

14th International Conference on Pressure Surges Eindhoven, The Netherlands; 12th - 14th April 2023

Keynote Speaker

Wayne Kirsner, PE
Principal, Kirsner Consulting Engineering, USA



Mr Kirsner is a forensic engineer who Investigates steam accidents where water hammer is a likely cause. He also performs consulting work to review and recommend system changes for steam systems where water hammer is a concern. He provides 2-day seminars on Understanding Waterhammer in Steam System for operators, steam fitters, and Engineers. Over 150 seminars have been delivered in the U.S., Canada, Scotland, Australia, and New Guinea since 1998. He has authored 9 articles in engineering magazines explaining what causes Condensation Induced Waterhammer. Specifics of each accident investigation and consulting project are described on the Accidents and Investigations page of his web site at <http://kirsner.org/pages/forensicResAlt.html>. Articles are there too. Education: MS Physics, 1973, BSME 1980, Georgia Tech. Mr. Kirsner has been Professional Engineer since 1983.

Presentation Title:

Understanding the 1994 Hanford Power House Condensation-Induced Waterhammer Accident that Befuddled Engineers Until a Working Model was Built that Demonstrated What Happened

14th International Conference on Pressure Surges Eindhoven, The Netherlands; 12th - 14th April 2023

Keynote Speaker

Ouajih Hamouda, PhD, PEng

Piping and Components Analyst | Ontario Power Generation | Canada



Dr Ouajih Hamouda is a Senior Design Engineer at Ontario Power Generation. He earned his PhD in Mechanical Engineering at McMaster University. He has worked on practical, experimental, and numerical Fluid-Structure Interaction problems in the nuclear industry and is experienced in the fields of stress analysis, fluid transients, two-phase flows, and flow-induced vibrations. He has published and reviewed research articles in scientific journals including the International Journal of Multiphase Flow, the Journal of Fluids and Structures, and the Journal of Pressure Vessel Technology. He has presented at technical meetings such as ASME PVP, CANCAM, CNS, CSME, ICTAM, FSI and FIV&N, and NURETH.

Presentation Title and Abstract:

Leonhard Euler's derivation of the water-hammer equations in 1775

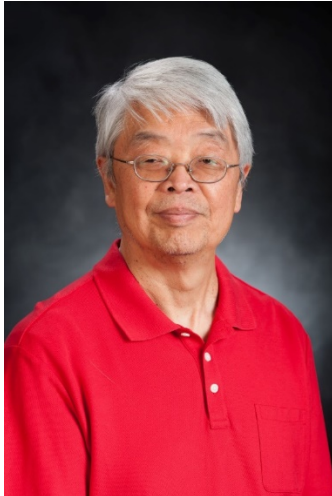
The presentation and accompanying paper describes the first known appearance of the water-hammer equations in the archival history. The equations were derived in an article by Leonhard Euler that may have been submitted for a prize competition in 1742, was presented to the Petersburg Academy in 1775, was partially published in 1862, and was finally completed with a newly discovered missing fragment in 1979. Study of this historical work reveals a significant scientific and mathematical breakthrough that underpins much of late 19th and early 20th century developments in transient hydraulics. Here, the history of this remarkable achievement is traced, and the work is placed in historical context as it relates to the theory of fluid transients today.

14th International Conference on Pressure Surges Eindhoven, The Netherlands; 12th - 14th April 2023

Keynote Speaker

Jim C. P. Liou, Ph.D., P.E.

**Professor of Civil and Environmental Engineering, University of Idaho,
Moscow, Idaho USA**



Dr. Jim C. P. Liou is a Professor of Civil and Environmental Engineering at the University of Idaho, Moscow, Idaho, USA. He received an MS in Civil Engineering from University of Idaho (1972) and a Ph.D. in Civil Engineering from University of Michigan-Ann Arbor (1976). He worked for Bechtel Inc for 3 years on hydraulic investigations and designs related to power plants and then for Stoner Associates Inc for 7 years on fluid transients consulting and software developments. At the University of Idaho, He teaches hydraulics, hydraulic transients, and numerical methods. His research on fluid transients has been applied to nuclear reactor cooling, real-time leak detection and batch tracking of petroleum products and natural gas pipelines, condensation-induced water hammer, transients in LNG pipelines involving vapor-liquid phase equilibrium, and pipeline safety. He has taught (with E. Benjamin Wylie, Professor emeritus at the University of Michigan) a waterhammer short course for the American Society of Civil Engineers twice yearly from 2001 to 2020.

Presentation Title and Abstract:

Transient Flow Metering Review and Development

Many types of flow meters exist for measuring steady volumetric flow rate in pipes. The measurement becomes questionable for transient flows. A few approaches employ transient flow physics and thus are more adapted for instantaneous flow measurements. This presentation gives an overview of volumetric flow metering technologies with emphasis on their ability and limitations for transient flow rate measurements. The overview is followed by a description of a study where the usage of a symmetric tapered tube as a low-cost and rugged transient flow meter was explored. Challenges encountered in this study and what performance one should expect for transient flow meters in general will be discussed.

14th International Conference on Pressure Surges Eindhoven, The Netherlands; 12th - 14th April 2023

Keynote Speaker

Anton Bergant, PhD, PE

**Litostroj Power d.o.o. (Full-Time) and University of Ljubljana (Part-Time),
Ljubljana, Slovenia**



Dr. Anton Bergant has become involved in hydraulic engineering as a junior fireman in his village. As professional engineer and researcher he has focused on hydraulics of water turbines and systems. He has been employed with Litostroj Industries since 1980, except from October 1989 to January 1993 when he was employed as research officer with the University of Adelaide, Australia. He is currently employed full-time with company Litostroj Power d.o.o., Ljubljana and part-time with Faculty of Mechanical Engineering, University of Ljubljana, Ljubljana, Slovenia. In Litostroj he has been a principal investigator of a number of research and industrial projects for customers in Slovenia and all over the world. He has served as a member of professional boards for solution of water hammer and flow-induced vibration problems. Dr. Bergant's main topic of research is transient cavitating pipe flow. He has been involved in the design and construction of a number of experimental apparatuses and the development of software codes for hydraulic transients in systems. He is a Full Member of the Slovenian Academy of Engineering.

Presentation Title and Abstract:

Vladimir Jordan – industrial water-hammer engineer and researcher

Vladimir Jordan was an adherent of post-WW2 hard working European engineering community. In 1947 he established and headed the design office of a newly founded manufacturer of turbine and industrial equipment: Litostroj. As a natural born artist, he 'fell in love' with the graphical method which he applied in conjunction with analytical methods for water-hammer analysis to a range of industrial problems. In particular, his original papers on the treatment of distributed vaporous cavitation along pipelines, shut-off valve induced hydraulic oscillations, and water-hammer effects in Kaplan turbine draft tubes, attracted wide interest in the seventies. Jordan's life and work are reviewed. Special attention is paid to a few highlights which may not sink into oblivion.