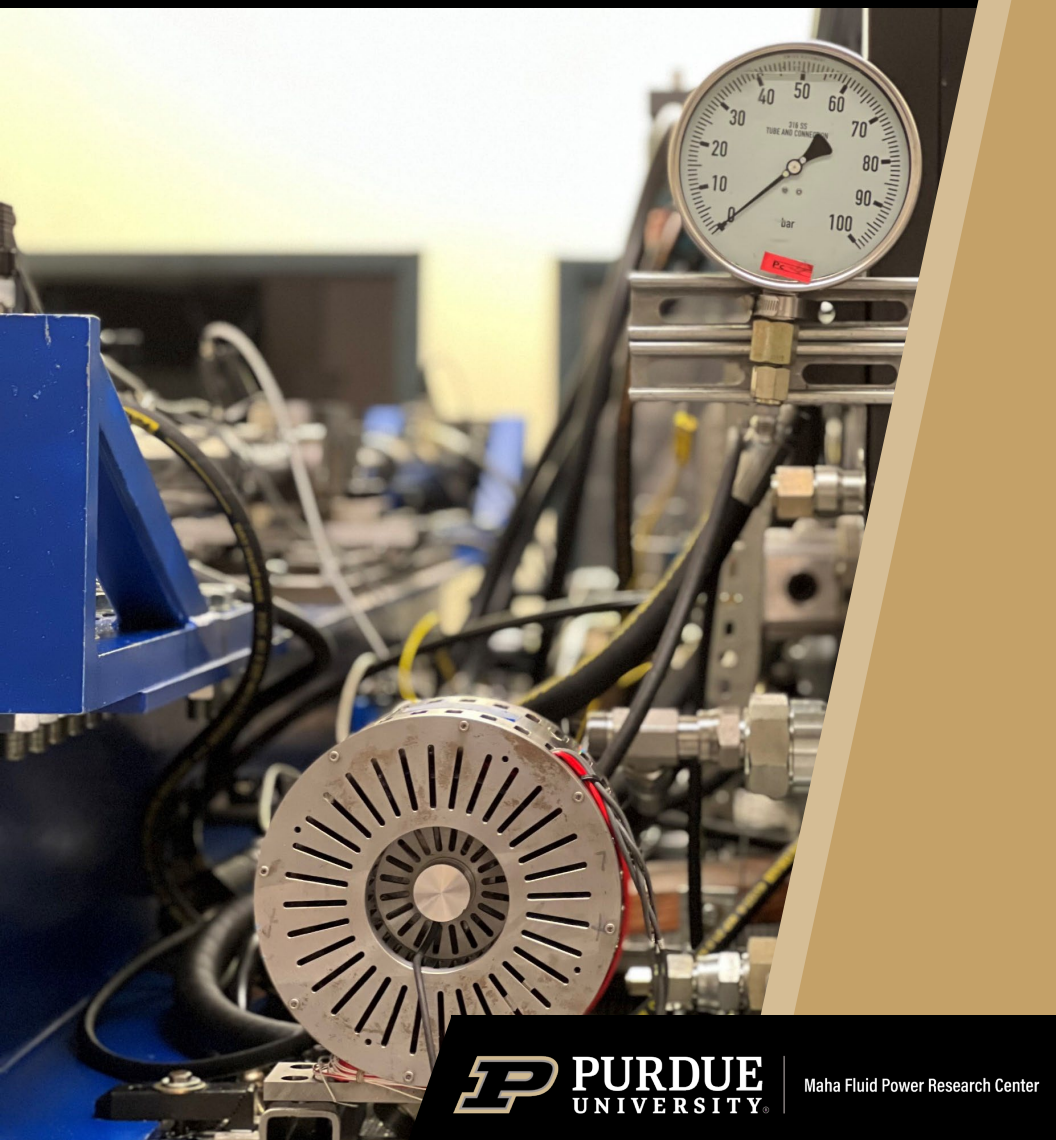


# 2026 International Maha Fluid Power Conference

West Lafayette, IN, USA

September 8-10, 2026

## PROGRAM



**PURDUE**  
UNIVERSITY®

Maha Fluid Power Research Center

## FOREWORDS

Dear Attendee,

On behalf of the Organizing Committee and the Maha Fluid Power Research Center at Purdue University, it is our great pleasure to present you with the final program for the 2026 International Maha Fluid Power Conference.

