Conference Programme

Tuesday 21st May 2024

17:00 18:30 **Early Evening Conference Registration**
Meet your peers in the hotel foyer before the Conference and collect your delegate pack.

Wednesday 22nd May 2024

08:00 08:45 **Conference Morning Registration – First Floor, outside Alphine Meadows**
Conference room will open at 08:45am

Co-Chairmen's Welcome

Professor Cem Sarica, Floyd M. Stevenson Distinguished Professor of Petroleum Engineering, The University of Tulsa, USA &
Steven Smith, Global Business Development Manager, Facilities, SLB, Canada

08:55 09:00

TUFFP Tulsa University Fluid Flow Projects

Dr. Cem Sarica, Floyd M. Stevenson Distinguished Professor of Petroleum Engineering at the University of Tulsa (TU), is currently serving as the director of three industry-supported consortia at the TU: Fluid Flow, Paraffin Deposition, and Horizontal Well Artificial Lift Projects. His research interests are production engineering, multiphase flow in pipes, flow assurance, and horizontal wells. He holds BS and MS degrees from Istanbul Technical University and a Ph.D. in petroleum engineering from TU. He has previously served on various SPE Committees. He was an SPE Journal Editorial Board member between 1999 and 2007. He served as Associate Editor of JERT of ASME between 1998 and 2003. He was a member of the Technical Advisory Committee of British Hydrodynamics Research Group (BHRg) Multiphase Production Conferences. He served as the Technical Program Chair of the BHRg 2008 and 2012 Conferences. He is the recipient of the 2010 SPE International Production and Operations Award. He was recognized as a Distinguished Member of SPE in 2012. Cem received SPE John Franklin Carll Award and SPE Cedric K. Ferguson Certificate in 2015.

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Steve has been involved in the development of multiphase flow solutions for oilfield applications for 30 years. He joined Neotec in 1993 as a member of the Technical Services team where his primary responsibilities included providing technical support, training, and consulting services, all of which required extensive application of computer modeling to the design and analysis of systems involving multiphase flow. In 2008, Steve was named President & CEO of Neotec. Following the acquisition of Neotec by SPT in 2010, and the subsequent acquisition of SPT by SLB in 2012, Steve took on a series of Portfolio Management roles related to the development of Schlumberger's production engineering and production operations software. He is currently leading business development efforts for SLB's process simulation and digital twin solutions. Steve is the author or co-author of several papers on multiphase flow and related subjects and has been involved in over 200 international consulting projects. He holds M.Eng. and B.Sc. degrees in Chemical Engineering from the University of Calgary and is a registered professional engineer in Canada. Steve has been actively involved with BHR since the 1st North American Conference on Multiphase Technology in 1998.

Wednesday 22nd May 2024

Keynote Address

Professor Jim Brill, Professor Emeritus of Petroleum Engineering, The University of Tulsa & Professor Cem Sarica

"A Historical Perspective of Multiphase Flow and TUFFP's Contributions"

09:00 09:40

Jim Brill is Professor Emeritus of petroleum engineering at The University of Tulsa where he joined the faculty in 1966 and retired in 2000. He formed the fluid flow projects (TUFFP) in 1973, the paraffin deposition projects (TUPDP) in 1995 and served on the decision review board for the center of research excellence (TUCoRE) established by Chevron in 2002. He holds a BS in engineering from the University of Minnesota (1962) and a PhD in petroleum engineering from the University of Texas (1966). Multiphase flow experimental data and prediction models developed by Brill and his students have played a significant role in offshore facilities design. He has consulted on many multiphase flow projects, taught short courses on this topic throughout the world, published extensively in technical journals, is co-author of the 1999 SPE Monograph "Multiphase Flow in Wells" and co-author of the 2017 SPE Textbook "Applied Multiphase Flow in Pipes and Flow Assurance in Oil and Natural Gas Production". He has received SPE's Production Engineering Award, Distinguished Achievement Award for Petroleum Engineering Faculty, John Franklin Carll Award, DeGolyer Medal, Distinguished and Honorary Memberships, Legend of Production and Operations, and Legion of Honor. He is also an ASME Fellow and a member of the United States National Academy of Engineering.

