L'INSTITUT INDO-CANADIEN SHASTRI INDO-CANADIAN INSTITUTE

SICI Sponsored Lecture Series on

Recent Advances in Hydraulic Technology for Linear Actuation: Insights into Digital Technology, Efficiency and Performance

SHASTRI CONFERENCE AND LECTURE SERIES GRANT (SCLSG) 2023-24

Registration Link:
https://rb.gy/4dqic9

Event Organizer:

Dr. Ajit Kumar
Assistant Professor
Department of Mechanical Engineering
FIC (Innovation and Skill Development)
Indian Institute of Technology (Indian School of Mines) Dhanbad
Dhanbad (826004), Jharkhand, India
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L'INSTITUT INDO-CANADIEN SHASTRI INDO-CANADIAN INSTITUTE

ABOUT SICI

SHASTRI CONFERENCE AND LECTURE SERIES GRANT (SCLSG) 2023-24

The Shastri Indo-Canadian Institute (SICI) is a unique bi-national organization mandated by the governments of India and Canada to promote, facilitate, and nurture academic linkages, collaborations & exchanges, research partnerships, and networks on bi-national corridors. With its physical presence in New Delhi, India, and Calgary, Canada, and a strong base of 154 Indian and 40 Canadian member institutions, for the past 55 years, SICI has been the only organization in the Canada-India higher education corridor that has been instrumental in building and strengthening intellectual and cultural relationship through research and dialogue. Funded by the Ministry of Education, Government of India, it supports diverse disciplines, including Social Sciences, Humanities, Science and Technology, Biotechnology, Agriculture, Arts, Literature, Culture, Law, Business, Economic Reform, etc., and covers all levels of higher education from undergraduate to postdoc and from faculty to collaborative research.

Legacy that Inspires the Future

भारतीय प्रौद्योगिकी संस्थान
भारतीय खनि विद्यापीठ
धनबाद

IIT ISM INDIAN INSTITUTE OF TECHNOLOGY INDIAN SCHOOL OF MINES DHANBAD

ABOUT IIT(ISM)

SHASTRI CONFERENCE AND LECTURE SERIES GRANT (SCLSG) 2023-24

The Indian School of Mines (ISM) was formally opened on 9 December 1926 by Lord Irwin, the then Viceroy of India, to address the need for trained manpower related to mining activities in the country with disciplines of mining and applied geology. In 1967, it was granted the status of a deemed to be university under Section 3 of the UGC Act, 1956. Since its establishment, ISM has considerably expanded its activities, and presently, it can be considered a total technology education institute. In August 2016, it was converted into the Indian Institute of Technology (Indian School of Mines) and notified inthe Gazette of India.

The Department of Mechanical Engineering started the journey in 1999 and completed 22 years with excellence. Presently, the department is the largest in the institute in terms of faculty strength and academic infrastructure. The department offers two UG courses, one in Mechanical Engineering and another in Mining Machinery Engineering. The UG and PG students are working with the faculties in the fields of fluid power technology, microfluidics, aero-acoustics, bubble dynamics, biomechanics, robotics, renewable energy, tribology, refrigeration, modern manufacturing, mining machinery along with conventional thermal engineering and machine design.

SHASTRI LECTURE SERIES 2023-24

PREAMBLE

Global market competitiveness necessitates improved productivity, efficiency, and safety in manufacturing and process industries. Hydraulic technology is crucial for mobile equipment deployed in agriculture, construction, and mining. Advancements in linear actuation, digital technology integration, and electro-hydraulic systems have revolutionized industrial automation, leading to higher productivity, lower downtime, and sustainable operations. New technologies like variable speed drives and energy recovery systems have been developed to reduce energy consumption and increase overall system efficiency. Following the significance of advancements in hydraulics with a particular focus on linear actuation, the lecture series "***Recent Advances in Hydraulic Technology for Linear Actuation: Insights into Digital Technology, Efficiency and Performance***" aims to deliberate on new research results of hydraulic actuation technology with detailed insights into its digitalization, performance, and efficiency. Experts in the relevant fields from academia and industry will deliver lectures and share their expertise with the participants to acquaint them with the innovations and developments in digital hydraulic technology for linear actuation. **The lecture series is funded by the Shastri Indo-Canadian Institute (SICI) through the Shastri Conference and Lecture Series Grant (SCLSG) 2023-2024 and facilitated by IIT (ISM) Dhanbad.**