This is the fourth event organized by Maha at Purdue to foster networking, exchange ideas, and showcase the latest research trends in fluid power and motion control technologies. It is also our third gathering since the establishment of the Maha Industry Consortium in 2022. This year's conference continues to build on our strong tradition of bringing together global academic and industry leaders.

Throughout the three-day program, five academic leaders, ten industry executives, and two association representatives will deliver keynote addresses, unveiling current technology trends, industry needs, and future challenges. In addition, the schedule features 48 technical presentations from industry and research institutions worldwide. Several of these are presentation-only, while others are accompanied by peer-reviewed original publications. To recognize outstanding contributions to our field, the conference will also feature a Best Paper Award (selected from the peer-reviewed submissions) and a Best Presentation Award, generously supported by River Publishers.

During our Gala Dinner on September 9th, we will honor the memory of Maha's founder, the late Prof. Monika Ivantysynova. The Monika Ivantysynova Medal will be awarded to distinguished Purdue alumni who have demonstrated exceptional career achievements in fluid power and motion control.

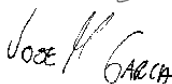
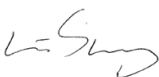
On September 9th, a technology exhibition will also take place, designed to engage both conference participants and the broader Purdue community. Concurrently, Purdue students will have the opportunity to participate in a dedicated recruitment event supported by the National Fluid Power Association.

We would like to extend our deepest gratitude to the authors, presenters, session chairs, and advisory committee members for their dedication to building this outstanding technical program. We are also incredibly grateful to the member companies of the Maha Industry Consortium for endorsing the event, and to the Industry Advisory Board for their organizational guidance and their assistance in the difficult task of selecting this year's medal winners. We further recognize our Gold, Silver, and Bronze Sponsors, whose generous support has allowed us to keep this event affordable for students and faculty members.

Finally, a special thank you goes to the Maha staff and students for their crucial help in coordinating all the conference details.

We hope you enjoy the conference, and that you leave with inspiration for new ideas and enriched professional connections.

Sincerely,



The Conference Chairs:

Andrea Vacca, Lizhi Shang, Jose Garcia-Bravo

## GENERAL INFORMATION

### Registration and Checking-In

Registration will be held on the first floor of Stewart Center in room 109BC from 12:00 pm - 5:00 pm on Tuesday, September 8th, and outside Stewart 206 from 7:30 am - 11:00 am on Wednesday, September 9th. Both attendees and exhibitors will need to check in at this location

### Pictures and videotaping during the conference

Conference attendees may NOT take pictures or videos at any presentation without the consent of the author or presenter.

### Expo program

The conference Expo will take place on Sept. 9th at the Memorial Mall, in front of the Stewart Center. The Ballrooms of the Purdue Memorial Union (PMU) will be used in case of unfavorable weather conditions. The Expo will be accessible to everyone, including people not registered to the Maha Conference.

### Social Events

Conference dinners. A cocktail hour (5:30 pm) will precede the conference dinners (6:30 pm). This will occur at the Buchanan Club on the 5th floor of the Ross Ade pavilion on September 8th and at the North Ballroom of the Purdue Memorial Union (PMU) on September 9th. With the exception of some reserved tables, seating is open to maximize network exchanges.

Conference lunches. Lunch boxes will be provided on Sept 9th (12:30 pm) and Sept 10th (12:20 pm) at room 214ABCD of Stewart Center.

Maha farewell. A farewell party will occur on Sept 10th at 4:20 pm at the Maha Fluid Power Research Center (address: 1500 Kepner Dr., Lafayette, IN). Please contact the conference office in case you need transportation.

### Internet access

Wireless internet is available to all attendees via the ATT WIFI hotspot. Please choose ATT Wifi as your internet connection. When you open a browser, you will be automatically connected. You will need to provide your email address and accept the terms & conditions. If you have difficulties, please visit the Conference Office

## ORGANIZING COMMITTEE

Andrea Vacca, Maha Fluid Power Research Center, Purdue University, [avacca@purdue.edu](mailto:avacca@purdue.edu)

Lizhi Shang, Maha Fluid Power Research Center, Purdue University, [shangl@purdue.edu](mailto:shangl@purdue.edu)

