

International Conference

FT 2025

Fluid Power 2025



Conference Programme

CONGRESS CENTRE HABAKUK

SLOVENIA - MARIBOR, 17. - 18. SEPTEMBER 2025

## International conference Fluidna Tehnika / Fluid Power 2025

Ladies and Gentlemen!

On behalf of the organizing committee, it is a great pleasure for us to welcome you to the **jubilee international Fluid Power 2025 conference**, which will be held in **Maribor, at Habakuk Hotel and Convention Centre, on the 17 - 18. September**. The conference is intended for everyone who encounters hydraulic or pneumatic devices, and everyone who want to be informed about the "state of the art" and about innovations in the field of hydraulics and pneumatics.

Meetings of internationally renowned experts in the field of hydraulics and pneumatics have been held under the auspices of the University of Maribor since 1995. Thirty years of persistence are like a pearl, precious and beautiful, which requires time, persistence and care. Our anniversary conference will be held with another even bigger anniversary event – the 50th anniversary of the founding of the University of Maribor.

The Fluid Power Conferences are a well-known and established central biennial event of the profession in this part of Europe. The main purpose of the conference Fluid Power 2025 is to introduce the latest achievements and results of research and development work, to offer insights into daily practice, as well as present new products and services over a wide- range of applications. During these two days a wide variety of applications and technologically-oriented topics will be presented..

Organizing committee



**Wednesday, 17<sup>th</sup> September 2025 – Hall Mlinařik**

- 08:00**    *Arrival and Registration*
- 09:00**    *Opening ceremony*
- 09:30**    ***OPENING SESSION - Invited lectures***
- 10:30**    *Coffee break*
- 11:00**    ***Session I***
- 14:00 – 15:00**    *Main break - Lunch*
- 15:00**    ***Session II***
- 16:30**    ***Round table***
- 08:00 – 18:00**    ***Exhibition, Poster session***
- 18:00**    ***Social evening – Embraced by Fluid Power***

**Thursday, 18<sup>th</sup> September 2025 – Hall Mlinařik**

- 08:00**    *Registration, information*
- 09:00**    ***Session III***
- 10:30**    *Coffee break*
- 11:00**    ***Session IV***
- 12:30**    *Coffee break*
- 13:00**    ***Session V***
- 14:30**    ***Fluid Power Golden diploma award***  
***Summary of FT2025, Conclusion***
- 08:00 – 15:00**    ***Exhibition, Poster session***

*all papers will be presented in English language*



## Opening Session – Keynote Lectures

Wednesday, 17. 9. 2025 | 9:30 – 10:30 | Hall Mlinařik

### **Key Challenges for Slovenian Industry and Its European Integration**

*A. Bizjak*

*Chamber of Commerce and Industry of Slovenia, Slovenia*

### **Sustainability and Energy Efficiency in Fluid Power - Recent advancements in research and industry**

*K. Schmitz*

*RWTH Aachen University, IFAS, Germany*



**Session I:**  
**Design, Applications & Control**

**Wednesday, 17. 9. 2025 | 11:00 – 14:00 | Hall Mlinařik**

**Application of Bosch Rexroth's Servo-Hydraulic System Solutions  
(keynote lecture)**

*Y. Kamizuru*

*Bosch Rexroth's Industrial Hydraulics System Solutions, Germany*

**Uniforest Connect - Digitalization in Forestry**

*S. Grobelnik, R. Horvat*

*Uniforest d.o.o., Prebold, Slovenia*

**A Self-Optimizing Hydraulic System Approach for Agile Metal Forming**

*D. Jankovič, M. Šimic, T. Pepelnjak, N. Herakovič*

*University of Ljubljana, Slovenia*

**Numerical Optimization of Self-supporting Internal Geometry for  
Additively Manufactured Hydraulic Manifolds**

*J. Bartolj <sup>1)</sup>, K. Schmitz <sup>2)</sup>, N. Vukašinović <sup>1)</sup>, F. Majdič <sup>1)</sup>*

