2023 Mary Kay O'Connor Safety & Risk Conference

Safe and Sustainable Energy Transition

Making Safety Second Nature

Oct. 11-13, 2023 Hilton Hotel, College Station, Texas

In collaboration with

IChemE ADVANCING CHEMICAL ENGINEERING WORLDWIDE

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TEES | Mary Kay O'Connor
Process Safety Center
Texas A&M Engineering Experiment Station

DAY – 1

Symposium Overview Day -1 | October 11th, 2023

	8:15 – 9:10 AM	**Plenary Speaker - Michelle Roberson**
	9:10 – 9:25 AM	**Booth Exhibitors Presentation**
		(Rexa, Softekeng, SIS-TECH, ProlyTx, Kenexis)

	9:30 – 10:30 AM	**Keynote Address – Katherine Lemos**
	10:30 – 11:00 AM	**Hesham Alsubait**
		Process Safety culture in Research Centers: Road Map towards Enhancement
	11:00 – 11:30 AM	**Tim Hoff**
		Application of Inherently Safe Principals to Projects
MANAGING PROCESS SAFETY	1:00 – 1:30 PM	**Keynote Address – Rebecca Peterson**
mockingbird	1:30 – 2:00 PM	**Hema Divya Katna**
		Threshold Quantity for Process Safety Metrics for Special / Coded Chemicals
	2:00 – 2:30 PM	**Mike Stone**
		PSM Boundaries in the Semiconductor Industry
	2:30 – 3:00 PM	**Hallie Graham/Pettigrew**
		Bridging Gaps in Process Safety for the Offshore Energy Transition, the Work of the Gulf Research Program

| | 3:30 – 4:00 PM | **Rejender Dahiya** |
| | | *Keep in the Pipe – Swiss Cheese – Why the Holes Lineup* |

Asset Integrity Management *mockingbird*	4:00 – 4:30 PM	**Gianmaria Pio** *Fire Behaviour of Acetonitrile by*
	4:30 – 5:00 PM	**Harigopal Attal** *You have a "safeguard(s)" in place; Sounds promising, but have you tested it?*
	5:00 – 5:30 PM	**Abdullah Alsulieman** *Dynamic Risk Assessment of Liquid Carryover in Oil and Gas Separator Based on Condition-Monitoring Data*

	9:30 – 10:00 AM	**Keynote Address – Dr. Stratos Pistikopolous**
Hydrogen Safety *North*	10:00 – 10:30 AM	**Jesse Brumbaugh** *Detection and Mitigation of Hydrogen Releases*
	10:30 – 11:00 AM	**Vojtech Jankuj** *Process Safety of hydrogen filling station in the Czech Republic*
	11:00 – 11:30 AM	**Michael Snakard** *10,000 LBS Hydrogen – A process safety perspective on Hydrogen based fuels and H2Hubs*

	1:00 – 1:30 PM	**Osama Alghamdi** *Integration of Psychological Safety into the Chemical Process Industry*

Learning from Incidents, Investigations, Case histories, Incident Data	1:30 – 2:00 PM	**Yuexin Liu**
		Applying Machine Learning and Keyword Analysis for Efficient Incident Reporting and Risk Management
North		
	2:00 – 2:30 PM	**Mohaned Y. Faisal**
		Shift Work Fatigue Risk Evaluation: A Review and Case Study
	2:30 – 3:00 PM	**Valerio Cozzani**
		Major accident scenarios caused by pipeline failures due to earthquakes

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	3:30 – 4:00 PM	**Savio Vianna**
		Computational Modelling of Burning velocity of gases vented by Li-ion Batteries
Accident Modelling and Investigation	4:00 – 4:30 PM	**Savio Vianna**
		Footprint of uncertainty (FOU) in the context of Bowtie risk tool using fuzzy logic
North		
	4:30 – 5:00 PM	**Ola Srour**
		Study on the consequences of hazardous gas releases from buried pipelines
	5:00 – 5:30 PM	**Mohammad Asif**
		Understanding corrosion at molecular level

	9:30 – 10:00 AM	**Savio Vianna**
		Physics-informed deep learning applied to steady state methane dispersion
Consequence Analysis	10:00 – 10:30 AM	**Amani Grati**

