



FPNI Ph.D. Symposium on Fluid Power

OCTOBER 26-28 · FLORIANÓPOLIS-SC · BRAZIL 2016

FINAL PROGRAM

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WELCOME FROM THE CONFERENCE ORGANIZERS

Fluid Power Net International (FPNI) and the Laboratory of Hydraulic and Pneumatic Systems (LASHIP), at the Federal University of Santa Catarina (UFSC), organize the 9th FPNI Ph.D. Symposium on Fluid Power (FPNI2016). The symposium will take place in the beautiful and friendly city of Florianópolis, the Island of Santa Catarina, Brazil.

Since the 1st Ph.D. Symposium on Fluid Power, in 2000, the objective has been to provide a forum for young researchers from all over the world, coming from academia and industry, to exchange ideas and opinions on current research and future developments in fluid power. This year we received 53 submissions, with the final program including 45 papers from Asia, Europe, North America and South America.

The program includes a laboratory party, a dinner at a traditional Brazilian barbecue restaurant and a farewell party at the host hotel in a tourist beach. On Friday, at the end of the technical sessions, we will have a FPNI meeting.

We would like to thank the Organizing Committee, Scientific Committee, Reviewers, LASHIP's undergraduate and graduate students, UFSC Mechanical Engineering Department staff, ASME staff, and others who have given their support. Furthermore, without the support of our sponsors, this conference would not have happened, thus we thank all for that.

We are confident you will have the opportunity to be in touch with current fluid power research projects, establish contacts and cooperation with young researchers, professors, and industry experts.

Victor J. De Negri – Jonny C. da Silva – Edson R. De Pieri

General Co-Chairs FPNI 2016

ORGANIZING & SCIENTIFIC COMMITTEE

ORGANIZING COMMITTEE

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Jonny C. da Silva – *Federal University of Santa Catarina, Brazil*

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Eduardo André Perondi - *Federal University of Rio Grande do Sul, Brazil*

Eric J. Barth - *Vanderbilt University, United States of America*

Eric Bideaux - *INSA Lyon, France*

Esteve Codina - *Polytechnic University of Catalonia, Spain*

Heikki Handroos - *Lappeenranta University of Technology, Finland*

Huayong Yang - *Zhejiang University, China*

Hubertus Murrenhoff - *RWTH Aachen, Germany*

Jean-Charles Maré - *INSA Toulouse, France*

Jürgen Weber - *TU – Dresden, Germany*

Kalevi Huhtala - *Tampere University of Technology, Finland*

Kazushi Sanada - *Yokohama National University, Japan*

Kazuhiro Tanaka - *Kyushu Institute of Technology, Japan*
Kim Stelson - *University of Minnesota, United States of America*
Matti Pietola - *Aalto University, Finland*
Massimo Milani - *University of Modena and Reggio Emilia, Italy*
Monika Ivantysynova - *Purdue University, United States of America*
Nicolae Vasiliu - *University Politehnica of Bucharest, Romania*
Nigel Johnston - *University of Bath, United Kingdom*
Petter Krus - *Linköping Universit, Sweden*
Roberto Paoluzzi - *C.N.R – IMAMOTER, Italy*
Robert Rahmfeld - *Danfoss Power Solutions, Germany*
Roger Fales - *University of Missouri, United States of America*
Rudolf Scheidl - *Johannes Kepler University Linz, Austria*
Saeid Habibi - *McMaster University, Canada*
Songjing Li - *Harbin Institute of Technology, China*
Takao Nishiumi - *National Defense Academy, Japan*
Torben Andersen, *Aalborg University, Denmark*
Victor Sverbilov - *Samara State Aerospace University, Russia*

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SUPPORTING AGENCIES

- CNPq – Conselho Nacional de Desenvolvimento Científico e Tecnológico
- FAPESC – Fundação de Amparo à Pesquisa e Inovação do Estado de Santa Catarina