THE UNIVERSITY of TULSA

SESSION 1 – HYDRATES – MODELLING AND EXPERIMENTS

CHAIRMAN: Steven Smith, Global Business Development Manager, Facilities, SLB, Canada

09:40

Pipe Wall Deposition of Gas Hydrates Under Multiphase Flow for Gas-Oil-Water Systems
C. Kakitani, D. C. Marques, C. L. Bassani, M. A. Marcelino Neto, R. E. M. Morales, Federal University of Technology, Brazil; A. K. Sum, Colorado School of Mines, USA

10:05

Assessment of Porosity-Based Hydrate Growth and Agglomeration Models in a Population Balance Framework
J. P. S. Oliveira, J. N. E. Carneiro, ISDB FlowTech, Brazil; E. Hayashi, C.V. Barreto, ESSS, Brazil; S. M. Paulino, J. Trujillo, G. S. Bassani, GALP, Portugal

10:30

Modelling Gas Hydrate Formation/Transportability During Transient Shut-Down and Start-Up Operations of Oil & Gas Pipelines – Field and Experimental Insights
L. E. Zerpa, A. Qu, C. Brock, L. F. R. Dalla, J. Delgado-Linares, C. A. Koh, E. D. Sloan, Colorado School of Mines, USA

10:55

Effect of Hydrate-Like Particles in High Concentrations (Between 5% and 20% v/v) on Multiphase Flow
V. O. Ochoski Machado, R.E.M.Morales, E. N. dos Santos, M. A. Marcelino Neto, S. Cavalli, Federal University of Technology, Brazil; G. Lavalle, A. Cameirão University Lyon, France; A. K. Sum, Colorado School of Mines, USA

11:20 **Exhibitor Presentation – ESSS**

ESSS O&G

11:25 11:55 **Refreshment Break – Sponsored by SLB**

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SESSION 2 – FLOW EVOLUTION AND TRANSIENTS – PART 1

CHAIRMAN: Dr. Jørn Kjølaas, Senior Research Scientist, SINTEF, Norway

11:55 13:20

Jørn worked at the SINTEF Multiphase Flow Laboratory at Tiller for 21 years, working mainly on experiments and modelling of multiphase flows. He is currently Head of LedaFlow model development.

SINTEF

Wednesday 22nd May 2024

SESSION 2 – FLOW EVOLUTION AND TRANSIENTS – PART 1

CHAIRMAN: Dr. Jørn Kjølaas, Senior Research Scientist, SINTEF, Norway

11:55 **CFD Modeling of Vapor Collapse at High Point of a Light Crude Oil Pipeline**
E. A. Mahvelati, A. Bayram, K.V. Srinivasan, C. Chauvet, C. Harper, Wood PLC, Canada

12:20 **Characterization of the Evolution of Intermittent Flow in a Large Diameter Slightly Upward Inclined Pipe**
G. Soto-Cortes, Universidad Autónoma Metropolitana, Mexico; D. Bertoldi, E. Pereyra, C. Sarica, S. Graham, The University of Tulsa, USA.

12:45 **High Flow Rate Flow Instability Mechanism Observed in an Offshore Field**
P. S. Johansson, T. K. Kjeldby, Equinor, Norway; D. Biberg, M-B. Kirkedelen, SLB Norway Technology Center, Norway

13:10 **Exhibitor Presentation - Kongsberg**

13:15 **Exhibitor Presentation – Wood PLC**

13:20 – 14:20 Lunch Break

SESSION 3 – MEASUREMENT

CHAIRMAN: Professor Ruud Henkes, Professor Fluid Flow, Delft University of Technology / Shell Projects and Technology, The Netherlands

14:20
15:20

Ruud Obtained a Master's Degree Aerospace Engineering (with honours) in 1985 at Delft University of Technology, and a PhD degree (with honours) in Fluid Flow and Heat Transfer in 1990 at the same university. Associate Professor Aerodynamics in Delft until 1997, when he joined the multiphase flow team of the Shell Technology Centre in Amsterdam. Since then, various roles as team lead and Principal Technical Expert Fluid Flow at Shell. Combined with part-time full professorship multiphase flow at Delft since 2008, turning to the role of Scientific Director of the J.M. Burgerscentrum for Fluid Mechanics since 2021.

14:20 **Minimally-Intrusive Approach to Quantify Impact of Gas Void Fraction on Liquid Rates Reported by Turbine Meters Operating on Liquid Outlets of Separators**
D. L. Gysling, CorVera LLC, USA

14:45 **Wet Gas Flow Measurement Using a Coriolis Meter: Influences of Flow Conditions**
S. Milad Salehi, L. Lao, N. Simms, Cranfield University, UK; W. Drahm, Y. Lin, A. Rieder, A. Güttler, Endress+Hauser Flow, Germany