Flammability, Combustion, Explosion

South

		Comparative analysis of the methodologies for the evaluation of the gas generation rate for gas generating chemical systems under runaway conditions
10:30 – 11:00 AM	**Lorenz Boeck**	*Understanding the Reactivity and Dynamics of Hybrid-Mixture Explosions at Large Scales*
11:00 – 11:30 AM	**James Thomas**	*Design of State-of-the-Art Battery Failure Experiment*

| 1:00 – 1:30 PM | **Luc Vechot** | *Learning from the collaboration between industry and academia to build Process Safety Competency industry* |

Operational Excellence, Best Practices, Worker Involvement

South

1:30 – 2:00 PM	**Samantha Scruggs**	*IOGP Process Safety Fundamental*
2:00 – 2:30 PM	**David Breeding**	*Best Practices for Working Safely with Hydrogen: Engineering Safety Guidelines, Texas A&M University*
2:30 – 3:00 PM	**Katherina Sikorova**	*Major accident prevention in the Czech Republic – examples of good practice*

| 3:30 – 4:00 PM | **Matteo Iaiani** | *Probabilistic Assessment of Security Attacks to Offshore Oil & Gas Installations* |

Cyberphysical Systems

South

4:00 – 4:30 PM	**Yuexin Liu**
	Deep Reinforcement Learning for Cyber Security in Cyber-Physical Systems: A comprehensive Survey
4:30 – 5:00 PM	**Mawuli Afenyo**
	A risk-based model to detect the vulnerability of cyber breaches in the maritime industry
5:00 – 5:30 PM	**Divine Livingstone Caesar**
	Cybersecurity and Process Safety: A resilience building approach to risk management

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| 9:30 – 9:40 AM | **Dr. Faisal Khan – OESI Overview** |
| 9:40 – 10:20 AM | **Keynote Address – Dr. Greg Kusinski** |

Ocean Safety Day

Oakwood Ballroom

10:30 – 11:10 AM	**Michaela Nobel**
	Keynote Address Ensuring Safety of Offshore Wind while Spurring Technology
11:10 – 11:30 AM	**Tom Sheppard**
	Systemic Risk in US Offshore O&G: HF and HOP Challenge
1:00 – 1:40 PM	**Lisa Grant, BSEE**
	Keynote Address: Why the OESI?
1:40 – 2:20 PM	**Steven Wong, DOE**
	Keynote Address Fragility of Complex Systems and Implications for Safety

	2:20 – 3:00 PM	**Keynote Address – C. Peres, Rich Sear, Charles Williams**
		Systemic Risk in Offshore Oil and Gas in the U.S. Gulf of Mexico
	3:30 – 5:30 PM	**Special Session on OESI Roadmap Refresh and Feedback Discussion**

	9:30 – 10:00 AM	**James Beall**
		Why and How to Start a Career in Process Automation
	10:00 – 10:30 AM	**Mike Antosh**
		Building an Engineering Data Ecosystem
Process Automation	10:30 – 11:00 AM	**M.C. Chow**
Amphitheater		*Plant Automation Modernization Projects*
	11:00 – 11:30 AM	**David Weimer**
		Optimize Costs and Mitigate Risks

Ethics Training – Shane Pirtle

Common Cause and Systematic	11:00 – 2:00 PM	**Workshop**
Amphitheater		*Preventing Systematic Faults and Reducing TI*
	1:30 – 2:00 PM	**Workshop**
		Applying Common Sense to Common Cause

| | 3:30 – 4:00 PM | **Tim Olsen** |
| | | *Operator Response to Alarm is an IPL* |

Operation Effectiveness	4:00 – 4:30 PM	**Kedar Kottawar**
Amphitheater		*Peak Risk Analysis*
	4:30 – 5:00 PM	**Craig Wright**
		Can Control Room Operators be more Effective
	5:00 – 5:30 PM	**S. Camille Peres**
		Surprises in writing effective operating procedures