*<sup>1)</sup> University of Ljubljana, Slovenia, <sup>2)</sup> RWTH Aachen University, IFAS, Germany*

**Strategic Integration of Hydraulic Accumulators: Best Practices**

*T. Tašner*

*HAWE Hidravlični sistemi d.o.o., Slovenia*

**Elika, Variable Flow with Fixed Displacement Helical Pump**

*D. Persici, A. Rimondi,*

*Marzocchi Pompe S.p.A., Italia*

**Designing Educational Systems to Illustrate Mechatronic Principles  
(poster)**

*Ž. Šitum, T. Drašković, F. Hruškar, L. Meštrić, E. Stemberger, M. Antolković,*

*M. Šego*

*University of Zagreb, Croatia*



**Session II:**  
**Pneumatics and Mechatronic Systems**

**Wednesday, 17. 9. 2025 | 15:00 – 16:30 | Hall Mlinařik**

**Pneumatics Today and Tomorrow: A Review of Technology and Development Trends (keynote lecture)**

*M. Šimic, N. Heraković*  
*University of Ljubljana, Slovenia*

**Static Properties Based Classification of Pneumatic Actuators – The Potential of Progressive Effective Area over the Stroke**

*O. Reinertz*  
*RWTH Aachen University, IFAS, Germany*

**Implementation and Experimental Validation of a Time-Controlled Quick-Exhaust for Downstream Throttled Pneumatic Drives**

*L. Päßler, C. Reese, O. Reinertz, K. Schmitz*  
*RWTH Aachen University, IFAS, Germany*

**Advanced Mechatronic Systems Featuring Pneumatic Actuation**

*Ž. Šitum, F. Čavić, V. Pavlović, L. Zoričić, A. Ivanković, M. Čmelješević, B. Galić, M. Prgomet, A. Varović*  
*University of Zagreb, Croatia*

**Pneumatically Powered Hydraulic Rescue Shears for Firefighter Operations**

*B. Matkun, M. Cipek, D. Pavković, Ž. Šitum*  
*University of Zagreb, Croatia*

**Remote Control and Monitoring of a Pneumatic Workstation Using TwinCAT 3 and Beckhoff PLC (poster)**

*V. Tič, A. Muhič*  
*University of Maribor, Slovenia*

**Round Table – Shaping the future of knowledge sharing and networking in Fluid Power**



**Session III:  
Simulation & Testing**

**Thursday, 18. 9. 2025 | 09:00 – 10:30 | Hall Mlinařik**

**The Importance to Consider Advanced Fluid Properties in Flow  
Simulation of Positive Displacement Machines**

*A. Ćelik*

*Poclain Hydraulics d.o.o., Slovenia*

**Research into the Critical Influencing Parameters of a Hydraulic Tank  
when Using Two Pumps**

*F. Majdić, M. Kramar, A. Trajkovski, J. Bartolj*

*University of Ljubljana, Slovenia*

**Upfront Simulations and (their) Democratization – Where we are?**

*A. Ćelik*

*Poclain Hydraulics d.o.o., Slovenia*

**Presentation of a Mobile Testing Device for the Inspection of Ground  
Anchors of Rockfall Protection Nets in Alpine Terrain**

*J. Edler, M. Rebhan, E. Troyer*

*Graz University of Technology, Austria*

**Contribution to the Research and Failure Analysis of the Geroler  
Hydraulic Motor**

*A. Osmanović <sup>1)</sup>, D. Lovrec <sup>2)</sup>, J. Halilović <sup>1)</sup>, S. Ćosić <sup>1)</sup>*

*<sup>1)</sup> University of Tuzla, Bosnia and Herzegovina; <sup>2)</sup> University of Maribor, Slovenia*



