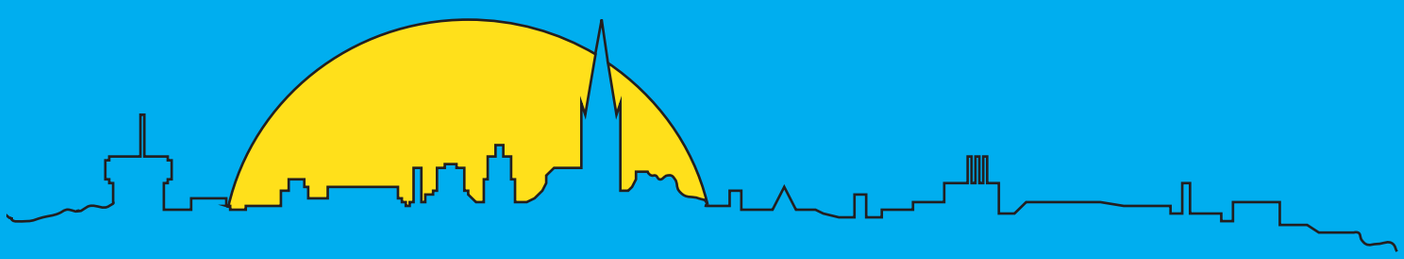
The 19th Scandinavian International Conference on Fluid Power

Linköping, Sweden
June 2 - 4, 2025

Programme



SICFP'25

SUNDAY 1st of JUNE, 2025

19:00

WELCOME RECEPTION AT ÖSTGÖTA MUSEUM DOWNTOWN

Drinks and appetizers will be served
Address: Raoul Wallenbergs plats, crossing between Vasavägen/Gråbrödragatan

MONDAY 2nd of JUNE, 2025

09:00

REGISTRATION WITH COFFEE

Linköping University, Campus Valla
Address: Building A-Hus, Hans Meijers väg

10:00

WELCOME NOTES

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Linköping University Welcomes You
Prof. Matts Karlsson
Vice-rector for Research, Linköping University, Sweden

The Conference Chair Welcomes You
Prof. Liselott Ericson
Linköping University, Sweden

Looking Back at SICFP Through the Years
Prof. Petter Krus
Linköping University, Sweden

KEYNOTE

Combining Digital Hydraulics with Electrification
Prof. Perry Y. Li
Fluid Power and Mechatronics Research Lab, University of Minnesota, USA

12:00

LUNCH

13:30

SESSION 1A
NOISE AND VIBRATION

An Approach for Evaluating Structure-Borne Noise Emission of Axial Piston Units Using Blocked Forces
Matthias Vogt
Bosch Rexroth AG &
Karlsruhe Institute of Technology, Germany

Impact of Impeller Structural Parameters on Cavitation of High-Speed Aviation Piston Pump
Hua Fang
Zhejiang University, China

Particle Dampers for Pump Noise Mitigation
Michael Lenz
Technische Universität Dresden, Germany

Measurement of a Rotary Mechanical Pulsation Compensator under Hydraulic Resonance
David Holzer
Johannes Kepler University Linz, Austria

A2

13:30

SESSION 1B
COMPONENTS 1

Development of a Hydraulic Supply System with Pressurized Reservoir for a Digital Hydraulic Actuator
Marcos Paulo Nostrani
Federal University of Santa Catarina, Brazil

Preemptive Scheduling of Multi-rod Hydraulic Infinite Linear Actuator
Robert Braun
Linköping University, Sweden

A Multi-Criteria Approach to Electro-Mechanical Actuator Selection in Non-Road Mobile Machines
Matias Alenius
Tampere University, Finland

A Foundation for the Development of Deaeration-Efficient Hydraulic Tanks
Charlotte Becker
RWTH Aachen University, Germany

ACAS

15:00

COFFEE BREAK

15:30

SESSION 2A
PUMPS 1

Physics-Informed Neural Network for Solving Hydrodynamic Lubrication Characteristics of Piston Pump Slipper Pair
Hanyu Gao
Zhejiang University, China

Data-Driven Serial Testing of Axial Piston Units: Integrating Signal Processing and Machine Learning for Roller Bearing Fault Detection
Maximilian Romeser
Bosch Rexroth AG, Germany

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Session continues on next page

15:30

SESSION 2B
COMPONENTS 2

An Inline Hydro-Mechanical Transmission (i-HMT) with a Rotatable Valve Cam to Improve Efficiency
Perry Y. Li
University of Minnesota, MI, USA

Model Predictive Control with Discrete-valued Input for Digital Valve Unit: Comparison of Differential Evolution and Genetic Algorithm
Yuhao Song
Okayama University of Science, Japan

Session continues on next page

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SESSION 2A
PUMPS 1

Session continues from previous page

A Class-incremental Learning Method based on Knowledge Distillation for Multi-Fault Diagnosis of Axial Piston Pump
Dandan Wang
Zhejiang University, China

Simulation of Hydrostatic Pockets Between the Cylinder Block and Valve Plate of a Piston-Type Pump
Thomas Heeger
Linköping University, Sweden

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SESSION 2B
COMPONENTS 2

Session continues from privious page

A Pump Decoupled Architecture to Allow Increasing Energy Efficiency of Hydrostatic Transmissions Solution Based on Fixed Displacement Secondary Units
Prithvi N. Chandiramani
Purdue University, IN, USA

A Multi-Domain Simulation Model for Gerotor Pump Performance Prediction including Thermal Modeling
Kai Ping Qwah
Purdue University, IN, USA

