

# 14<sup>th</sup> International Pressure Surges Conference

## Provisional Programme

### Tuesday April 11, 2023

17:00	Evening registration	Atlas, Hall - Groundfloor South
19:00		

### Day One - Wednesday April 12, 2023

07:45	Morning registration	Auditorium, Congresbalie	
08:30			
08:30	Welcome from PS15 Chairman - Peter Glover	Auditorium, Blauwe Zaal	
08:35	Opening by TU/e rector magnificus Frank Baaijens		
08:50	Keynote A - Ben Wylie - Retrospective Chairman: Sandy Anderson		
09:20	Session 1 - Control Chairman: Anton Heinsbroek, Co-Chairman: Paul Leruth		
09:20	Managing unstable pump curves on a pressure controlled reticulation network		Glover
09:40	Virtual commissioning of pump station control systems using 'hardware-in-the-loop' real-time simulation		van der Vaart
10:00	Sponsor presentations - 3 x 5 mins (AFT, Deltares, Dynaflo)		
10:15	Refreshment break	Auditorium, Voorhof	
10:45	Session 2 - Case studies Chairman: Peter Glover, Co-Chairman: Sam van der Zwan	Auditorium, Blauwe Zaal	
10:45	Transient hydraulic review of an existing water pumping main after a significant upgrade in the supplying system		Toscano
11:05	Study of transient events in pumping station before reconstruction		Himr
11:25	Waterhammer Simulation, Mitigation, and Pressure Measurements for a Fire Protection Network at a Nuclear Power Plant		Witte
11:45	Sponsor presentations - 4 x 5 mins (Spaval, Titan, Mokveld, Charlatte)		
12:05	Conference Group Photograph	Stairs	
12:30	Lunch	Auditorium, Voorhof	
14:00	Session 3 - Surge protection Chairman: Trey Walters, Co-Chairman: Bjoernar Svingen	Auditorium, Blauwe Zaal	
14:00	Keynote B - Anton Bergant - Vladimir Jordan – industrial water-hammer engineer and researcher		
14:30	Vortex Diodes for dampening pressure oscillations in pump pressure lines Results from measurements, water hammer calculations and practical advice		Haakh
14:50	Surge Vessel Performance Inline & Parallel Connections		Ibrahim
15:10	Systematic Surge Protection Strategies: Proper Choice and Pitfall in Practice		Karney
15:30	Refreshment break	Auditorium, Voorhof	
16:00	Session 4 - Discussion on Control: Is it better to avoid control solutions to surge problems and plump for a "proper" fix? Chairman: Bryan Karney, Co-Chairman: Dr Steve Beck	Auditorium, Blauwe Zaal	
16:30	Close of day one conference	Auditorium, Blauwe Zaal	
16:30 20:00	Drinks Reception sponsored by AFT	Atlas, University Club	

## Day Two - Thursday April 13, 2023 - Parallel Session A - Auditorium, Blauwe Zaal

08:30	<b>Session 5a - Pipe filling/emptying</b> <b>Chairman: Dr Steve Murray, Co-Chairman: Anton Heinsbroek</b>		<i>Auditorium, Blauwe Zaal</i>
08:30	<b>Keynote C - Wajih Hamouda - Leonhard Euler's Derivation of the Water-Hammer Equations in 1775</b>		
09:00	Extending the method of characteristics to simulate rapid flooding of large and complex systems	Giuseppin	
09:20	An Elastic Model for Transients during Emptying of A Pipeline by Pressurized Air	Soon-Thiam Khu	
09:40	Air gun with water bullet	Tijsseling	
10:00	Modelling of Pipe Filling Events in Intermittent Water Supply Systems	Ferreira	
10:20	Refreshment break		<i>Auditorium, Voorhof</i>
10:50	<b>Session 6a - Air/multiphase</b> <b>Chairman: Angus Simpson, Co-Chairman: Anton Bergant</b>		<i>Auditorium, Blauwe Zaal</i>
10:50	Experimental and numerical analyses of the effect of air pockets in pressurised transient flows	Cabral	
11:10	Elastic and rigid modelling in two-phase pressurised hydraulic systems	Besharat	
11:30	An Innovative Open Channel flow Based Model for Calculating Column Separation	Khani	
11:50	<b>Keynote D1 - Wayne Kirsner - Understanding the 1994 Hanford Power House CIWH Accident - 1</b>		
12:20	Lunch		<i>Auditorium, Voorhof</i>
13:50	<b>Session 7a - Hydropower</b> <b>Chairman: Frederic Daude, Co-Chairman: Peter Glover</b>		<i>Auditorium, Blauwe Zaal</i>
13:50	<b>Keynote D2 - Wayne Kirsner - Understanding the 1994 Hanford Power House CIWH Accident - 2</b>		
14:20	Waterway stability analysis of hydropower plants using a nonlinear numerical method and FFT with focus on the response of hydraulic power	Svingen	
14:40	Stability of water-level controls in hydropower plants accounting for backlash, delays and instrumental errors	Vesipa	
15:00	Surge protection of water transmission mains associated with the construction of new micro-hydropower plants: case studies	Covas	
15:20	Refreshment Break		<i>Auditorium, Voorhof</i>
15:50	<b>Session 8a - Leak Detection and Thermodynamics</b> <b>Chairman: Sam van der Zwan, Co-Chairman: Dr Steve Beck</b>		<i>Auditorium, Blauwe Zaal</i>
15:50	Advancing leak detection in water pipe network with tree structures using transient analysis	Pan	
16:10	What happens in Air Vessels with regard to Water Hammer Surge Protection? Studies on transient Thermodynamic Processes	Haakh	
16:30	Comparison of pressure surge events in water and liquid nitrogen as a substitute fluid for rocket engine feed lines	Klein	
16:50	Close of day two conference		
18:00	<b>Conference Dinner</b>		<i>DAF Museum</i>
23:30	18:00 Reception: a glass of Prosecco and a walk round the museum 19:00 Dinner		