15:10 **Exhibitor Presentation – SMT**

15:15 **Exhibitor Presentation – SPE**

15:20
15:50 **Refreshment Break – Sponsored by SLB**

Wednesday 22nd May 2024

SESSION 4 – HYDRATES – CASE STUDIES

CHAIRMAN: Professor Eissa Al-Safran, Professor of Petroleum Engineering, Kuwait University, Kuwait

15:50
16:45

Eissa Al-Safran is a professor of petroleum engineering and former vice dean for research and academic affairs at the College of Engineering and Petroleum at Kuwait University. Al-Safran was a visiting professor at Massachusetts Institute of Technology (MIT), the University of Tulsa (TU), and New Mexico Institute of Mining and Technology (NMT). Al-Safran worked as a reservoir engineer, and production engineering consultant in Kuwait Oil Company. He is the coauthor of the SPE book Applied Multiphase Flow in Pipes and Flow Assurance-Oil and Gas Production, and has authored and coauthored more than 100 peer-reviewed journal and conference publications. Al-Safran received the regional SPE 2017 Distinguished Achievement for Petroleum Engineering Faculty Award, the regional SPE 2019 Production and Operations Award, the international SPE 2020 Distinguished Membership Award, the regional SPE 2021 Service Award, and the international SPE 2022 Production and Operations Award.

15:50 **Hydrate Dissociation in the Service Line Without Using a Rig in an Ultra-Deepwater Well**
A. Henrique de Andrade Pinheiro, R. Barbosa de Jesus, Petrobras, Brazil

16:15 **New Technologies to Enable Long Subsea Tieback Developments**
B. W. E. Norris, Z. M. Aman, The University of Western Australia, Australia; T. Wood, L. Liebana, L. Thomas, Worley UK; P.T. Bhaskoro, PETRONAS, Malaysia; G. Bishop Falope, (PACESET), Heriot Watt University, UK

16:40 **Exhibitors Presentation – SLB**

16:45
17:45

Welcome Reception – Sponsored by SLB

Join SLB in celebrating the 40th anniversary of Olga and Pipesim

Thursday 23rd May 2024

Keynote Address

Mack Shippen, Production Engineering Advisor, SLB, USA

"A 50-Year Retrospective on Mechanistic Multiphase Flow Modelling"

08:30
09:10

Mack Shippen is an Advisor with SLB in Houston, serving as Domain Champion for production operations and flow assurance solutions. He has extensive experience in well and network simulation studies, ranging from flow assurance to network optimization and dynamic coupling of reservoir and surface simulation models. He has served as SPE Distinguished Lecturer and chaired the SPE Reprint Series on Offshore Multiphase Production Operations. He holds BS and MS degrees in Petroleum Engineering from Texas A&M University, where his research focused on multiphase flow modelling.

SESSION 5 – MULTIPHASE FLOW – PART 1

CHAIRMAN: Professor Cem Sarica, Floyd M. Stevenson Distinguished Professor of Petroleum Engineering, The University of Tulsa, USA

09:10 **Comparing Multiphase Flow Simulators in Reproducing Pre-Salt Wells Production Data**
J. L.L. de Almeida, P. M. de Oliveira, J. R. Barbosa Jr., Federal University of Santa Catarina, Brazil; T. R. Gessner, Petrobras, Brazil

Thursday 23rd May 2024

09:35 **State of the Art Flow Loop Experiments with Real Fluids to Enable Simulator Matching with Field Conditions**
P. S. Johansson, T. K. Kjeldby, G. W. Johnson, A. Valle, Equinor, Norway; B. Hu, Z. Gang Xu, X. Wang, SLB Norway Technology Center, Norway

10:00 **Machine Learning Framework for Gas-Liquid Pipe Flow Prediction with Uncertainty**
A. Mendes Quintino, M. Stanko, Norwegian University of Science and Technology, Norway

10:25 – 10:55 Refreshment Break

SESSION 6 – SLUGS

CHAIRMAN: Dr. Richard Fan, Staff Flow Assurance Engineer, ConocoPhillips, USA

10:55 12:35

Yongqian (Richard) Fan is a Staff Flow Assurance engineer in ConocoPhillips (COP). He supports COP's worldwide projects and operations in the areas of multiphase flow, sand transport, hydrate, surge analysis, etc. He worked for BP America, SPT Group, and SINOCHEM before re-joining COP in 2020. Yongqian Fan holds a MS degree from Petroleum University of China (Beijing) and a Ph.D from Tulsa University, both in Petroleum Engineering.