LIST OF PARTICIPANTS

Name	Institution	Country
Anders Hedegaard Hansen	<i>Aalborg University</i>	Denmark
Anders Petter Krus	<i>Linköping University</i>	Sweden
Andrea Vacca	<i>Purdue University</i>	USA
Anselmo Rafael Cukla	<i>Federal University of Rio Grande do Sul</i>	Brazil
Antonio Carlos Valdiero	<i>Regional University of Northwestern Rio Grande do Sul State</i>	Brazil
Artur Gama	<i>Federal University of Santa Catarina</i>	Brazil
Baoren Li	<i>Huazhong University of Science and Technology</i>	China
Bernhard Manhartgruber	<i>Johannes Kepler University</i>	Austria
Carl-Adam Torbjörnsson	<i>Saab AB</i>	Sweden
Christian Nørgård	<i>Aalborg University</i>	Denmark
Christoph Gradl	<i>Johannes Kepler University Linz</i>	Austria
Diego Mise	<i>Federal University of Santa Catarina</i>	Brazil
Edson Roberto De Pieri	<i>Federal University of Santa Catarina</i>	Brazil
Eduardo André Perondi	<i>Federal University of Rio Grande do Sul</i>	Brazil
Elvira Rakova	<i>TU Dresden</i>	Germany
Emma Frosina	<i>University of Naples "Federico II"</i>	Italy
Eric Bideaux	<i>National Institute of Applied Sciences</i>	France
Fabio Borges	<i>Federal University of Rio Grande</i>	Brazil
Felipe Francesco Vegini	<i>Federal University of Santa Catarina</i>	Brazil
Giacomo Kolks	<i>TU Dresden</i>	Germany
Guilherme Pagatini	<i>Federal University of Santa Catarina</i>	Brazil
Hamid Roozbahani	<i>Lappeenranta University of Technology</i>	Finland
Heikki Handroos	<i>Lappeenranta University of Technology</i>	Finland
Henrique Raduenz	<i>Federal University of Santa Catarina</i>	Brazil
Janne Koivumäki	<i>Tampere University of Technology</i>	Finland
Jaroslav Stryczek	<i>Wroclaw University of Science and Technology</i>	Poland
Job Angel Ledezma	<i>Federal University of Santa Catarina</i>	Brazil
Jonny Carlos da Silva	<i>Federal University of Santa Catarina</i>	Brazil
Jouni Mattila	<i>Tampere University of Technology</i>	Finland
Juliane Weber	<i>TU Dresden</i>	Germany

Julio Nelson Scussel	<i>Foundation for Research and University Extension</i>	Brazil
Jürgen Weber	<i>TU Dresden</i>	Germany
Justyna Krawczyk	<i>Wroclaw University of Science and Technology</i>	Poland
Kai Goebel	<i>National Aeronautics and Space Administration</i>	USA
Katharina Baer	<i>Linköping University</i>	Sweden
Lars Johan Persson	<i>University of Bath</i>	United Kingdom
Lizhi Shang	<i>Purdue University</i>	USA
Lubomir Marciniak	<i>Wroclaw University of Science and Technology</i>	Poland
Luciano Endler	<i>Federal Institute of Mato Grosso</i>	Brazil
Magnus Landberg	<i>Saab AB</i>	Sweden
Marcos Paulo Nostrani	<i>Federal University of Santa Catarina</i>	Brazil
Mario Destro	<i>Federal University of Santa Catarina</i>	Brazil
Martin Hochwallner	<i>Linköping University</i>	Sweden
Mateus Bertolin	<i>Federal University of Santa Catarina</i>	Brazil
Michal Banas	<i>Wroclaw University of Science and Technology</i>	Poland
Monika Ivantysynova	<i>Purdue University</i>	USA
Niels Henrik Pedersen	<i>Aalborg University</i>	Denmark
Paulo Leonel Teixeira	<i>Federal University of Santa Catarina</i>	Brazil
Per Johansen	<i>Aalborg University</i>	Denmark
Peter Kosenkov	<i>Samara State Aerospace University</i>	Russian Federation
Pietro Marani	<i>C.N.R. - IMAMOTER</i>	Italy
Piotr Strycze	<i>Wroclaw University of Science and Technology</i>	Poland
Rafael R. S. Bravo	<i>Federal Institute of Santa Catarina</i>	Brazil
Rafael Goularte	<i>Federal University of Santa Catarina</i>	Brazil
Rafael Izquierdo	<i>Federal University of Rio Grande do Sul</i>	Brazil
Rafael Tovo	<i>Technological Institute of Aeronautics</i>	Brazil
Remzija Cerimagić	<i>Aalborg University</i>	Denmark
Rene Chacon	<i>Purdue University</i>	USA
Riccardo Bianchi	<i>Purdue University</i>	USA
Rita Enquist	<i>Linköping University</i>	Sweden
Rodrigo Szpak	<i>Federal University of Santa Catarina</i>	Brazil
Roman Ivantysyn	<i>TU Dresden</i>	Germany
Ryan P. Jenkins	<i>Purdue University</i>	USA