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TUESDAY 3rd of JUNE, 2025

08:30

SESSION 3A
ELECTRO-HYDRAULIC ACTUATORS

Experimental Investigation of Control Strategies for an Asymmetric Cylinder with Two Individually Controlled Pumps
Samuel Kärnell
Linköping University, Sweden

Health Aware Control Design for Extending Remaining Useful Life of Electro-Hydrostatic Actuator Based Steering
Simo Käki
Tampere University, Finland

Towards Full Electrification: Virtual Thermal Prototyping of a Dual-Mode Electro-Hydrostatic Actuator for a Hybrid Wheel Loader
Baoyan Hu
Beihang University, China

An Electrohydraulic Actuator for Bipedal Robots with Active-Passive Combination
Junru Hui
Zhejiang University, China

A2

08:30

SESSION 3B
MODELLING AND SIMULATION

Automated Valve Model Generation at Parker Hannifin
Viktor Larsson
Parker Hannifin, Sweden

The Multi-Pump System Combinatorial Problem: A Filtering Approach Using Genetic Algorithms
Artur Tozzi de Cantuaria Gama
Linköping University, Sweden

Accelerating Product Development: The Effort of Asset Administration Shells for Aggregated Systems
Denis Ritz
Technische Universität Dresden, Germany

CFD Analysis of Hydraulic Oscillator for Flow Separation Control
Ryuto Yoshida
Okayama University of Science, Japan

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10:00

COFFEE BREAK

10:30

SESSION 4A
APPLICATIONS

Energy Management of Hydraulic Flight Control Actuation Systems using Multi-Mode Control
Alessandro Dell'Amico
Saab AB and Linköping University, Sweden

A Vision-Based Vibration Measurement Method for Large Hydraulic Manipulator
Shuwei Yang
Zhejiang University, China

Extreme Variable-Speed Lubrication Dynamics of Cylinder Block/Valve Plate Interface Based on Neural Network Method
Baoyan Hu
Beihang University, China

New Rotary-Actuated Proportional Valves for Humanoid Robot
Franc Majdič
University of Ljubljana, Slovenia

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10:30

SESSION 4B
PUMPS 2

Reduction of Pump Flow Pulsations by Using Electric Motor Torque Pulsations
Thomas Heeger
Linköping University, Sweden

Experimental and Analytical Investigation of a Highly Integrated Electro-Hydraulic Pump Motor Unit
Lukas Matias
University of Bath and Domin, United Kingdom

Design and Efficiency Modelling of a Fixed-ratio Hydraulic Transformer
Pierre Bernard
Poclain Hydraulics Industrie, France

An Elastohydrodynamic Lubrication (EHL) Model for Radial Piston Motors
Jinhwan Lee
Purdue University, IN, USA

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12:00

LUNCH

13:30

KEYNOTE

A2

The Future of Fluid Power for Aerospace Applications
Prof. Jean-Charles Maré
INSA-Institut Clément Ader, Toulouse, France

Modular and Quiet: Steer-by-Wire and Brake-by-Wire in Mobile Machinery
Dr. Björn Eriksson
Parker Hannifin, Sweden

15:00

COFFEE BREAK IN FLUMES LAB

Ends approx. 16:00

16:00

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GFPS MEMBERS' MEETING

18:30

CONFERENCE DINNER AT CONCERT AND CONGRESS DOWNTOWN

Address: Konsistoriegatan 7

WEDNESDAY 4th of JUNE, 2025

08:30

SESSION 5A
VALVES

First Steps Towards Model-based Valve Design: Measuring Pressure Drop and Flow Forces of Industrial 2/2 Directional Poppet Valves
Timo Rothhardt
RWTH Aachen University, Germany

Sliding Contacts of 3D-Printed Direction Control Valves: Tribological Performance of Suitable Material Pairs
Ana Trajkovski
University of Ljubljana, Slovenia

SLM 3D Printed Proportional Directional Water Hydraulic Valve, Tested with Optimized Mounting Plate
Jan Bartolj
University of Ljubljana, Slovenia

Sensorless Position Estimation of Electro-Hydraulic Proportional Valve Using Dual Solenoids
Jiasheng Wang
Zhejiang University, China

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08:30

SESSION 5B
MOBILE MACHINERY

Potential of Hydraulic Waste Heat Recovery for Cabin Comfort
Fabian Lagerstedt
Huddig AB and Linköping University, Sweden

Automatic Sequential Actuation of Multiple Cylinders in Mobile Cranes using a Single Electro-Hydraulic Converter
Timofei Komarov
LUT University, Finland

Simulative Controller Evaluation for an Electro-hydrostatic Excavator Actuator with Load-Holding Capability Using Active Hysteresis and Throttling Control
Felix Figge
RWTH Aachen University, Germany

Energy Efficient Semi-Automatic Control of Loader Cranes using Reinforcement Learning
Amy Rankka
Linköping University and Hiab AB, Sweden

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10:00

COFFEE BREAK

10:30

KEYNOTES , PANEL DISCUSSION AND END NOTE

A2

Global Value Chains: Future Challenges
Prof. Jakob Rehme
Industrial Management, Linköping University, Sweden

Panel Discussion
Shaping the Future of Fluid Power

12:00

LUNCH

13:00

HOPSAN LECTURE AND TUTURIAL

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Bring your own laptop, hands-on exercises

Robert Braun
Linköping University, Sweden

SFMA
SWEDISH
FLUID MOTION
ASSOCIATION

Partners

TRANS-AUTO AB

SWEDISH FLUID MOTION ASSOCIATION

Applied Actuators Sweden AB

LINKÖPING UNIVERSITY