10:55 **Modelling the Impact of Chemical Injection Using LedaFlow Slug Capturing**
J. Fox, Kongsberg Digital, Inc., USA; J. Kjølass, SINTEF, Norway; V. Richon, TotalEnergies EP Norge AS, Norway

11:20 **Fluid-Structure Theoretical Model for Slug Flow Fatigue Response**
K. Porter, E. Pereyra, S. Graham, C. Sarica, The University of Tulsa, USA; J. Mesa, Anaconda Inc., USA

11:45 **Experimental Analysis of the Gas Density in Two-Phase Slug Flows**
B. P. Naidek, M. V. R. Pereira, P. L. N. Machado, E. M. Baggio, R. da Fonseca Júnior, L. F. dePaiva, E. N. dos Santos, M. M. Alves Neto, R. E. M. Morales, Federal University of Technology, Brazil

12:10 **A Mechanistic Model for Liquid-Gas Churn Flow in Vertical Tubulars under Multiphase Conditions**
M. Alsanea, Kuwait University, Kuwait; H. Karami, University of Oklahoma, USA

12:35 – 13:45 Lunch Break

SESSION 7 - FLOW EVOLUTION AND TRANSIENTS – PART 2

CHAIRMAN: Dileep Penmetsa, Principal Consultant, Wood PLC, USA

13:45 14:35

Dileep Penmetsa is a Principal Consultant in Wood's Production Optimization group, currently serving as the Global Flow Assurance Technical Manager, with 17+ years of global experience in leading a wide range of large capital investment flow assurance projects associated with the design of subsea oil and gas production and export systems and providing operational support. Mr. Penmetsa holds a master's degree in Chemical Engineering from Texas A&M University, USA and is a member of SPE.

13:45 **Steady-State and Transient Modelling of Slack Line**
T. J. Danielson, Ellipsis Services LLC, USA

14:10 **Estimation of Local Volumetric Phase Fractions in Transient Multiphase Flows: Assessment of an Image Processing Tool Based on Machine Learning and Neural Network**
F. A. Alves Mendes, R. M. Perissinotto, N. A. Vieira Bulgarelli, W. Monte Verde, M. Souza de Castro, University of Campinas, São Paulo, Brazil

14:35 – 14:45 Stretch Break

Thursday 23rd May 2024

SESSION 8 – MULTIPHASE FLOW – PART 2

CHAIRMAN: Peter Wilson, Flow Assurance Technical Authority – Sakarya Project, Wood PLC, UK

14:45
15:35

Peter is a Process/Flow Assurance Technical Authority with Wood in the UK providing SME support to a number of global projects in the early stages of operation. He has been working in the Oil & Gas industry for over 35 years, starting his career with Shell in New Zealand prior to joining Brown & Root in the UK. He established Scandpower's offices in the UK providing OLGA software sales, training, support and consultancy services to the UK and Africa prior to joining BG International at the FA SME supporting BG's global operations. Peter Holds a Bachelor of Chemical and Process Engineering from the University of Canterbury in New Zealand and is a member of the SPE.

14:45 **A Practical Approach to Predict Velocity Profiles and Shape Factors in Horizontal and Slightly Inclined Wavy Stratified Liquid-Liquid Pipe Flow**
O. M. H. Rodriguez, P. J. Miranda-Lugo, University of São Paulo, Brazil

15:10 **A Review and Machine Learning Work for Downward Liquid-Gas Flow in Vertical Pipes**
O. Osuagwu, H. Karami, The University of Oklahoma, USA

15:35 – 16:05 Refreshment Break

SESSION 9 – CO_2 PHASE BEHAVIOUR

CHAIRMAN: Dr. Eduardo Pereyra, Associate Professor, University of Tulsa,TUFFP, USA

16:05
16:55

Eduardo Pereyra is an associate professor at the McDougall School of Petroleum Engineering and associate director at the Fluid Flow Project (TUFFP.org) and Horizontal Wells Artificial Lift Projects of The University of Tulsa (TUHWALP.org). Eduardo holds two B.E. Degree, one in Mechanical Engineering and one in System Engineering, from the University of Los Andes, Merida, Venezuela. He received his Master's and Ph.D. Degree in Petroleum Engineering from The University of Tulsa. His research interests are multiphase flow and its application to transportation, flow assurance, artificial lift, multiphase measurements, and separation technologies. He is one of the TU faculties associated with the University of Tulsa North Campus Research Facilities. This campus contains unique facilities and state-of-the-art instrumentation for energy-related research.