Jose Garcia-Bravo, Maha Fluid Power Research Center, Purdue University, [jmgarcia@purdue.edu](mailto:jmgarcia@purdue.edu)

# 2026 International Maha Fluid Power Conference

## TUESDAY, SEPTEMBER 8

|         |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|---------|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1:00 PM |                  | OPENING AND REMARKS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 1:15 PM | STEW FOWLER HALL | KEYNOTE LECTURE<br>Session Chair: Jim Van De Ven<br><b>Jean-Charles Mare</b> (INSA Toulouse, <i>France</i> ) - Trends in Actuation for Aerospace<br><b>Jürgen Weber</b> (TU Dresden, <i>Germany</i> ) - Digitalization in Fluid Power<br><b>Eric Lanke</b> (NFPA, <i>USA</i> ) - Future Trends in the U.S. Fluid Power Industry                                                                                                                                                                                                                                                                               |
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| 2:45 PM | WEST FOYER       | COFFEE BREAK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 3:15 PM | STEW FOWLER HALL | KEYNOTE LECTURE<br>Session Chair: Jürgen Weber<br><b>Tatiana Minav</b> (Tampere University, <i>Finland</i> ) - EMA Implementation and Its AI-Based Condition Monitoring/Predictive Maintenance<br><b>Jim Van De Ven</b> (University of Minnesota, <i>USA</i> ) - Investigation of Alternative Powertrains for Mobile Machines: Agricultural Sprayer Case Study<br><b>Noah Manring</b> (University of Missouri, <i>USA</i> ) - Using Nondimensional Analysis to Model, Design, and Test Hydraulic Control Systems<br><b>Christian Geis</b> (VDMA, <i>Germany</i> ) - Research-Industry Collaboration in Europe |
|         |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
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| 5:30 PM | BUCHANAN CLUB*   | DINNER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

\*Buchanan Club is located on the 5<sup>th</sup> Floor in the Ross-Ade Pavilion, John R Wooden Dr, West Lafayette.

## WEDNESDAY, SEPTEMBER 9

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| 8:00 AM  | STEW FOWLER HALL | KEYNOTE LECTURE<br>Session Chair: Lizhi Shang<br><b>Shawn Horner</b> (Parker Hannifin, <i>USA</i> ) - Future Trends in Motion and Control Technology<br><b>Steffen Haack &amp; Enrique Busquets</b> (Bosch Rexroth, Germany) - AI in Fluid Power Technology<br><b>Jeff Herrin</b> (Danfoss, <i>Denmark</i> ) - When Technology Leadership Is Not Enough - The Kings of Collaboration<br><b>Dave Norman</b> (Moog, <i>USA</i> ) - Fluid Power Earns Its Way on Modern Aircraft |
|          |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
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| 10:15 AM | WEST FOYER       | COFFEE BREAK                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 10:45 AM | STEW FOWLER HALL | KEYNOTE LECTURE<br>Session Chair: Andrea Vacca<br><b>John Tuntland + Mandi Henderson</b> (CAT, <i>USA</i> ) - How Caterpillar Advanced Technology Is Enabling Safer Outcomes and What It Means for Hydraulics<br><b>Alberto Frulli + Stefano Fiorati</b> (CNH, <i>Italy/USA</i> ) - Transforming Off-Highway Machines Through Advanced Fluid Power Technologies<br><b>Corey Quinnell</b> (Husco, <i>USA</i> ) - Why the Best Engineering Does Not Always Win                  |
|          |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
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| 12:30 PM | STEW 214 ABCD    | LUNCH                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 1:30 PM  | PURDUE MALL      | EXPO                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

# 2026 International Maha Fluid Power Conference

WEDNESDAY, SEPTEMBER 9 (continue)

