



Programme of THE TWELFTH WORKSHOP ON DIGITAL FLUID POWER

June 6-7, 2024, Tampere, Finland



Programme

Thursday, 6th, June:

9.00 – 9.30 Registration

9.30 – 10.50 Plenary Session

Chair: Matti Linjama, Tampere University

9.30 Opening of Workshop

Matti Linjama, Tampere University, Finland

9.40 Research and Activities at IHA

Tatiana Minav, Tampere University, Finland

9.50 Digital Fluid Power Market Solutions

Bernd Winkler, Linz Center of Mechatronics GmbH, Austria

10.25 Digital Water Hydraulics – Case Study on Development of Reliable Control System for ITER Remote Maintenance Tools

Harri Sairiala, Fluiconnecto Oy, Finland

10.50 – 11.15 Coffee break

11.15 – 12.30 Valves I

Chair: Bernd Winkler, Linz Center of Mechatronics GmbH

11.15 Development and Simulation of a Comprehensive Test System for Analyzing High Flow Rate Digital Flow Control Units in Hydraulic Applications

Essameldin Elsaed, Tampere university, Finland

11.40 Theoretical Analysis of a Piezo-electro-hydraulic Latch for Valve Actuation

Rudolf Scheidl, Johannes Kepler University Linz, Austria

12.05 Effect of Armature Key Parameters on Dynamic Characteristics of Fast Switching Valve

Pengyuan Zhang, Yanshan University, China

12.30 – 13.30 Lunch

13.30 – 14.45 Systems

Chair: Mikko Huova, Tampere University, Finland

13.30 Efficient and Load Sensitive Hydraulic Supply Unit using Multiple Switching Converters

Helmut Kogler, Linz Center of Mechatronics, Austria

13.55 Energy Efficient Digital Hydraulic Addon for A Composite Press in Series Production

Andreas Plöckinger, Linz Center of Mechatronics, Austria

14.20 An Integrated Compact Digital Hydraulic Converter Prototype for Hydraulic Transmission

Min Pan, University of Bath, UK

14.45 – 15.15 Coffee break



Proceedings

15.15 – 16.05 Pumps

Chair: Tatiana Minav, Tampere University, Finland

15.15 Comparative Evaluation of Valve Control Strategy for Two Types of Valves in Digital Displacement Pump for Improved Performance

Mohit Bhola, Aalborg University, Denmark

15.40 Regenerative Structural Fatigue Testing with Digital Displacement Pump/Motors

Win Rampen, The University of Edinburgh, UK

18.00 – 22.00 Gala Dinner - cruise on lake Pyhäjärvi (map how to get to cruiser at back)

Friday, 7th, June:

9.30 – 10.45 Reliability and Control

Chair: Bernhard Manhartgruber, Johannes Kepler University Linz

9.30 Digital Hydraulic Work Functions of a Prototype Wheel Loader

Mikko Huova, Tampere University, Finland

9.55 High Accuracy Control for Position Servo System Using High-Speed on/off Valves

Enguang Xu, Zhejiang University of Technology, China

10.20 Feasibility Study for Possibility for Enhancing Reliability through Optimization and Control of Digital Hydraulic Pitch System

Mohit Bhola, Aalborg University, Denmark

10.45 – 11.15 Coffee break

11.15 – 12.05 Valves II

Chair: Rudolf Scheidl, Johannes Kepler University Linz

11.15 The Limits of Classical Orifice Equation Modeling for Digital Applications with Fast Switching

Bernhard Manhartgruber, Johannes Kepler University Linz, Austria

11.40 Digital Hydraulic Control of Accumulator Flow in Hydraulic Hybrid

Matti Linjama, Tampere University, Finland

12.15 – 13.15 Lunch

13.40 – 17.00 Visit to Metso aggregates Tampere factory.

Bus starts at the front of hotel and returns at 17:00 at the latest.

Map to Gala dinner cruiser (walk)