DAY – 2

Symposium Overview Day -2 | October 12th, 2023

	8:15 – 9:10 AM	**Plenary Speaker- Dr. Greg Kusinski**
	9:10 – 9:25 AM	**Exhibitors Presentation**
		(PSRG, Graybar, 4Nick, Cognascents, Entrust Sol.)
	9:30 – 10:00 AM	**David Drerup**
		Process Safety Health: How Should we approach metrics and monitoring and what are emerging societal expectations?
	10:00 – 10:30 AM	**Jamison Chang**
		Application of natural language processing for spill reduction in an exploration and production company
Data Analysis and Big Data	10:30 – 11:00 AM	**Douglas White**
Mockingbird		*Safety First: Innovative Advanced Analytical and Automation Solutions for Improving Safety*
	11:00 – 11:30 AM	**Hesham S. Alotaibi**

Realizing Digital Transformation in Safety

	1:00 – 1:30 PM	**Fahad Al-Shammari**

SABIC Process Safety Journey

1:30 – 2:00 PM **Michael Harper/Frank Hart**

Review and Validation of Phast Dispersion Model for LNG Siting Applications in the US

2:00 – 2:30 PM **Chi-Yang Li**

Computational fluid dynamics (CFD) studies of CO2 dispersion

2:30 – 3:00 PM **Michael Harper/Frank Hart**

Model improvements and validation for buried CO2 pipeline ruptures

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Functional Safety, Control Systems, ASM, SIS, LOPA, Alarms

Mockingbird

3:30 – 4:00 PM **Vikram Sudarshan**

Path-Sampling and Dynamic Risk Assessment for Rare Un-postulated Reliability/Safety Events

4:00 – 4:30 PM **Tabassum Abbasi**

A new index encompassing water-energy-food nexus and the risks associated with the production of protein

4:30 – 5:00 PM **William Sharpe**

Risk Assessment: How to avoid slipping, tripping, and falling over the numbers

5:00 – 5:30 PM **Edward Marszal**

Enforcing Consistency of PHA/LOPA

9:30 – 10:00 AM **Hesham Alsubait**

Challenges of Rolling out the Safety Management System (SMS/PSM) in newly commissioned Technical Research Center. (Mindset vs. Safety Culture)

Managing Process Safety

North

10:00 – 10:30 AM	**Raphael Tsukada**	
	Application of the Weighted set covering problem combined to computational fluid dynamics for optimization of gas detectors in a chemical plant	
10:30 – 11:00 AM	**Rene Murata/Janet Benaquisto**	
	The Benefits of Procedural PHAs	
11:00 – 11:30 AM	**Madonna Breen**	
	Best Practices for Management of Change and Maturity Level Measurements	

1:00 – 1:30 PM	**Bryant Hendrickson**	
	90% of what? Setting and achieving flame and gas detector performance targets	

Consequence Analysis, Flammability, Combustion, Explosion

South

1:30 – 2:00 PM	**Onder Akinci**	
	Performance of External Steel Shell Full Containment LNG Tanks Subject to Blast, Fire and Impact Loads	
2:00 – 2:30 PM	**Ravi Kedarasetti**	
	Plume sight, An ultra-flexible accident modelling tool	
2:30 – 3:00 PM	**Norman Ritchie**	
	New Methods for Learning from Incidents Involving Human & Organizational Performance	

Process Safety Automation

North

3:30 – 4:00 PM	**Pu Du**	
	Model-based fault diagnosis and fault tolerant control for safety-critical chemical reactors	
4:00 – 4:30 PM	**Hossam A. Gabbar**	
	EEG-Based Integrated Support System for improved training and human performance for safe process plant operation	
4:30 – 5:00 PM	**Vishal Lagad**	
	PSM Evergreening with Artificial Intelligence	

| | 5:00 – 5:30 PM | **Surendra Mahakalkar** |
| | | *Enhancing Process Safety by implementing Risk Based Emergency Response and Crisis Management Plan with Consequence Modelling – SEC Success Story* |

	9:30 – 10:00 AM	**Keynote Address – Dr. Krish Sharman**
Ocean Safety Day	10:00 – 10:30 AM	**Gary Young**
South		*Scalable machine learning : bridging the divide, encouraging new application in oil, gas and near surface environmental and engineering geophysics*
	10:30 – 11:00 AM	**Valerio Cozzani**
		Safe Winterization and protection from Cold Waves of Chemical and Oil & Gas Facilities
	11:00 – 11:30 AM	**Ahmed Elkady**
		Comparative Analysis of International and US Safety Regulations for Offshore CO2 transportation for CCUS Purposes