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| 2:30 PM | STEW 278 | <b>GEAR AND VANE PUMPS</b><br>Session Chair: Liselott Ericson<br><br><b>Parth Tawarawala</b> (Purdue University, <i>USA</i> )<br>Analysis of Efficiency and Axial Compensation in Continuous-Contact Helical Gear Pumps through Multiphysics Lubrication Modelling and Experimental Validation<br><br><b>Carlo Maria Vescovini</b> (Casappa, <i>Italy</i> )<br>Enhanced Multi-Objective Multi-Physics Optimization of Pump Timing Applied to a Dual-Flank Contact Helical Gear Pump<br><br>Jinglun Qu (Purdue University, <i>USA</i> )<br>Analysis and Refinement of Fluid Supply Flow Paths for a Balanced Twin-Lip Vane Pump<br><br>Jeff Blaszczyk (Moog, <i>USA</i> )<br>High Speed Tungsten Carbide Stacked Vane Pump | STEW 279 | <b>NOVEL TECHNOLOGY IN OFF ROAD VEHICLE</b><br>Session Chair: Brian Steward<br><br><b>Paul Michael</b> (Milwaukee School of Engineering, <i>USA</i> )<br>Influence of Fluid Properties on Hydraulic System Losses in Dynamometer and Excavator Field Testing<br><br><b>Xin Tian</b> (CNH, <i>Italy/USA</i> )<br>Off-Road Vehicle Performance & Fluid Power: From Concept Sketch to Hi-Fi and Real-Time Modeling<br><br><b>Timir Rajendra Patel</b> (Purdue University, <i>USA</i> )<br>High Efficient Independent Metering System with Energy Recuperation: The Case of a Mini-Excavator<br><br><b>Vignesh Jeganathan</b> (Simetrics, <i>USA</i> )<br>Bridging 1D System Modeling and 3D CFD for Hydraulic Slack Adjuster Design: A Decoupled Co-Simulation Approach |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|         |          | COFFEE BREAK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|         |          | 4:10 PM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |          | STEW 278                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>PISTON PUMPS AND MOTORS</b><br>Session Chair: Noah Manring<br><br><b>Roman Ivantysyn</b> (TU Dresden, <i>Germany</i> )<br>Ultra Compact High-Speed Axial Piston Pumps for Electrified Mobile Machinery: Optimizing and Testing Tribologic Gaps for 10000 RPM<br><br><b>Julien Ntede Florent</b> (University of Bologna, <i>Italy</i> )<br>Numerical Analysis of the Influence of Ball Joint Clearance on the Elastohydrodynamic Performance of Slipper Interfaces in Axial Piston Motors<br><br><b>Karl Stübig</b> (Danfoss, <i>Denmark</i> )<br>Cylinder Block Deformation as Indicator for Cylinder Pressure in Axial Piston Units: A Novel Method Using Strain Gauges<br><br><b>Pierre Bernard</b> (Poclain Hydraulics, <i>France</i> )<br>Increasing Tool Productivity by Re-Engineering Radial Pistons Cam-Lobe Motors | STEW 279 | <b>SUSTAINABLE FLUID POWER</b><br>Session Chair: Aleksandar Egelja<br><br><b>Olivier Reinertz</b> (RWTH Aachen University, <i>Germany</i> )<br>How Fluid Power Research Can Contribute to a More Sustainable Construction Industry<br><br><b>Justin Hernan</b> (Parker Hannifin, <i>USA</i> )<br>Electrification-Enabled Hydraulic Architecture: Improving Efficiency and Total Cost of Ownership<br><br><b>Samuele Nizzardo</b> (University of Padova, <i>Italy</i> )<br>Full 3D CFD and FEM Validation of Surrogate-Optimized Hydraulic Manifolds Designed via the MOTHEA Framework<br><br><b>Medhat Khalil</b> (Milwaukee School of Engineering, <i>USA</i> )<br>Energy Saving Strategies in Hydraulic-Driven Machine Design |
|         |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

# 2026 International Maha Fluid Power Conference

## WEDNESDAY, SEPTEMBER 9 (continue)

|         |           |              |
|---------|-----------|--------------|
| 5:30 PM | PMU NORTH | SOCIAL EVENT |
| 6:30 PM | PMU NORTH | DINNER       |