Salimzhan Gafurov	<i>Samara National Research University</i>	Russian Federation
Shaoping Wang	<i>Beihang University</i>	China
Songjing Li	<i>Harbin Institute of Technology</i>	China
Sven Osterland	<i>TU Dresden</i>	Germany
Tatiana Minav	<i>Aalto University</i>	Finland
Thales Agostini	<i>Federal University of Santa Catarina</i>	Brazil
Thomas Schaep	<i>Terex Corporation</i>	France
Tiago Macedo	<i>Federal University of Santa Catarina</i>	Brazil
Victor Juliano De Negri	<i>Federal University of Santa Catarina</i>	Brazil
Viktor Larsson	<i>Linköping University</i>	Sweden
Viktor Sverbilov	<i>Samara National Research University</i>	Russian Federation
Vinícius Vígolo	<i>Federal University of Santa Catarina</i>	Brazil
Vitor Valente	<i>Federal University of Rio Grande do Sul</i>	Brazil
Wen Zeng	<i>Harbin Institute of Technology</i>	China
Xiangdong Kong	<i>Yanshan University</i>	China
Yesid Asaff	<i>Federal University of Santa Catarina</i>	Brazil
Zongxia Jiao	<i>Beihang University</i>	China

PROGRAM



Wednesday, October, 26



LARANJEIRA Room
Culture and Events Center
Federal University of Santa Catarina



Shuttle: Jurerê Beach Village → UFSC



8:00



FPNI 2016 - Registration



8:30 - 9:30



Coffee Break & Exhibition



9:30 - 10:00

WED-2

Hydraulic Actuators



10:00 - 12:00



Andrea Vacca, *Purdue University, Lafayette, IN, United States*

10:00 – 10:15



Welcome

Keynote Speaker

Victor J. De Negri

Federal University of Santa Catarina, Florianópolis, SC, Brazil

10:15 – 10:30



ABIMAQ - Chamber for Hydraulic, Pneumatic and Automation Equipment: Brazilian Market Overview

Invited Speaker

Maurício Garcia

Brazilian Machinery Manufacturers Association - CSHPA/ABIMAQ, Brazil

10:30 – 11:00



Challenges and Opportunities for Fluid Power

Keynote Speaker

Monika Ivantysynova

Purdue University, West Lafayette, IN, United States of America

11:00 – 11:15



Design and Research on a Hydraulic Cylinder with Plastic Components

Technical Publication: **FPNI2016-1508**

Piotr Styczek, Franciszek Przystupa, and Michal Banas

Wroclaw University of Technology, Wroclaw, Lower Silesia, Poland

11:15 – 11:30



Motion Control Concepts for the Hydraulic Infinite Linear Actuator

Technical Publication: **FPNI2016-1523**

Martin Hochwallner and Petter Krus

Linköping University, Linköping, Sweden

11:30 – 11:45



Virtual Environment With AMESim and its Integration With MATLAB-Simulink

Technical Publication: **FPNI2016-1527**

Rafael Luiz da Silva Tovo^a, Luiz Carlos Sandoval Góes^b, and Francisco Javier Triveño Vargas^a

^a *Embraer, São José dos Campos, São Paulo, Brazil*

^b *Technological Institute of Aeronautics, S. J. Campos, S. Paulo, Brazil*

11:45 – 12:00



Discussion



Lunch & Exhibition



12:00 - 13:00

WED-3

Pneumatic Systems



13:00 - 15:00



Petter Krus, *Linköping University, Linköping, Sweden*

13:00 – 13:30



A Park-like transform for fluid power systems : application to pneumatic stiffness control

Keynote Speaker

Eric Bideaux

National Institute of Applied Sciences, Villeurbanne, France

13:30 – 14:00



Pneumatic control microfluidic systems and applications

Keynote Speaker

Songjing Li

Harbin Institute of Technology, Harbin, China

14:00 – 14:15



Economy analysis for the selection of the most cost-effective pneumatic drive solution

Technical Publication: **FPNI2016-1518**

Elvira Rakova and Jürgen Weber

TU Dresden, Dresden, Germany

14:15 – 14:30



Design and Implementation of Supervisory Control for an Electropneumatic Station Subject to Faults in Material Flow