SPEAKER

UNDERSTANDING HYDRAULIC SYSTEMS, OPERATIONAL CHARACTERISTICS AND APPLICATIONS

JOIN US LIVE VIA ZOOM ON:

10 Feb 2024 SATURDAY

7:00 PM TO 8:30 PM

Dr. Ajit Kumar
Assistant Professor
Mechanical Engineering
IIT (ISM) Dhanbad

ABOUT THE SPEAKER

Dr. Ajit Kumar is an Assistant Professor in the Department of Mechanical Engineering at IIT (ISM) Dhanbad. He has more than ten years of extensive teaching and research experience in the domain of mining machinery and fluid power engineering. As an Assistant Manager, Dr. Kumar served Milupara Underground Coal Mine, MIEL, Raigarh, with hands-on experience on underground equipment such as Mine Pumps, Haulage systems, and LHD machines. He was also one of the key members of the Underground Man Riding System Installation Project Team at Milupara Underground Coal Mine. He was involved in planning the sump area, mine pump installation, and laying haulage tracks. His research credentials include developing an energy-saving strategy using a hydraulic accumulator as a power assist unit (PAU) for the enhanced steering operation of a typical off-road vehicle, such as a Load Haul Dump (LHD) machine. He has completed one TEQIP-sponsored research project titled "Improving Energy Efficiency by Analysis of Potential Energy Regeneration in Hydraulic System of Heavy-Duty Vehicles." Prof. Kumar is currently engaged as Co-PI in a CRG, SERB-sponsored project titled "Enhancing the Operational Efficiency of a Hydraulic Excavator Machine by Introducing a Novel Energy Recuperative Mechanism." He has published more than 50 research papers in the domain of fluid power technology in various peer-reviewed journals and conferences. He also has one design patent and one utility patent on his name in the said domain. Prof. Kumar received several national and international awards for his remarkable contribution to research and teaching.

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Meeting ID: 811 0425 5953; Passcode: 799041 (Time - 7.00 PM to 8.30 PM, IST)

SPEAKER

HYDROSTATIC LINEAR ACTUATION SYSTEM: INSIGHTS INTO EFFICIENCY AND PERFORMANCE

JOIN US LIVE VIA ZOOM ON:

11 Feb 2024 SUNDAY

7:00 PM TO 8:30 PM

Prof. Nariman Sepehri

Professor
Mechanical Engineering
University of Manitoba, Canada

ABOUT THE SPEAKER

Prof. Nariman Sepehri is a Professor of Mechanical Engineering at the University of Manitoba, Canada. He received his PhD degree from the University of British Columbia, Canada. He served as Department Associate Head (Graduate Studies) of Mechanical Engineering, Associate Dean of Engineering (Undergraduate Programs), and Acting Dean of Engineering at the University of Manitoba. He received the Dean of Engineering's Award for Superior Academic Performance and the University of Manitoba Rh Award for outstanding contributions to scholarships and research in Applied Sciences. Sepehri is a Senior Member of IEEE, Fellow of ASME, Fellow CSME, Fellow CAE, Past-Chair ASME Fluid Power Systems and Technology Division, Co-founder and Chair of IEEE Winnipeg Robotics, Control, Instrumentation and Measurement (RobConIM) Chapter and has been the Associate Editor and Editorial Board member of several journals including ASME Journal of Dynamics Systems, Measurement and Control, International Journal of Control and, IFAC Control Engineering Practice. Research and development activities of Sepehri are primarily centered on fluid power-related aspects of systems, manipulation, diagnosis, and control covering a wide range of applications: robotics (mining/underwater hydraulic manipulators), manufacturing (injection molding), aerospace (flight control actuators), off-highway (excavator machines), processes and healthcare (assistive devices). He has collaborated with researchers in the USA, Brazil, China, Hungary, Romania, Denmark, Sweden and France. His research contributions include the publication of over 160 journal articles and book chapters and over 140 conference papers. He holds seven patents and is co-author of a textbook by Wiley. More than 100 persons at Master's, Doctoral, or Postdoctoral levels conducted their research under his supervision.