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	1:00 – 1:30 PM	**Alex Waugh**
		Reliability Centered Maintenance (RCM) approach to Safety Risk-Based Cost Benefit Analysis and LOPA Data Input Development
Economics, Cost benefit, Value at Risk, Business Care	1:30 – 2:00 PM	**Sankhadeep Sarkar**
South		*Economic Tool for Quantifying Process Risks of end of Life-Lithium-Ion Bat*
	2:00 – 2:30 PM	**Harold Griffin**
		Popcorn Polymer Accumulation, Pipe Rupture, Explosions, and Fires at TPC Group Chemical Plant Butadiene Unit
	2:30 – 3:00 PM	**Michael Harper/Frank Hart**
		Model improvements and validation for buried CO2 pipeline ruptures

	3:30 – 4:00 PM	**Keynote Address – Dr. Gregg Kiihne**
		Transitioning Process Safety Knowledge
Managing Process Safety	4:00 – 4:30 PM	**Jack Chosnek**
South		*Managing the risk of MOC*
	4:30 – 5:00 PM	**Paul Tours**
		Integrated Process Hazard Analysis, Bowties and Barrier Management
	5:00 – 5:30 PM	**Bahman Abdolhamidzadeh**
		Setting up the right leading process safety indicators to support the lagging metrics and drive continuous improvement: A gas company case study

	9:30 – 10:00 AM	**Chet Barton**
		The importance of operations and maintenance PSM training
Operational Excellence, Best Practices, Worker Involvement	10:00 – 10:30 AM	**Kristin Robbins**
Amphitheater		*It's mastery, not magic: Blueprint for enhancing safety culture*
	10:30 – 11:00 AM	**Karolina Tarkowska Malik**
		Integrated Operational Risk Management
	11:00 – 11:30 AM	**S. Camille Peres**
		Understanding how to Integrate humans into the 4 Pillars of a Process Safety Management System

| | 1:00 – 1:30 PM | **Keynote Address – Samantha Scruggs** |
| | | *A Process Safety toolkit – The CCPS Body of Knowledge* |

Consequence Analysis, Flammability, Combustion, Explosion

Amphitheater

1:30 – 2:00 PM	**Henrique Paula**	
	An integrated approach for developing recommendations in hazard evaluation and incident investigations	
2:00 – 2:30 PM	**Pranav Bagaria**	
	Runaway oxidation testing for solids: Case studies and pitfalls	
2:30 – 3:00 PM	**Asma**	
	Use of a two-parameter Weibull distribution for the description of the effect of the particle size distribution on dust explosion properties	

3:30 – 4:00 PM	**Atif Ashraf**
	Performance Analysis Technique: A Novel Technique for Comparing and Understanding the Differences between WAI and WAD

Resilience, Sustainability

Amphitheater

4:00 – 4:30 PM	**Raghava Kommalapati**
	Photocatalytic Degradation of Produced Water by TiO2-rGO-CdS Nanotubes
4:30 – 5:00 PM	**Mitchell Huffman**
	A Detailed Strength, Weakness, and Opportunity Analysis of Existing Sustainability Metrics
5:00 – 5:30 PM	**Yutian Qian**
	Constructing a Process Risk Index Empowered by ASPEN Plus Simulation

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9:30 – 10:00 AM	**N. Muthiah**
	SIS Lifecycle

Safety Instrumented Systems

Oakwood Ballroom

10:00 – 10:30 AM	**Cheyna Kaspar**
	SIS Safety Lifecycle

	10:30 – 11:00 AM	**Gregorio Aguilar**
		SIS, Digitalization and Uncertainty
	11:00 – 11:30 AM	**Jana Kallambetu**
		Datacentric Digitalization of Functional Safety

	1:00 – 2:00 PM	**Panel**
		Credible Failure Rates
Failure Rates	2:00 – 2:30 PM	**Iwan van Beurden**
Oakwood Ballroom		*Failure Rate Data Landscape*
	2:30 – 3:00 PM	**Luis Garcia**
		Economic Justification of SIS