16:05 **Accurate Physical Property Modelling of CO_2-Rich Mixtures with Impurities Within Typical CCS Feedstock**
N. Pedrosa, A. J. Queimada, X. Zhang, R. Szczepanski, B. Salimi, KBC Process Technology (A Yokogawa Company), UK

16:30 **A Numerical Study of the Behaviour of Carbon Dioxide in Valves**
B. Fluttert, A. Twerda, D. van Nimwegen, A. Rajora, TNO, The Netherlands; W-P. Breugem, TU Delft, The Netherlands, R. Pecnik, Delft University of Technology, The Netherlands

16:55 Close of Conference

19:00 The conference dinner will be held at The Bison Restaurant
Welcome drinks & Hors d'oeuvres Reception on the Terrace,
Sponsored by:

Best Paper Award, Sponsored by:

Dress code: Smart/Casual

Friday 24th May 2024

SESSION 10 – CO_2 FLOW IN PIPES AND WELLS – PART 1

CHAIRMAN: Dr. Peter Sassan Johansson, Principal Researcher, Equinor, Norway

09:00
09:50

Peter Sassan Johansson is a Principal Researcher at Equinor's Research Centre in Trondheim, Norway. He holds a doctoral engineer degree within simulation and modelling of turbulent flows from the Norwegian University of Science and Technology. Main areas of research are multiphase flow in gas condensate systems, with focus on field data, surging flows, minimum flow, low liquid loading systems and general model uncertainty. Recently, slug flow in deep water risers has also become a research area.

09:00 **Numerical Modelling of Two-Phase CO_2 Flow in Pipes**
P. Kumar, Centrum Wiskunde & Informatica (CWI), Delft University of Technology, The Netherlands; B. Sanderse, Centrum Wiskunde & Informatica (CWI), The Netherlands; P. I. Rosen Esquivel, Shell Projects & Technology, The Netherlands; R. A. W. M. Henkes, Delft University of Technology, Shell Project & Technology, The Netherlands

09:50 **Interaction Between CO_2 Injection Wells and the Network**
D. Shah, G. Hegde, K.V. Srinivasan, D. Erickson, Wood PLC, USA

09:50 – 10:00 Stretch Break

SESSION 11 – SOLIDS

CHAIRMAN: Dr. Hamid Karami, Associate Professor, University of Oklahoma, USA

10:00
11:00

Hamid Karami is an associate professor at Mewbourne School of Petroleum and Geological Engineering of the University of Oklahoma. His main areas of research focus are experimental fluid dynamics, multiphase flow, petroleum flow assurance, and artificial lift. He is experienced in experimental and modeling studies of multiphase flow, with more than 60 publications. He has a PhD in petroleum engineering from the University of Tulsa.

10:00 **Effect of Liquid Density or Presence of Solid Particles on the Performance of Airlift Pumps**
M. H. Taha, J. Rosettani, S. G. Holagh, C. R. Dickie-Wilson, S. E. Moussa, W. H. Ahmed, University of Guelph, Canada

10:25 **Investigation of the Effect of Asphaltene Aggregates Size and Flow Conditions on Asphaltene Deposition Behavior in Oil Wells Using Integrated Modeling Approach**
E. Al-Safran, A. Aql, Kuwait University, Kuwait; M. Ghasemi, Stratum Reservoir AS, Norway; S. Sinha, A. Qubian; Kuwait Oil Company, Kuwait

10:50 **Validation of CFD Modelling for Sand Particle Erosion Under Slug/Churn and Low Liquid Annular Flow Regimes for Vertical to Horizontal Elbows**
M. Agrawal, S. Khanna, A. Kopliku, BP, USA

11:15 – 11:45 Refreshment Break

Friday 24th May 2024

SESSION 12 – CO_2 FLOW IN PIPES AND WELLS – PART 2

CHAIRMAN: Dr. Peter Sassan Johansson, Principal Researcher, Equinor, Norway

11:45	**Modelling of Gas Entrainment in Near-Horizontal Stratified Flows with LedaFlow** *J. Kjølaas, SINTEF Industry, Norway*
12:10	**Leak Detection Issues for CO_2 and H_2 Pipeline Networks** *F. Zhang, K.V. Srinivasan, Wood PLC, Canada; P. Dhoorjaty, D. Ericson, Wood PLC, USA*
12:35	**Simulation of Single-Point Injection Gas Lift using Supercritical Carbon Dioxide (CO2)** *E. Al-Safran, A. Aql, Kuwait University, Kuwait*
13:00	**Co-Chairmen Conference Close**

13:10 – 14:00 Farewell Lunch

Thanks to all of our sponsors and exhibitors

Multiphase 2026 will be held in Nice, France, June 2026. More information concerning the venue and focus topics to follow

Visit https://isavft.co.uk for updates, or join our mailing list, to be kept up to date with the latest news.