**Session IV:**  
**Fluid Power in Hydropower Applications**  
**Thursday, 18. 9. 2025 | 11:00 – 12:30 | Hall Mlinařik**

**The Last 30 Years of Hydropower in the World and Slovenia  
(keynote lecture)**

*A. Predin, M. Kastrevc, G. Hren  
University of Maribor, Slovenia*

**Water Turbine Hydraulic Regulating System and Modifications to Meet  
Grid Stability Requirements**

*M. Hrovat  
Hainzl Motion & Drives d.o.o., Slovenia*

**Factors Affecting the Accuracy of Operation of the Electrohydraulic  
Actuation Position System with Throttling Control**

*D. Nauparac, N. Višnjic  
PPT-Engineering, Belgrade, Serbia*

**Experimental Study on Performance of Centrifugal Pump**

*B. Baloni, M. Shah, S. A. Channiwala  
National Institute of Technology-Surat, India*

**Experimental Investigation of Ultrasonic Cavitation Erosion:  
Implications for Water Turbines and Hydraulic Machinery**

*L. Kevorkijan, T. Jernejc, L. Leřnik, I. Biluř  
University of Maribor, Slovenia*





**Session V:  
Fluids & Efficiency**

**Thursday, 18. 9. 2025 | 13:00 – 14:30 | Hall Mlinařik**

**Improving Energy Efficiency Through the Use of Modern Hydraulic Oil**

*A. Hrobat <sup>1)</sup>, J. Mohorko <sup>1)</sup>, V. Tič <sup>2)</sup>, M. Kambič <sup>1)</sup>*

*<sup>1)</sup> OLMA d.o.o, Ljubljana; <sup>2)</sup> University of Maribor, Slovenia*

**Wear Particle in the Hydraulics System and Impact on the Gear Pump**

*N. Novak, A. Trajkovski, J. Bartolj, M. Kalin, F. Majdič*

*University of Ljubljana, Ljubljana, Slovenia*

**FTIR Changes of Differently Degraded Mineral Oils**

*M. Kambič <sup>1)</sup>, J. Mohorko <sup>1)</sup>, A. Hrobat <sup>1)</sup>, K. Pivec <sup>1)</sup>, D. Lovrec <sup>2)</sup>*

*<sup>1)</sup> OLMA d.o.o, Ljubljana; <sup>2)</sup> University of Maribor, Slovenia*

**Automated Detection of Compressed Air Leakage in Pneumatic Stations**

*V. Tič, A. Baligač*

*University of Maribor, Slovenia*

**FT2025**

**Fluid Power Golden Diploma Award**

**Summary and Conclusion**



## General sponsor



## Social evening sponsor



*Sinergija premikanja. Hidravlika. Pnevmatika. Linearna tehnika.*



## Sponsors



## Media sponsors



## Fluid Power 2025 Conference is Supported by



Metal Processing Association



Authorized and supervising engineers obtain  
**5 credits**

## Social Evening: Embraced by Fluid Power

Social evening, organized at the end of the first day of the conference, is a great opportunity to relax at the end of the day, and to chat with others in a pleasant atmosphere, make new contacts and exchange some ideas.

This year's social evening will be held in the noble Maribor Underground. We will enter the magical world of the Vinag Wine cellar and discover almost two centuries of winemaking and wine-making traditions beneath the streets of Maribor. Amazing wine cellar is **one of the largest and oldest classic wine cellars in Europe – it boasts an area of 15.000 m<sup>2</sup> and 2,2-kilometre-long underground tunnels.**



## Location:

---

### **Hotel Habakuk\*\*\*\***

#### **Congress centre Habakuk**

Pohorska ulica 59

SI-2000 Maribor

Tel: +386 2 300 81 00

E-mail: [habakuk@hotel-habakuk.si](mailto:habakuk@hotel-habakuk.si)

<https://habakuk-hotel.com/en/>



## Organiser:

---



Laboratory for  
Oil Hydraulics

e-mail: [laoh@um.si](mailto:laoh@um.si)  
Phone: +386 22 20 7611

prof. dr. Darko Lovrec  
e-mail: [darko.lovrec@um.si](mailto:darko.lovrec@um.si)



<http://ft.fs.um.si/>