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Meeting ID: 811 0425 5953; Passcode: 799041 (Time - 7.00 PM to 8.30 PM, IST)

SPEAKER

FAULT DIAGNOSIS AND CONDITION MONITORING TECHNIQUES IN HYDROSTATIC TRANSMISSION DRIVES

JOIN US LIVE VIA ZOOM ON:

12 Feb 2024 MONDAY

7:00 PM TO 8:30 PM

Prof. Nariman Sepehri
Professor
Mechanical Engineering
University of Manitoba, Canada

ABOUT THE SPEAKER

Prof. Nariman Sepehri is a Professor of Mechanical Engineering at the University of Manitoba, Canada. He received his PhD degree from the University of British Columbia, Canada. He served as Department Associate Head (Graduate Studies) of Mechanical Engineering, Associate Dean of Engineering (Undergraduate Programs), and Acting Dean of Engineering at the University of Manitoba. He received the Dean of Engineering's Award for Superior Academic Performance and the University of Manitoba Rh Award for outstanding contributions to scholarships and research in Applied Sciences. Sepehri is a Senior Member of IEEE, Fellow of ASME, Fellow CSME, Fellow CAE, Past-Chair ASME Fluid Power Systems and Technology Division, Co-founder and Chair of IEEE Winnipeg Robotics, Control, Instrumentation and Measurement (RobConIM) Chapter and has been the Associate Editor and Editorial Board member of several journals including ASME Journal of Dynamics Systems, Measurement and Control, International Journal of Control and, IFAC Control Engineering Practice. Research and development activities of Sepehri are primarily centered on fluid power-related aspects of systems, manipulation, diagnosis, and control covering a wide range of applications: robotics (mining/underwater hydraulic manipulators), manufacturing (injection molding), aerospace (flight control actuators), off-highway (excavator machines), processes and healthcare (assistive devices). He has collaborated with researchers in the USA, Brazil, China, Hungary, Romania, Denmark, Sweden and France. His research contributions include the publication of over 160 journal articles and book chapters and over 140 conference papers. He holds seven patents and is co-author of a textbook by Wiley. More than 100 persons at Master's, Doctoral, or Postdoctoral levels conducted their research under his supervision.

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Meeting ID: 811 0425 5953; Passcode: 799041 (Time - 7.00 PM to 8.30 PM, IST)

SPEAKER

PROPORTIONAL HYDRAULICS FOR EFFICIENT ELECTRO-HYDRAULIC ACTUATION

JOIN US LIVE VIA ZOOM ON:

13 Feb 2024 TUESDAY

7:00 PM TO 8:30 PM

Dr. Somashekhar S. Hiremath
Professor
Mechanical Engineering
IIT Madras

ABOUT THE SPEAKER

Dr. Somashekhar received a Doctoral Degree in 2004 from the Indian Institute of Technology Madras, Chennai, Tamil Nadu, India. He has published more than 150 papers at the national and international levels. He has delivered more than 75 invited talks on various topics related to his research at engineering colleges, universities, research centers, industries, and conferences. Currently, he is handling many consultancy and sponsored projects for various industries and R&D institutions of defense and the government of India. His current research areas are Mechatronic System Design-System Simulation and Modeling, Robotics, Finite Element Modeling – basically Fluid-Structure Interactions, Micromachining, Advanced machining processes – Hybrid Processes and Fluid Power Systems. He has received several recognition and awards for his exemplary contribution to teaching and research.