## THURSDAY, SEPTEMBER 10

|          |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
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| 8:30 AM  | STEW 278 | <p><b>DRIVE AND STEER-BY-WIRE</b></p> <p>Session Chair: Olivier Reinertz</p> <p>Timothy Oppertwall (Husco, <i>USA</i>)<br/>Steer by Wire Safety: Preserving Steering Under Fault Conditions Through Physics Driven Desig</p> <p><b>Matthias Krug</b> (Thomas Group, <i>Germany</i>)<br/>Development of a Demonstrator for a Full Steer-by-Wire Solution</p> <p><b>Qadeer Ahmed</b> (Ohio State University, <i>USA</i>)<br/>Powertrain-Aware Explainable Reinforcement Learning Energy Management in Off-Road Vehicles</p> <p><b>Barun Acharya</b> (Parker Hannifin, <i>USA</i>)<br/>Electrified Traction Architectures for Off-Highway Mobile Equipment: A Decision Framework</p> <p><b>Lasse Schmidt</b> (Aalborg University, <i>Denmark</i>)<br/>Electro-Hydraulic Drive Networks for Next-Generation Working Machines - Design &amp; Results for an Excavator</p> | STEW 279 | <p><b>HYDRAULIC COMPONENT TECHNOLOGY</b></p> <p>Session Chair: Paul Michael</p> <p><b>Elton Bishop</b> (DigitalHydraulic LLC, <i>USA</i>)<br/>Novel Poppet Valve for Digital Hydraulic Transformer</p> <p><b>Austin Zapata</b> (Purdue University, <i>USA</i>)<br/>When Orifice Flow Must Consider Extensional Effects</p> <p><b>Shanmukh Sarode</b> (Parker Hannifin, <i>USA</i>)<br/>Sustainability Driven Advanced Hydraulic Pump Designs and Global Fluid Qualification Processes</p> <p><b>Anders Hedegaard Hansen</b> (Aalborg University, <i>Denmark</i>)<br/>Experimental Investigation of a Novel Load-Holding Valve Technology Enabling Energy Recovery for Safety-Critical Hydraulic Systems</p> <p><b>Leonardo Franquillino</b> (Purdue University, <i>USA</i>)<br/>A Novel Hydraulic-Mechanical Linear Actuator Technology for High Efficiency Architectures</p> |
| 10:10 AM | STEW 206 | COFFEE BREAK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 10:40 AM | STEW 278 | <p><b>SYSTEM DIAGNOSTICS &amp; SIMULATION</b></p> <p>Session Chair: Lasse Schmidt</p> <p><b>Stefano Li Veli</b> (University of Sannio, <i>Italy</i>)<br/>Experimental Characterization and Numerical Modelling of an Electric Vehicle Thermal Management System Integrating a Screw-Type ePump</p> <p><b>Raul Rodriguez</b> (Bosch Rexroth, <i>USA</i>)<br/>Improving Structural Performance of a High-Pressure Hydraulic Portblock Using Manufacturing-Aware Shape Optimization and Automated Geometry Recovery</p>                                                                                                                                                                                                                                                                                                                                                 | STEW 279 | <p><b>SENSORS AND CONDITION MONITORING</b></p> <p>Session Chair: Jose Garcia Bravo</p> <p><b>Massimiliano Ruggeri</b> (STEMS - Institute for Energy and Sustainable Mobility of the CNR, <i>Italy</i>)<br/>New Sensing Method for Cartridge Valves</p> <p><b>Daniel Gysling</b> (Corvera, <i>USA</i>)<br/>SONAR-Based Gas Void Fraction Monitoring for Mobile Hydraulic Systems</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

# 2026 International Maha Fluid Power Conference

THURSDAY, SEPTEMBER 10 (continue)