Technical Publication: **FPNI2016-1542**

Rodrigo Szpak and Max H. de Queiroz

Federal University of Santa Catarina, Florianópolis, SC, Brazil

14:30 – 14:45



Trajectory Planning Based on Firefly Metaheuristic Algorithm Applied to Pneumatically Driven Modular Robots

Technical Publication: **FPNI2016-1556**

Anselmo Rafael Cukia^a, Rafael Crespo Izquierdo^a, Eduardo Perondi^a, Mario Roland Sobczyk^a, Flavio José Lorini^a, and Jose Barata^b

^a *Federal University of Rio Grande do Sul, Porto Alegre, RS, Brazil*

^b *Nova University of Lisbon, Charneca de Caparica, Portugal*

15:45 – 15:00



Discussion



Coffee Break & Exhibition



15:00 - 15:30

WED-4

Digital and Switched Hydraulics



15:30 - 17:45



Bernhard Manhartsgruber, *Johannes Kepler University Linz, Linz, Austria*

15:30 - 16:00



When will it Break? Prognostics and Health Management at NASA

Keynote Speaker

Kai Goebel

NASA Ames Research Center, Mountain View, CA, USA

16:00 - 16:30



Why Condition Monitoring? Success case on Blow Moulding Machines

Keynote Speaker

Waldir Vianna Jr.

Argo-Hytos AT, Jarinu, São Paulo, Brazil

16:30 - 16:45



Reducing Fatigue Loading due to Pressure Shift in Discrete Fluid Power Force Systems

Technical Publication: **FPNI2016-1506**

Anders Hedegaard Hansen and Henrik C. Pedersen

Aalborg University, Aalborg, Denmark

16:45 - 17:00



LQR Feedback Control Development for Wind Turbines Featuring a Digital Fluid Power Transmission System

Technical Publication: **FPNI2016-1537**

Niels Henrik Pedersen, Per Johansen, and Torben O. Andersen

Aalborg University, Aalborg, Denmark

17:00 - 17:15



Motion Observer With On-Line Parameter Estimation for Moving-Coil Based Digital Valves in Digital Displacement Machines

Technical Publication: **FPNI2016-1543**

Christian Noergaard, Michael Bech, and Daniel B. Roemer

Aalborg University, Aalborg, Denmark

17:15 - 17:30



Discussion

17:30 - 17:45



WIEFP 2016 - Final Discussion



Laboratory Party



LASHIP



18:00 - 20:00



Shuttle: UFSC → Jurerê Beach Village



20:15



Thursday, October, 27



CATAMARÃ Room
Jurerê Beach Village Hotel

THU-1

Mobile Hydraulics



8:00 - 10:00



Jürgen Weber, TU Dresden, Dresden, Germany

8:00 – 8:30



Future trends in virtual design of fluid power driven machines

Keynote Speaker

Heikki Handroos

Lappeenranta University, Lappeenranta, South Karelia, Finland

8:30 – 8:45



Development and Construction of an Instrumentalized Workbench With a Hydraulic Motor for Farm Machine Testing

Technical Publication: **FPNI2016-1552**

Antonio C. Valdiero, Ronei O. Ziech, Mauricio S. Pinto, Ivan J. Mantovani, and Luiz A. Rasia

Regional University of Northwestern Rio Grande do Sul State, Panambi, RS, Brazil

8:45 – 9:00



Investigation of Thermal Effects in Direct Driven Hydraulic System for Off-Road Machinery

Technical Publication: **FPNI2016-1512**

Niko Karlén, **Tatiana Minav**, and Matti Pietola

Aalto University, ESPOO, Finland

9:00 – 9:15



Haptic Joystick for Improving Controllability of Remote-Operated Hydraulic Mobile Machinery

Technical Publication: **FPNI2016-1507**

Lauri Luostarinen, Rafael Aman, and **Heikki Handroos**

Lappeenranta University, Lappeenranta, South Karelia, Finland

9:15 – 9:30



Aspects of Parameter Sensitivity for Series Hydraulic Hybrid Light-Weight Duty Vehicle Design

Technical Publication: **FPNI2016-1567**

Katharina Baer, Liselott Ericson, Petter Krus

Linköping University, Linköping, Sweden

9:30 – 9:45



A Filter-Based Control Approach to Reduce Payload Oscillations in Hydraulic Cranes