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Meeting ID: 811 0425 5953; Passcode: 799041 (Time - 7.00 PM to 8.30 PM, IST)

SPEAKER

SERVO CONTROL IN LINEAR HYDRAULIC ACTUATION SYSTEM FOR ENHANCED PERFORMANCE

JOIN US LIVE VIA ZOOM ON:

14 Feb 2024 WEDNESDAY

7:00 PM TO 8:30 PM

Mr. Krishna Singh
Senior Manager
Bosch-Rexroth Pvt. (I) Ltd.

ABOUT THE SPEAKER

Mr. Krishna Singh is presently working as a Senior Manager at Bosch Rexroth, India. Mr. Singh is a passionate Mechanical Engineer with 22+ years of extensive experience in Hydraulic system applications and technical support. He has worked in various capacities in several reputed industries like Ambuja Cement Ltd. And Wirtgen India Pvt. Ltd. He is highly skilled at monitoring equipment and machinery performance and developing preventative maintenance measures. He is efficient in conducting quality assurance and safety checks on all equipment and delivering demonstrations to ensure that customers are educated on safe and effective equipment use and easy maintenance and troubleshooting. He has been involved in several international industrial projects, such as the Bulk Material Handling project in Vietnam, the Hydro-Thermal Dam project in Bhutan, and the Bangladesh-India Friendship Power Project.

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Meeting ID: 811 0425 5953; Passcode: 799041 (Time - 7.00 PM to 8.30 PM, IST)

SPEAKER

DIGITAL HYDRAULICS TECHNOLOGY FOR MOBILE APPLICATIONS: EMPHASIS ON LINEAR ACTUATION

JOIN US LIVE VIA ZOOM ON:

15 Feb 2024 THURSDAY

7:00 PM TO 8:30 PM

Mr. Manoranjan Jena
Senior Mechanical Engineer – Hydraulic Technology
Volvo CE India Private Limited

ABOUT THE SPEAKER

Mr. Manoranjan Jena is presently working with Volvo CE as a Senior Mechanical Engineer-Hydraulic. He is responsible for design and development of hydraulic system for Volvo CE machines. He received his M-Tech degree in Machine Design Engineering from BITS Pilani. Mr. Jena is a dedicated mechanical engineer with 10 years of work experience in research and development of mobile hydraulic components, mobile hydraulic systems, and its application engineering. He has also extensive work experience in the development of advanced powertrain & gear drive motion systems. Mr. Jena is also pursuing his industrial PhD research at IIT (ISM), Dhanbad.

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Meeting ID: 811 0425 5953; Passcode: 799041 (Time - 7.00 PM to 8.30 PM, IST)

SPEAKER

TECHNOLOGICAL ADVANCEMENTS IN HYDROSTATIC HYBRID TRANSMISSION DRIVES

JOIN US LIVE VIA ZOOM ON:

16 Feb 2024 FRIDAY

7:00 PM TO 8:30 PM

Dr. Niranjan Kumar
Associate Professor
Mechanical Engineering
IIT (ISM) Dhanbad

ABOUT THE SPEAKER

Dr. Niranjan Kumar is presently working as an Associate Professor in the Department of Mechanical Engineering, IIT (ISM) Dhanbad. He has over ten years of extensive teaching and research experience in mining machinery and fluid power engineering at IIT (ISM) Dhanbad. He has developed the simulation model of the components and the hydraulic system of various heavy machinery like wheel loaders and excavators on different simulation platforms like Symbol Shakti, MATLAB, and Automation Studio. He also developed the energy-saving strategy for the cyclic operation of the wheel loader. He has received research grants from DST(CRG) and TEQIP. Also, Dr. Niranjan Kumar has completed the Design and Vetting of 5 Cum Hydraulic Excavator manufactured by HEC, Ranchi. Moreover, he is the faculty in-charge of the Power Hydraulics and Pneumatics lab and is involved in academic and research activities concerning fluid power and control.

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