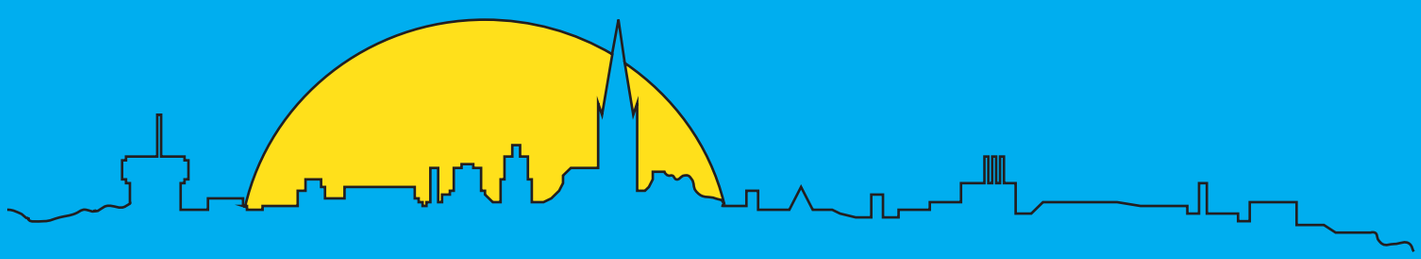
The 19th Scandinavian International Conference on Fluid Power

Linköping, Sweden
June 2 - 4, 2025

Preliminary programme



SICFP'25

SUNDAY 1st of JUNE, 2025

19:00

WELCOME RECEPTION AT ÖSTGÖTA MUSEET DOWNTOWN

Drinks and appetizers will be served
Address: crossing between Vasavägen/Gråbrödragatan

MONDAY 2th of JUNE, 2025

09:00

REGISTRATION WITH COFFEE

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

10:00

OPENING CEREMONY

10:30

WELCOME AND KEYNOTE

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Welcome, Linköping University
Prof. Liselott Ericson, Linköping University, Sweden

Combining digital hydraulics with electrification,
Prof. Perry Y. Lee
Director, Fluid Power and Mechatronics Research Lab, University of Minnesota, USA

12:00

LUNCH

13:30

SESSION 1A
NOISE AND VIBRARION

Chair:

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

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Session continues on next page

13:30

SESSION 1B
COMPONENTS

Chair:

Development of a Hydraulic Supply System with Pressurized Reservoir for a Digital Hydraulic Actuator
Henrique Frassetto Cardoso
Federal University of Santa Catarina, Brazil

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

Session continues on next page

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SESSION 1A
NOISE AND VIBRARION

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

SESSION 1B
COMPONENTS

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, Germany

ACAS

15:00 **COFFEE BREAK**

15:30

SESSION 2A
PUMP 1

Chair:

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

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
Haotian Han
Purdue University, USA

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SESSION 2B
TRANSMISSIONS AND TRANSFORMERS

Chair:

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

Experimental Validation of the Use of a Rotatable Valve Cam to Improve the Efficiency of an Inline Hydromechanical Transmission (iHMT)
Evan Sand
University of Minnesota, MI, USA

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

ACAS

TUESDAY 3rd of JUNE, 2025

08:30

SESSION 3A
ELECTRO HYDRAULIC ACTUATOR

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

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08:30

SESSION 2B
MODELLING AND SIMULATION

TBD
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

COFFEEE 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

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Session continues on next page

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, United Kingdom

Session continues on next page

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SESSION 4A
APPLICATIONS

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

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

SESSION 4B
PUMPS 2

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

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

12:00

LUNCH

13:30

KEYNOTE

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

Controlling "by-wire" is the natural next step
Dr. Björn ERIKSSON
Parker Hannifin, Sweden

15:00

COFFEEE BREAK IN FLUMES LAB

Ends appr. 16:30

18:30

CONFERENCE DINNER AT CONCERT AND CONGRESS DOWNTOWN

Address: Konsistoriegatan 7

WEDNESDAY 4th of JUNE, 2025

08:30

SESSION 6A
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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SESSION 6B
MOBILE MACHINES

Potential of Hydraulic Waste Heat Recovery for Cabin Comfort
Fabian Lagerstedt
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, Sweden

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

COFFEEE BREAK

10:30

KEYNOTES , PANEL DISCUSSION AND END NOTE

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TBD
Prof. Jakob Rehme
Industrial Management, Linköping University, Sweden

Panel Discussion - Shaping the Future of Fluid Power
Panel: TBD
Moderator TBD

12:00

LUNCH

13:00

HOPSAN LECTURE AND TUTURIAL

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Robert Braun
Linköping University

Partners

TRANS-AUTO AB

LINKÖPING UNIVERSITY