Technical Publication: **FPNI2016-1563**

Riccardo Bianchi, Guido Francesco Ritelli, and Andrea Vacca

Purdue University, Lafayette, IN, United States of America

9:45 – 10:00



Discussion



Coffee Break & Exhibition



10:00 - 10:30

THU-2

Pumps and Motors



10:30 - 12:00



Monika Ivantysynova, *Purdue University, West Lafayette, IN, USA*

10:30 – 10:45



Transparent Pump?: An Approach to Visualize Lifetime Limiting Factors in Axial Piston Pumps
Technical Publication: **FPNI2016-1510**

Roman Ivantysyn and Jürgen Weber
TU Dresden, Institute of Fluid Power, Dresden, Germany

10:45 – 11:00



Designing of the Gerotor Pump Body Made of Plastics
Technical Publication: **FPNI2016-1504**

Justyna Krawczyk and Jaroslaw Stryczek
Wroclaw University of Technology, Wroclaw, Poland

11:00 – 11:15



Investigation of Instability of a Pressure Compensated Vane Pump
Technical Publication: **FPNI2016-1535**

Ryan P. Jenkins and Monika Ivantysynova
Purdue University, Lafayette, IN, United States of America

11:15 – 11:30



Advanced Virtual Prototyping of Axial Piston Machines
Technical Publication: **FPNI2016-1561**

Rene Chacon and Monika Ivantysynova
Purdue University, Lafayette, IN, United States of America

11:30 – 11:45



A Three-Dimensional CFD Methodology to Study Vane-Ring and Vane-Under-Vane Interactions of a Vane Pump Power Split Transmission
Technical Publication: **FPNI2016-1568**

Emma Frosina^a, Kim Stelson^b, Adolfo Senatore^a, Dario Buono^a, Feng Wang^b, and Haiyang Gao^c
^a *University of Naples “Federico II”, Naples, Italy*
^b *University of Minnesota, Minneapolis, MN, United States of America*
^c *Simerics Inc., Bellevue, WA, United States of America*

11:45 – 12:00



Discussion



Lunch & Exhibition



12:00 - 13:00



Heikki Handroos, *Lappeenranta University, Lappeenranta, SK, Finland*

13:00 – 13:30



High reliability technologies of aircraft power supply and actuation system

Keynote Speaker

Shaoping Wang

Beihang University, Beijing, China

13:30 – 13:45



A Generic Model Based Tracking Controller for Hydraulic Valve-Cylinder Drives

Technical Publication: **FPNI2016-1522**

Anders Hedegaard Hansen, Lasse Schmidt, Henrik C. Pedersen, Torben O. Andersen

Aalborg University, Aalborg, Denmark

13:45 – 14:00



Stability-Guaranteed Variable Impedance Control of Hydraulic Manipulators With Multiple Cartesian Degrees of Freedom

Technical Publication: **FPNI2016-1565**

Janne Koivumäki and Jouni Mattila

Tampere University of Technology, Tampere, Finland

14:00 – 14:15



A Hybrid Feedback Linearization and Neural Network Control Algorithm Applied to a Hydraulic Actuator

Technical Publication: **FPNI2016-1562**

Fabio A. P. Borges^a, Eduardo Perondi^a, Mauro A. B. Cunha^b, and Mario Roland Sobczyk^a

^a *Federal University of Rio Grande do Sul, Porto Alegre, RS, Brazil*

^b *Rio Grande's Southern Federal Institute, Pelotas, RS, Brazil*

14:15 – 14:30



Closed-Loop Pressure Feedback Control of a Pressure-Driven Microdroplet

Technical Publication: **FPNI2016-1524**

Wen Zeng, Hai Fu, Songjing Li

Harbin Institute of Technology, Harbin, Heilongjiang, China

14:30 – 15:00



Discussion



Coffee Break & Exhibition



15:00 - 15:30

THU-4

Noise and Vibration



15:30 - 17:00

Baoren LI, *Huazhong University of Science and Technology, Wuhan, China*

15:30 – 15:45

**The Finite Difference Technique for Modelling of Pipe System Vibroacoustical Characteristics**Technical Publication: **FPNI2016-1533**Tatiana Mironova^a, Andrey Prokofiev^a, and Victor Sverbilov^b^a Samara State Aerospace University, Samara, Russia^b Samara National Research University, Samara, Russia