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| 10:40 AM | STEW 278      | <p><b>SYSTEM DIAGNOSTICS &amp; SIMULATION</b></p> <p>Session Chair: Lasse Schmidt</p> <p><b>Brian Steward</b> (Iowa State University, USA)<br/>Real-Time Anomaly Detection for J1939-Based Mobile Hydraulic Control Systems</p> <p><b>Jinhwan Lee</b> (Purdue University, USA)<br/>A Transient Thermo-Elasto-Hydrodynamic Model for Multi-Lobe Radial Piston Motors</p> <p><b>Pawan Panwar</b> (Milwaukee School of Engineering, USA)<br/>Use of Deep Learning to Predict Speed, Pressure, and End of Life in a High-Pressure Pump</p>                                                                                                                                                                                                                                                                                                                                                                          | STEW 279 | <p><b>SENSORS AND CONDITION MONITORING</b></p> <p>Session Chair: Jose Garcia Bravo</p> <p><b>Annalisa Sciancalepore</b> (Sun Hydraulics, USA)<br/>Valve-Integrated Position Sensing (VIPS) for Flow Estimation and Monitoring in Electrohydraulic Systems</p> <p><b>Ishan Suvarna</b> (Purdue University, USA and Bosch Rexroth, USA)<br/>Wear Prediction of Swashplate Axial Piston Pump</p> <p><b>Kailash Choudhary</b> (Purdue University, USA and Casappa, Italy)<br/>Experimental Investigation of Micromotions in Helical External Gear Machines</p>                                                                                                                                                                                                                                                                                             |
| 12:20 PM | STEW 214 ABCD | LUNCH                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 1:20 PM  | STEW 278      | <p><b>ELECTRIFICATION, DIGITALIZATION &amp; SYSTEM DESIGN</b></p> <p>Session Chair: Tatiana Minav</p> <p><b>Germano Franzoni</b> (Parker Hannifin, USA)<br/>Hydraulic Innovation in the Real World: Why Some Technologies Thrive, Many Stall, and What Comes Next</p> <p><b>Liselott Ericson</b> (Linköping University, Sweden)<br/>Electrification of Mobile Machines - Exploiting Increased Degrees of Freedom in System Design</p> <p><b>Anthony Khoraych</b> (Advanced Test and Automation Inc., Canada)<br/>From Simulation to Decision-Grade Evidence: Automated Pump Validation for Electrified and Severe-Duty Systems</p> <p><b>Christian Bock</b> (Bosch Rexroth, USA)<br/>Rexroth's Component Digitalization Strategy: How Software Is Redefining Hydraulics</p> <p><b>Scott D. Sudhoff</b> (Purdue University, USA)<br/>Understanding and Mitigating Common Mode Current in Electrified Systems</p> | STEW 279 | <p><b>SIMULATION TECHNOLOGY</b></p> <p>Session Chair: Harish Manne</p> <p><b>Francesco Corradin</b> (Walvoil, Italy)<br/>Model Based Design Applied to the Software Development of a Fully Digitalised Hydraulic Circuit - Smart Miniexcavator Case Study</p> <p><b>Naoki Hirose</b> (IHI Corporation, Japan)<br/>Unsteady CFD Analysis of Alternating Flow Patterns in a Restrictive Orifice of a Pressure Regulator Valve</p> <p><b>Priyanka Viswanath</b> (Simerics, USA)<br/>1D System Modeling and 3D CFD Co-Simulation Methodology for Analyzing Transient Behavior in Hydraulic Valves</p> <p><b>Nicolas Romain</b> (Siemens, France)<br/>Excavator Closed-Loop Simulator: From Fuel to Soil</p> <p><b>Kai Ping Qwah</b> (Purdue University, USA)<br/>Modeling of Rotor Deformation Effects in Gerotor Pumps for High Pressure Applications</p> |

# 2026 International Maha Fluid Power Conference

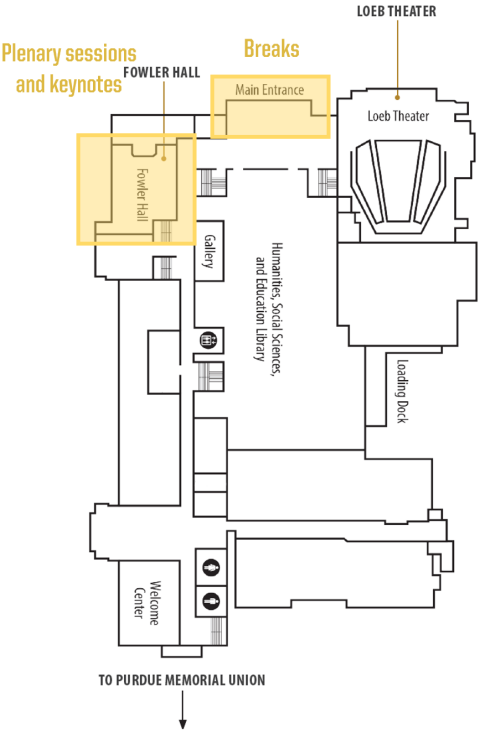
## THURSDAY, SEPTEMBER 10 (continue)

