative Analysis of Actuator Dimensioning Methods in Pneumatics	Vladimir Boyko, Steffen Hülsmann, Jürgen Weber. Technische Universität Dresden and Festo, Germany
10:42 AM	10:54 AM	0:12:00	FPMC-69433	Gain-Scheduled Position Control of a Pneumatic Muscle Actuator	Matt Cotton, Andrew Plummer. University of Bath	FPMC-68837	Sizing Directional Pneumatic Valves Based on the Characteristic Dynamic Behavior of Linear Actuators	Vinicius Vigolo, Antonio Carlos Valdiero, Victor Juliano De Negri. Federal University of Santa Catarina, Brazil
10:54 AM	11:06 AM	0:12:00	FPMC-68888	HIL Testbed and Motion Control Strategy for the Hybrid Hydraulic-Electric Architecture (HHEA)	Arpan Chatterjee, Perry Y. Li. University of Minnesota, USA	FPMC-68483	Machine Learning Prediction of Journal Bearing Pressure Distributions, Considering Elastic Deformation and Cavitation	Nathan Hess, Lizhi Shang. Purdue University, USA
11:06 AM	11:18 AM	0:12:00	FPMC-68594	Leveraging Flow Regeneration in Individual Energy-Efficient Hydraulic Drives	Damiano Padovani. University of Agder, Norway	FPMC-70251	Towards a Standard Taxonomy for Levels of Automation in Heavy-Duty Mobile Machinery	Tyrone Machado, Andrei Ahonen, Reza Ghabcheloo. Tampere University, Finland

11:18 AM	11:30 AM	0:12:00	FPMC-68656	Blade Control for Surface Profile Tracking by Heavy-Duty Bulldozers	Teemu Mononen, Jouni Mattila, Antti Kolu. Tampere University and Novatron Oy, Finland	FPMC-68979	Novel Methods and Technologies for Assessing Usability of Off-Road Machines in R&d Phase: The Lutergo Laboratory	Victor Zhidchenko, Amin Hekmatmanesh, Heikki Handroos, Asko Kilpeläinen, Kari Kauranen. LUT University and LAB University of Applied Sciences, Finland
11:30 AM	11:42 AM	0:12:00	FPMC-68920	Nonlinear Cutterhead Pose Control of Large-Diameter Slurry Shields in Complicated Stratum	Hangjun Zhang, Jianhua Wei, Jinhui Fang, Yuzhu Yang. Zhejiang University, China	FPMC-68739	Meaningful and Physically Consistent Efficiency Definition for All Positive Displacement Pumps: Continuation of the Critical Review of ISO 4391 and ISO 4409	Christian Schänzle, Peter F. Pelz. Technische Universität Darmstadt, Germany
11:45 AM	12:45 PM	1:00:00	<p align="center">Discussion 3 (Control 2 and Modeling & Analysis) Chair: Kim Stelson - University of Minnesota Co-Chairs: Eric Barth - Vanderbilt University and Matthias Liermann - Danfoss Power Solutions</p>					
12:45 PM	1:45 PM	1:00:00	<p align="center">End of Day 2 / Virtual Social</p>					
<p align="center">EASTERN TIME ZONE -1 hr for Central, +5 hr for UK, +6 hr for Europe, +12 hr for China, +13 hr for Japan</p>								
Start	End	Duration	<p align="center">DAY 3 - THURSDAY, OCTOBER 21, 2021</p>					
			<p align="center">ROOM 1</p>			<p align="center">ROOM 2</p>		