15:45 – 16:00

**Simulation of Gear Pump Noise Generation**Technical Publication: **FPNI2016-1531**

Salmzhan Gafurov, Leonid V. Rodionov and Georgy Makaryants

Samara State Aerospace University, Samara, Russia

16:00 – 16:15

**Suppression of High Frequency Oscillations on Suspension System of Snow Groomer With Evolutionary Algorithms Optimization**Technical Publication: **FPNI2016-1534**

Pietro Marani and Cristian Ferrari

IMAMOTER CNR, Cassana (FE), Italy

16:15 – 16:30

**Active Pneumatic Vibration Isolator With Pressure Feedback**Technical Publication: **FPNI2016-1544**Georgy Makaryants^a, Peter Kosenkov^a, and Victor Sverbilov^b^a Samara State Aerospace University, Samara, Russia^b Samara National Research University, Samara, Russia

16:30 – 17:00

**Discussion****Shuttle:** Jurerê Beach Village → Ataliba Restaurant

19:30

**Conference Dinner**

ATALIBA Restaurant



20:00 - 23:00

**Shuttle:** Ataliba Restaurant → Jurerê Beach Village

23:15



Friday, October, 27



CATAMARÃ Room
Jurerê Beach Village Hotel

FRI-1

Tribology



8:00 - 10:00



Songjing Li, Harbin Institute of Technology, Harbin, China

8:00 – 8:30



Oscillations suppression in pipe systems by means of compensators

Keynote Speaker

Victor Sverbilov

Samara National Research University, Samara, Russia

8:30 – 8:45



A Combined Hydrostatic Hydrodynamic Bearing Based on Elastic Deformation

Technical Publication: **FPNI2016-1520**

Christoph Gradl and Rudolf Scheidl

Johannes Kepler University Linz, Linz, Austria

8:45 – 9:00



State of the Art Review on Theoretical Tribology of Fluid Power Displacement Machines

Technical Publication: **FPNI2016-1539**

Remzija Cerimagic, Per Johansen, Torben O. Andersen, and Henrik C. Pedersen

Aalborg University, Aalborg, Denmark

9:00 – 9:15



An Investigation of Design Parameters Influencing the Fluid Film Behavior in Scaled Cylinder Block/Valve Plate Interface

Technical Publication: **FPNI2016-1540**

Lizhi Shang and Monika Ivantysynova

Purdue University, Lafayette, IN, United States of America

9:15 – 9:30



Influence of the Lubricant Thermo-Piezo-Viscous Property on Hydrostatic Bearings in Oil Hydraulics

Technical Publication: **FPNI2016-1551**

Per Johansen, Daniel B. Roemer, Torben O. Andersen, and Henrik C. Pedersen

Aalborg University, Aalborg, Denmark

9:30 – 9:45



Analysis of the Thermo-Viscous Effect on Friction and Energy Dissipation in Oil Lubricated Interfaces

Technical Publication: **FPNI2016-1554**

Per Johansen, Daniel B. Roemer, Torben O. Andersen, and Henrik C. Pedersen

Aalborg University, Aalborg, Denmark

9:45 – 10:00



Discussion



Coffee Break & Exhibition



10:00 - 10:30



10:30 – 10:45

**An Analytic Approach to Cascade Control Design for Hydraulic Valve-Cylinder Drives**Technical Publication: **FPNI2016-1521**Lasse Schmidt, **Anders Hedegaard Hansen**, Torben O. Andersen, and Henrik C. Pedersen
Aalborg University, Aalborg, Denmark

10:45 – 11:00

**Modelling of the Swash Plate Control Actuator in an Axial Piston Pump for a Hardware-in-the-Loop Simulation Test Rig**Technical Publication: **FPNI2016-1570****L. Viktor Larsson** and Petter Krus
Linköping University, Linköping, Sweden

11:00 – 11:15

**Lyapunov Based Adaptive Control Method for Hydraulic Servo Drive**Technical Publication: **FPNI2016-1571****Hamid Rozbahani**, Konstantin Frumkin and Heikki Handroos
Lappeenranta University, Lappeenranta, South Karelia, Finland

11:15 – 11:30

**Control of an Electrohydraulic Stewart Platform Manipulator as Vessels Motion Simulator**Technical Publication: **FPNI2016-1553**Rodrigo Manuel Lebrón García^a, **Vítor Tumelero Valente**^b, Mario Roland Sobczyk^b and Eduardo André Perondi^b^a *University of Oklahoma, Norman, OK, United States of America*^b *Federal University of Rio Grande do Sul, Porto Alegre, RS, Brazil*