|         |          |                                                                                                                                                         |          |                                                                                                                                         |
|---------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------------------------------------------------------------|
|         |          | <b>ELECTRIFICATION, DIGITALIZATION &amp; SYSTEM DESIGN</b><br>Session Chair: Tatiana Minav                                                              |          | <b>SIMULATION TECHNOLOGY</b><br>Session Chair: Harish Manne                                                                             |
| 1:20 PM | STEW 278 | <b>Elena Menegatti</b> (Purdue University, <i>USA</i> )<br>Hydrogen Excavator: Research Progress on Engine Boosting and High Efficient Actuation System | STEW 279 | <b>Zihao Xu</b> (Purdue University, <i>USA</i> )<br>Research Progress on Multi-Chamber Cylinder Adopting Multi-Pressure Rail Technology |
| 3:20 PM | STEW 278 | <b>CLOSURE AND AWARD</b>                                                                                                                                |          |                                                                                                                                         |
| 3:35 PM | -        | <b>TRAVEL TO MAHA</b>                                                                                                                                   |          |                                                                                                                                         |
| 4:20 PM | MAHA LAB | <b>LAB TOUR AND SOCIAL EVENT</b>                                                                                                                        |          |                                                                                                                                         |

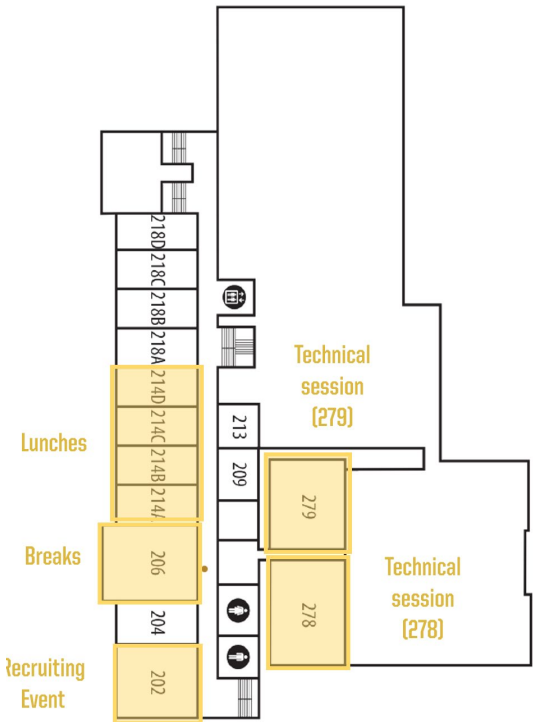
## WEDNESDAY, SEPT 9 - RECRUITING EVENT

Our goal is to provide a space for companies and students to casually interact with each other, and for both students and recruiters to be professionally matched to each other. The event is sponsored by the National Fluid Power Association. This event aims to increase students' awareness of the fluid power industry by engaging with companies and exploring careers in our industry. The event will take place from 12:00 to 2:30 pm in STEW 202. Students may pre-register by submitting their resumes. Participating companies may set up before 11:00 am and join at no additional cost. For more information, please contact Prof. J. Garcia-Bravo.

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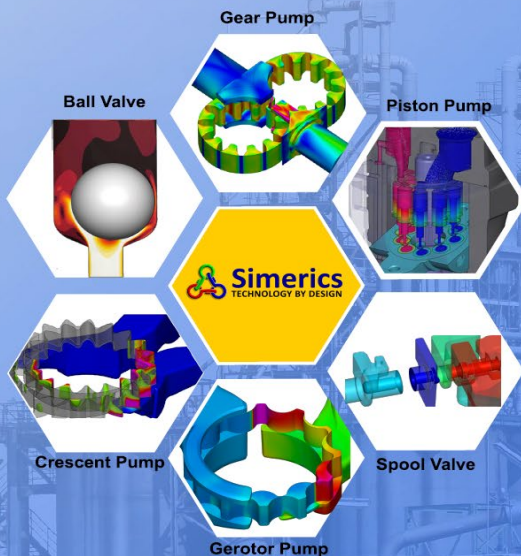
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ADAPTIVE LOAD SENSING

UP TO  
**5% +**

**EPX**  
METER OUT COMPENSATION

UP TO  
**20% =**

**TOTAL  
ENERGY  
SAVINGS**

\*UP TO  
**25%**



Volvo's Adaptive Load Sensing system (ALS) can optimize and recover energy dissipated during each work phase, providing significant increase in the efficiency of machinery for agriculture, construction, and the material handling sectors. EPX (Meter out compensation) technology recovers and regenerates energy in the machine system based on the options chosen by the manufacturer. When combined, ALS and EPX, allow an overall energy saving of up to 25%.