9:00 AM	10:25 AM	1:25:00	<p align="center">Video Session 4A: Renewable Energy and Other Applications Chair: Andrew Plummer - University of Bath</p>			<p align="center">Video Session 4B: Fault Detection and Diagnostics Chair: Saeid Habibi - McMaster University</p>		
			Paper #	Presentation Title	Authors	Paper #	Presentation Title	Authors
9:00 AM	9:12 AM	0:12:00	FPMC-68734	Dynamic Characteristics of a Hydraulic Soft Actuator With Three Degrees of Freedom	Qing Xie, Tao Wang, Shiqiang Zhu. Zhejiang University, China	FPMC-70511	Using Dynamic Pressure Response for Erosion Detection in Hydraulic Tubes and Hoses	Elnaz Etrinan, Mahdiyar Molahasani Majdabadi, Seokbum Ko, Travis Wiens. University of Saskatchewan, Canada
9:12 AM	9:24 AM	0:12:00	FPMC-69806	Hydraulic Test Stand to Model Circulatory System Dynamics for Artificial Heart Evaluation	Joseph T. Howard, Seth Thomas, James C. Gallentine, Eric J. Barth. Vanderbilt University, USA	FPMC-68858	Measurement of Step Responses of Flowrate in a Pipe Using a Kalman-Filtering Laminar Flowmeter	Kazushi Sanada. Yokohama National University, Japan
9:24 AM	9:36 AM	0:12:00	FPMC-68884	Numerical Study of a Weight-Adjustable Buoy for Efficient Wave Energy Conversion	Hao Tian, Boyang Zhou, Zengmeng Zhang, Yongjun Gong. Dalian Maritime University, China	FPMC-69415	Characterization of Solenoid On-Off Valve Faults: A Faster Analytical Modeling Approach	Hao Tian, Sichen Li, Jianbo Liu, Jiaoyi Hou, Yongjun Gong. Dalian Maritime University, China
9:36 AM	9:48 AM	0:12:00	FPMC-68484	Pipeline Model Fidelity for Wave Energy System Models	Jeremy W. Simmons, James D. Van de Ven. University of Minnesota, USA	FPMC-69755	A Simulation Survey on the Effects of Progressing Faults Within the SCAS of a Flight Control Actuator for Helicopters	Andrea De Martin, Giovanni Jacazio, Massimo Sorli, Giuseppe Vitriani. Politecnico di Torino, Italy
9:48 AM	10:00 AM	0:12:00	FPMC-68871	A Power Take-Off (PTO) for Wave Energy Converters Based on the Hybrid Hydraulic-Electric Architecture (HHEA)	Jackson Wills, Adam Keester, Perry Y. Li. University of Minnesota, USA	FPMC-68818	Investigating the Condition Monitoring Potential of Oil Conductivity for Wear Identification in Electro Hydrostatic Actuators	Yannick Duensing, Katharina Schmitz, Oliver Richert. Institute for Fluid Power Drives and Systems, Germany
10:00 AM	10:12 AM	0:12:00	FPMC-68813	Experimentation on a Hydraulic Energy Storage System for Mid-Size Wind Turbines	Eric Mohr, Biswaranjan Mohanty, Daniel Escobar-Naranjo, Kim Stelson. University of Minnesota, USA	FPMC-68615	AI-Based Condition Monitoring of Hydraulic Valves in Zonal Hydraulics Using Simulated Electric Motor Signals	Abid Abdul Azeez, Xu Han, Viacheslav Zakharov, Tatiana Minav. Tampere University, Finland.