11:30 – 11:45

**Thermal Impact of Different Cooling Sleeve's Flow Geometries in Motorized High-Speed Spindles of Machine Tools**Technical Publication: **FPNI2016-1517****Juliane Weber**, Linart Shabi and Jürgen Weber
TU Dresden, Dresden, Germany

11:45 – 12:00

**Discussion****Lunch & Exhibition**

12:00 - 13:00

Eric Bideaux, *National Inst. of Applied Sciences, Villeurbanne, France*

13:00 – 13:30

**Individualized Structures in Fluid Power Drive Systems**

Keynote Speaker

Jürgen Weber*TU Dresden, Dresden, Germany*

13:30 – 13:45

**Nonsymmetrical Flow Compensation Using Hydraulic Accumulator in Direct Driven Differential Cylinder Application**Technical Publication: **FPNI2016-1516**Alexander Järf, **Tatiana Minav**, and Matti Pietola*Aalto University, Espoo, Finland*

13:45 – 14:00

**Combined Kinetic and Potential Energy Recovery Solution Applied to a Reach Stacker**Technical Publication: **FPNI2016-1509****Thomas Schaep**^a, Eric Noppe^b, Eric Bideaux^a, Pierre Rodot^c, Wilfrid Marquis-Favre^a, Jean-Christophe Bernigaud^c, and Vincent Langlois^c^a *National Institute of Applied Sciences, Villeurbanne, France*^b *Technical University of Compiègne, Compiègne, France*^c *Terex Cranes France, Saint-Vallier, France*

14:00 – 14:15

**Controller Design for Precise and Efficient Industrial Cylinder Drives Using Independent Metering Valves**Technical Publication: **FPNI2016-1514****Giacomo Kolks** and Jürgen Weber*TU Dresden, Dresden, Germany*

14:15 – 14:30

**Heuristic Control Strategy of a Novel Hydraulic/Pneumatic Concept of Regenerative System for Commercial Hybrid Vehicles**Technical Publication: **FPNI2016-1564****Rafael Rivellino da Silva Bravo**^a, Victor J. De Negri^b, and Amir A. M. Oliveira Junior^b^a *Federal Institute of Santa Catarina, Criciúma, SC, Brazil*^b *Federal University of Santa Catarina, Florianópolis, SC, Brazil*

14:30 – 15:00

**Discussion****Coffee Break & Exhibition**

15:00 - 15:30

FRI-4

Hydraulic Valves



15:30 - 17:00



Victor Sverbilov, Samara National Research University, Samara, Russia

15:30 – 15:45

**The Design and Theoretical and Experimental Study of the Plastic Hydraulic Valves**Technical Publication: **FPNI2016-1511****Lubomir Marciniak**, Michal Banas and Jaroslaw Stryczek*Wroclaw University of Technology, Wroclaw, Poland*

15:45 – 16:00

**Dynamic Modelling and Performance of a Two Stage Piezoelectric Servovalve**Technical Publication: **FPNI2016-1538****Johan Persson**^a, Andrew Plummer^a, Christopher R. Bowen^a, and Phil Elliott^b^a *University of Bath, Bath, United Kingdom*^b *Moog Controls, Tewkesbury, United Kingdom*

16:00 – 16:15

**A Numerical Study of High Pressure Flow Through a Hydraulic Pressure Relief Valve Considering Pressure and Temperature Dependent Viscosity, Bulk Modulus and Density**Technical Publication: **FPNI2016-1515****Sven Osterland** and Jürgen Weber*TU Dresden, Dresden, Germany*

16:15 – 16:30

**Evaluation of an On-Line Fault Detection Method for Proportional Hydraulic Valves**Technical Publication: **FPNI2016-1569****Henrique Raduenz**^a, Pedro P. C. Bastos^b, Fábio J. Souza^b, Desyel Ferronato^b, Victor J. De Negri^a, and João M. C. Soares^b^a *Federal University of Santa Catarina, Florianópolis, SC, Brazil*^b *REIVAX S/A Automation and Control, Florianópolis, SC, Brazil*

16:30 – 17:00

**Discussion**

FPNI Meeting



17:00 - 17:45



Andrea Vacca, Purdue University, Lafayette, IN, United States



Farewell Party



Carijós BAR



19:00 - 00:00