

River Publishers Series in Proceedings

2022 Global Fluid Power Society Ph.D. Symposium

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Editors:
Adolfo Senatore, University of Naples Federico II, Italy
Emma Frosina, University of Sannio, Benevento, Italy

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Description:

On behalf of the Organizing Committee, we welcome you to the *Conference Proceedings of the 2022 Global Fluid Power Society PhD Symposium (GFPS2022)*. The Symposium is a bi-annual event organized by the Global Fluid Power Society (GFPS) to showcase and brainstorm on research carried out by junior investigators in fluid power. GFPS Society was created in 2016 to merge two long-lasting fluid power organizations: Fluid Power Net International (FPNI) and Network of Fluid Power Centres in Europe (FPCE). GFPS inherits the spirit of both FPNI and FPCE and currently represents the world's largest scientific network of fluid power institutions.
Since its first edition, the *GFPS PhD Symposium* represents an international meeting place in the world of research in the field of Fluid Power involving national and international institutions, academia, and companies in a discussion on the most recent results of scientific and technological research for the fluid power industry, with particular emphasis to applications and new trends. Attention is paid to, but not limited to, new technology in the fluid power, power transmissions and motion control fields.
The first edition of the *GFPS PhD Symposium* was hosted by the University of Samara, Russia, in 2018; then, after two years of emergency, the COVID-19 outbreak forced the edition 2020 expected in Guilin, China, and organized by the Harbin Institute of Technology di Harbin, to be held online. 2022 is finally coming back to normality!
In 2022, our expectation of hosting you all in Italy and its world-famous Naples has been realized! The program is arranged to offer the possibility of visiting Naples before, during and after the Symposium!
The University of Naples and the University of Sannio coordinate the organization.
The *GFPS2022* Program is highly varied, including plenary sessions, regular technical sessions with 61 oral presentations, two industry panel sessions, and special events devoted to students, young professionals, professors, and industries, scheduled over three days.
Presentations are organized in 2 General Sessions and 14 Special Sessions. Special Sessions aim to create a focus on specific topics, where researchers can gain knowledge, familiarize themselves, exchange ideas, and build cooperation.
The received papers were submitted for peer review. Relevance, quality, significance, and novelty of the scientific contribution were the main attributes for acceptance and publication in the Proceedings. The International Journal of Fluid Power publishes the Proceedings. We want to thank all the reviewers who actively contributed to the selection and quality improvement of the presented works.
GFPS PhD Symposium 2022 is honoured to have experts in Fluid Power as Invited Speakers.

- Prof. Rudolf Scheidl, from Johannes Kepler University, Austria, will present the first day of “Symbiotic Fluid Power”.
- Prof. Katharina Schmitz, from RWTH Aachen University, Germany, will present “Fluid Power – A sustainable motion technology” on October 13.
- Prof. Kim A. Stelson, from the University of Minnesota, US, will give a talk on “Energy Saving Fluid Power Technology for Off-Highway Vehicles” on the last day of the Symposium.

We are grateful to the Invited Speakers for joining the Symposium.
To recognize the most outstanding papers presented at the bi-annual *2022 Global Fluid Power Society PhD Symposium*, a Backé Medal sponsored by the Global Fluid Power Society, a Best Conference Paper Award sponsored by MDPI Fluids Journal, and a Best Conference Paper Award sponsored by the Symposium Organizers will be assigned.
We sincerely want to thank all the sponsors and the patronages who made this event possible.
The *2022 Global Fluid Power Society PhD Symposium* is about to begin. Students, professors, and engineers enjoy the Workshop!

Keywords: Pumps and motors; Fluid power components, architectures and systems; Control methodologies for fluid power systems and applications; Novel energy efficient components and systems; Digital and switched fluid power systems; Fluid power drives and transmissions; Safety, reliability, fault analysis and diagnosis; Noise and vibration; Fluid power in renewable energy, robotics, mechatronics and other applications; Human scale, and mobile self-powered fluid power;

Denmark Head Office
Alsbjergvej 10
9260 Gistrup
Denmark
www.riverpublishers.com
Email: info@riverpublishers.com

USA Office
Indianapolis, IN
USA
Tel.: +1-3176899634
Email: rajeev.prasad@riverpublishers.com

UK Office
River Publishers
Email: philippa.jefferies@riverpublishers.com