	3:30 – 4:30 PM	**Panel**
		IEA IPL & SIF Design and Maintenance Benchmarking
Maintenance	4:30 – 5:00 PM	**Greg Hall**
Oakwood Ballroom		*SIL 3 Proof Testing*
	5:00 – 5:30 PM	**Michael Scott**
		Defer Proof Testing

DAY – 3

	8:15 – 9:10 AM	**Trevor Kletz Award Lecture - Dr. S.A. Abbasi**
	9:10 – 9:25 AM	**Exhibitors Presentation**

	9:30 – 10:00 AM	**Mohd Fadly Adnan**
		Hazard Recognition of Proton Exchange Membrane (PEM) Hydrogen Production and Storage Installation
Hydrogen Safety	10:00 – 10:30 AM	**Jeff Marx**
Mockingbird A		*A Comparative Study: Transporting Hydrogen or Ammonia*
	10:30 – 11:00 AM	**Gregory Milewski**
		DID OSHA GET THE 14 ELEMENTS OF PSM CORRECT? – Rethinking the 14 Elements of PSM as Processes – not Programs
	11:00 – 11:30 AM	**Sahithi Akundi**
		Risk-Driven Model Predictive Controller

	1:00 – 1:30 PM	**Nicolas Obando**
		Asset Management: How to Approach the Digital Solution Evolution
Risk Assessment	1:30 – 2:00 PM	**Chris LeBoeuf**
Mockingbird A		*Development of a Blast-Resistant Roll-Up Door*
	2:00 – 2:30 PM	**Austin Johnes**
		Profitability and Process Safety in Chemical Supply Chains with Demand Variability Considerations

Mockingbird	9:30 – 11:30 AM	**Explosion Workshop – Dr. Ali Rangwala**
	1:00 – 2:00 PM	**Explosion Workshop – Dr. Ali Rangwala**

	9:30 – 10:00 AM	**Nicholas Reding**
		Performance-and Risk-Based Approach Toward Combustible Dust Hazard Analysis & Mitigation Design
Risk Assessment, Uncertainty ALARP *Amphitheater*	10:00 – 10:30 AM	**Abinash Barooah/M. Rahman**
		Data-Driven Model for Multiphase Leak Detection Using Dimensional Analysis Technique
	10:30 – 11:00 AM	**M Fakhrul Farhan Bin Mohd**
		Approach to Hazardous Area Classification Study for Ammonia Systems
	11:00 – 11:30 AM	**Mohd Fadly Adnan**
		ALARP Demonstration Approach during PHA Revalidation in Oil and Gas Facility

	1:00 – 1:30 PM	**Hans Pasman (Tanjin Amin)**
		The Lees' process knowledge compilation project is important because of past and future of process safety
Managing Process Safety *Amphitheater*	1:30 – 2:00 PM	**Hans Pasman (Edison Sripaul)**
		What is researched on process electrification and what does that mean for process safety?
	2:00 – 2:30 PM	**Basil Fysal**
		Optimizing Fire and Gas detection of an Offshore Platform using 3D F&G Mapping and CFD Modelling: A Comprehensive Approach

	9:30 – 10:00 AM	**Greg Hardin**
		Unrealized Potential of SRS
Security	10:00 – 10:30 AM	**Anupa Beharrysingh**
South		*ISA TR84 and Cybersecure*
	10:30 – 11:00 AM	**Matt Malone**
		Digital Twins/Industrial Cybersecurity
	11:00 – 11:30 AM	**Brad Mozlsek**
		Security ICS

	9:30 – 10:00 AM	**Gregory McMillan**
		Control Strategies
The Future of Control	10:00 – 10:30 AM	**Howard Elton**
North		*Safety and Security Impact of Emerging Technologies: How Standards are Addressing the Needs of Owner/Operators*
	10:30 – 11:00 AM	**Jimmy Miller**
		AI and Machine Learning

	9:30 – 10:00 AM	**Edward Marszal**
		Calibration and Analysis of Gas Detection
Process Sensing	10:00 – 10:30 AM	**Logan Mueller**
Oakwood Ballroom		*Don't Get Overwhelmed – Flow Meter Selection*
	10:30 – 11:00 AM	**Brad Propst**
		Digital Sensing Technology
	11:00 – 11:30 AM	**James Beall**
		Control Valve Performance