Day Two - Thursday April 13, 2023 - Parallel Session B - Auditorium 7		
08:30	<b>Session 5b - Fluid-Structure Interaction &amp; Optimisation</b> Chairman: Jim Liou, Co-Chairman: Bryan Karney	Auditorium 7
08:30	<b>Keynote C - Wajih Hamouda</b>	Auditorium, Blauwe Zaal
09:00	Analytical solutions for the fluid-structure-interaction four equations model of pressure/stress waves in pipes	Plouraboue
09:20	A Finite-Volume approach for multi-branch junctions and its extension to FSI problems	Daude
09:40	Reduction of Surge Loads by the Application of Optimised Hydraulic Dampers for Non-Return Valves in the Extraction Lines of Steam Turbines	Riedelmeier
10:00	Design and cost optimisation for a large-scale water transmission scheme	Scaturro
10:20	Refreshment break	Auditorium, Voorhof
10:50	<b>Session 6b - Modelling</b> Chairman: Mohamed Ghidaoui, Co-Chairman: Didia Covas	
10:50	On Boussinesq and Coriolis coefficients and shear stress	Vardy
11:10	Case study: what can statistical software do for transient flow model validation?	Anderson
11:30	About analytical solution of water hammer in simple reservoir-pipe-valve system	Urbanowicz
11:50	<b>Keynote D1 - Wayne Kirsner - 1</b>	Auditorium, Blauwe Zaal
12:20	Lunch	Auditorium, Voorhof
13:50	<b>Session 7b - Highly compressible flows in Method of Characteristics</b> Chairman: Anton Bergant, Co-Chairman: Angus Simpson	Auditorium 7
13:50	<b>Keynote D2 - Wayne Kirsner - 2</b>	Auditorium, Blauwe Zaal
14:20	Three practical ways to speed up the method of characteristics	Lingen
14:40	On the method of characteristics in highly compressible flows	Vardy
15:00	Viability of the Method of Characteristics for unsteady, non-isothermal, real gas analysis in piping networks	Lang
15:20	Refreshment Break	Auditorium, Voorhof
15:50	<b>Session 8b - Wavespeed</b> Chairman: Bryan Karney, Co-Chairman: Mohamed Ghidaoui	
15:50	Hydraulic transient wave propagation in a pipe made of metamaterial	Louati
16:10	One dimensional waves – Linear, cylindrical and spherical	Vardy
16:30	Pressure and size considerations for the speed of sound in (oil offloading) hoses	Meijer
16:50	Close of day two conference	
18:00	<b>Conference Dinner</b>	
23:30	18:00 Reception: a glass of Prosecco and a walk round the museum 19:00 Dinner	DAF Museum

## Day Three - Friday April 14, 2023

09:00	<b>Session 9 - Failures</b> <b>Chairman: Didia Covas Co-Chairman: Frederic Daude</b>		Atlas, Lecture-room 0.820
09:00	<b>Keynote E - Jim Liou - Transient Flow Metering Review and Development</b>		
09:30	Pressure monitoring and transient modelling: a diagnostic overview of failing operating state	Shaw	
09:50	Fatigue Analysis of the Plastic Section in Metallic-Plastic Combined Pipeline Systems	Lee	
10:10	Waterhammer Event in Alumina Refinery Causes Catastrophic Slurry Pump Failure	Walters	
10:30	Refreshment break		Atlas, Hall - Groundfloor North
11:00	<b>Session 10 - Accident &amp; Incidents</b> <b>Chairman: Sandy Anderson, Co-Chairman: Dr Steve Murray</b>		Atlas, Lecture-room 0.820
11:00	<b>Forum paper: Reducing pressure surge risk</b>	Adriasola-Velasco	
11:20	Accidents and Incidents	Glover and van der Zwan	
11:50	<b>Close of Conference - Angus Simpson</b>		
12:00	Presentation by potential new organiser 1		
12:10	Presentation by potential new organiser 2		
12:20	Presentation by potential new organiser 3		
12:30	Farewell Lunch		Zwarte Doos, Restaurant
14:30	<b>Discussion on the future organisation of the Pressure Surges conference series</b>		Zwarte Doos, Room 1.04
15:00	<b>Chairman: TBC, Minute taker: TBC</b>		