\* Savings may be higher for particular applications

Together, the two systems allow:

- Limited dissipation of energy in hydraulic circuits
- Increased controllability and precision in machines movements
- Greater efficiency
- Recovery and regeneration options within the dissipated energy circuit
- Extended autonomy and reduced battery size on electrified applications
- Digital integration between the individual components

A member of



**walvoil**  
MOTION BY PEOPLE

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# SECURING OUR FUTURE

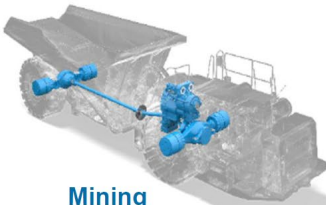


By Making the  
Challenging a **Reality.**

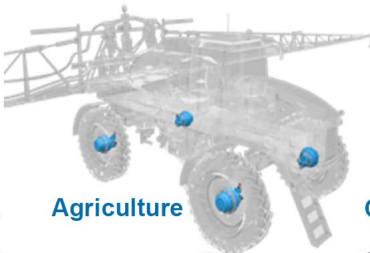
 **SARGENT™**

Drive Systems

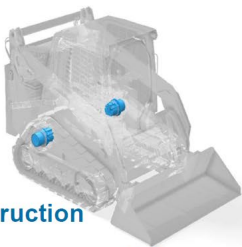
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Mining



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Construction



Axes



Driveshafts

Transmissions



Slew Drives

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## Power



## Filtration

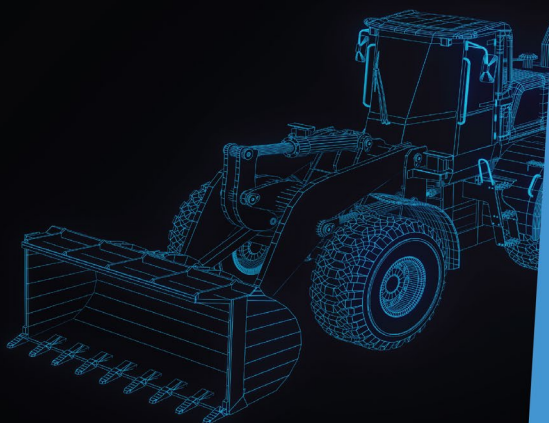


## Controls



Think **e**Hydraulics

## Smart Actuation for Smart Applications



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Upgrade your system with  
Thomas CANbus actuators.



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## PRECISION MOTION CONTROLS AND SYSTEMS

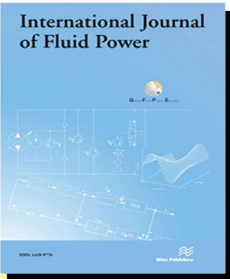
for Sea, Land, Air, and Space



Shaping the way our world moves™



Together, we engineer  
a better future



# 2026 International Maha Fluid Power Conference

## AI

For the first time, the Maha conference provides an AI-facing portal for attendees' favorite AI tool to access the conference information. Scan the following QR codes and start a chat to learn more about the conference.

Scan the below directly with your phone camera if you use Claude or ChatGPT

Claude



ChatGPT



or, Scan below and copy the prompt to your favorite chatbot like Gemini or Copilot



## AWARDS

Monika Ivantysynova Medal Award recognizes individuals with early association with Purdue who have distinguished themselves for career achievements in fluid power and related industries. The award is dedicated to Prof. Monika Ivantysynova, one of the most accomplished individuals in fluid power and the founder of the Maha Fluid Power Research Center. The awardee (up to two awards) will be announced at the 2026 International Maha Fluid Power Conference during the gala dinner on September 9th.



Best Paper and Best Presentation Awards sponsored by River Publishers and the Global Fluid Power Society ([www.gfpsweb.org](http://www.gfpsweb.org)), one award will be given to the best peer-reviewed paper presented during the conference, and up to two awards will be given to the best technical presentations. The winner of the award will be selected based on committees of experts. These awards will be announced during the closure event of the 2026 International Maha Fluid Power Conference.

## MAHA INDUSTRY ADVISORY BOARD (IAB) MEETING

The Maha IAB meeting will take place during lunch on Thursday, September 10, from 12:20 PM to 1:20 PM in STEW 202. Please note that this is a closed-door, invitation-only session. Attendees are welcome to grab their lunch beforehand and bring it to the room. For questions regarding the meeting agenda, please contact the conference chairs.

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