10:12 AM	10:24 AM	0:12:00				FPMC-68065	A Model-Based FDD Approach for an Eha Using Updated Interactive Multiple Model Svst	Ahsan Saeedzadeh, Saeid Habibi, Marjan Alavi. McMaster University, Canada
10:25 AM	11:25 AM	1:00:00	<p align="center">Discussion 4: (Applications and Fault Detection & Diagnostics) Chair: Katharina Schmitz - RWTH-Aachen University Co-Chairs: Andrew Plummer - University of Bath and Saeid Habibi - McMaster University</p>					
11:25 AM	11:45 AM	0:20:00	<p align="center">Break / Virtual Social (20 min)</p>					
			<p align="center">ROOM 1</p>			<p align="center">ROOM 2</p>		
11:45 AM	1:00 PM	1:15:00	<p align="center">Video Session 5A: Components 2 Chair: Songjing Li - Harbin Institute of Technology</p>			<p align="center">Video Session 5B: Power Transmission Chair: Victor J. de Negri - Federal University of Santa Catarina</p>		
			Paper #	Presentation Title	Authors	Paper #	Presentation Title	Authors
11:45 AM	11:57 AM	0:12:00	FPMC-68605	An Analysis of the Effects Causing an Asymmetric Behavior of the Lateral Lubricating Films of External Spur Gear Machines	Kaeul Lim, Federico Zappaterra, Swarnava Mukherjee, Andrea Vacca. Purdue University, USA	FPMC-68939	Simulated and Experimental Analysis of a Log Crane With Conventional and Direct Driven Hydraulics	Dmitrii Shevchuk, Iuliia Malysheva, Marjan Alizadeh, Heikki Handroos. Lappeenranta-Lahti University of Technology, Finland
11:57 AM	12:09 PM	0:12:00	FPMC-68694	A Novel Positive Displacement Axial Piston Machine With Bent Cylinder Sleeves	Swarnava Mukherjee, Antonio Masia, Mark Bronson, Lizhi Shang, Andrea Vacca. Purdue University and Bronson and Bratton, Inc., USA	FPMC-68797	Experimental Study on Energy Efficiency of Two-Cylinder Direct Driven Hydraulic System in a Large-Scale Test Bench	Robert Hermansson, Ville Näränen, Jyrki Kajaste, Olof Caloni, Matti Pietola, Petri Kuosmanen. Aalto University, Finland
12:09 PM	12:21 PM	0:12:00	FPMC-68089	Development of Glycerin/Chitosan-Based Fluids for Stationary and Mobile Hydraulic Drives	Malte Otten, Deniz Bulutcu, Ludger Frerichs. Technische Universität Braunschweig, Germany	FPMC-68843	Improving the Efficiency of a Compact Inline Hydro-mechanical Transmission (i-HMT) at Lock-Up	Johnathan (Hans) Barkei, Perry Li. University of Minnesota, USA
12:21 PM	12:33 PM	0:12:00	FPMC-68735	Analysis of Cavitation Characteristics of High Temperature Fuel Piston Pump in the Process of Suction and Discharge	Tianzhao Wang, Hongyi Jiao, Xingjia Ma, Xiaoping Ouyang, Heran Zhang. Zhejiang University and Liyuan Hydraulic Co. Ltd., China	FPMC-69056	Modeling Hybrid Hydro-Electro-Mechanical Power-Split Propulsion Systems	John Haughey, Brian L. Steward, Saxon J. Ryan, R. Gallolu Kankanamalage. Millersville University and Iowa State University, USA
12:33 PM	12:45 PM	0:12:00	FPMC-68806	Design and Analysis of a Flow-Control Valve With Controllable Pressure Compensation Capability for Mobile Machinery	Bo Wang, Li Yunwei, Quan Long, Xia Lianpeng. Taiyuan University of Technology, China	FPMC-70614	Investigating the Filtration Characteristics of Direct Driven Hydraulics	Xu Han, Jussi Välimaa, Abdullokh Orifjonov, Damiano Padovani, Tatiana Minav. Tampere University, Finland and University of Agder, Norway.
12:45 PM	12:57 PM	0:12:00	FPMC-67874	'Shuttle' Technology for Noise Reduction and Efficiency Improvement of Hydrostatic Machines: Part 2	Robin Mommers, Peter Achten, Innas, BV, Netherlands	FPMC-69399	Prediction Control and Energy Analyses of Hydraulic Transformer Based Heave Compensator	Huan Yu, Jinhui Fang, Jianhua Wei, Shizhen Li, Hangjun Zhang. Aerospace System Engineering Shanghai and Zhejiang University, China
1:00 PM	2:00 PM	1:00:00	<p align="center">Discussion 5 (Components 2 and Power Transmission) Chair: Heikki Handroos - Lappeenranta University of Technology Co-Chairs: Songjing Li - Harbin Institute of Technology and Victor de Negri - Federal University of Santa Catarina</p>					
2:00 PM	2:15 PM	0:15:00	<p align="center">Awards and Closing: Perry Y. Li - University of Minnesota, General Chair</p>					

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