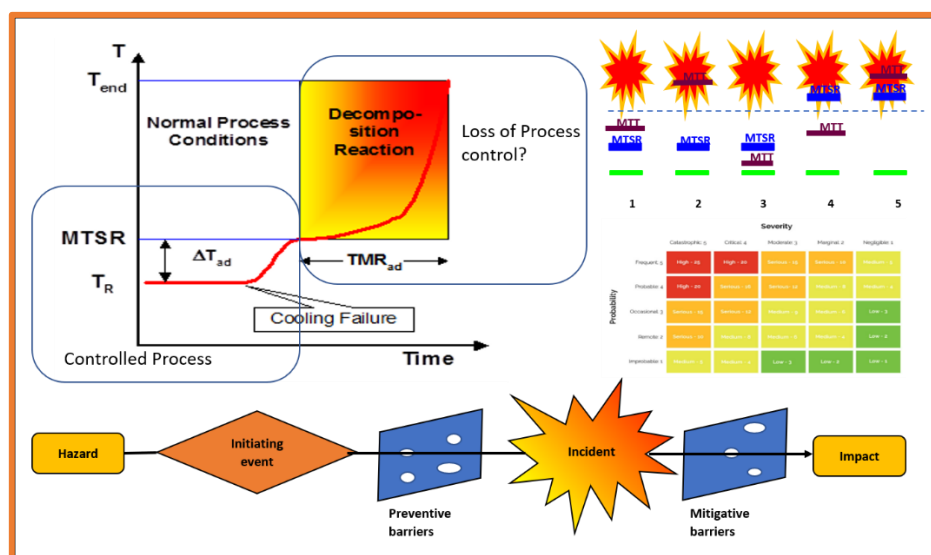


## SAAU PSE Training course on

### Advanced Learning on

# Reaction and Thermal Safety -

Converting Lab Test data to Plant operation Safety information and basis



### Venue

**1<sup>st</sup> March, 2023:**

Minerva Grand Hotel, Secunderabad, Sarojini Devi Road, Hyderabad

**3<sup>rd</sup> March, 2023:**

Fortune Inn Sree Kanya, Dwarakanagar, Diamond Park, Vishakhapatnam

#### **Course Objective**

An advanced training on process safety data analysis, conversion of thermal safety test data to safety information for HAZOP, LOPA and risk evaluation of hazardous, exothermic reactions, unit operations at manufacturing scale

#### **Activities**

- Chemical reactivity assessment
- Activation energy and TMRAD calculation
- Risk calculation- initiating event frequency and LOPA probability of failure on demand

#### **Who should attend**

- Process safety scientists
- Process engineers
- Technology transfer team members
- Scale-up engineers
- EHS team members
- Plant personnel performing manufacturing activities

### Course Fees:

#### **Standard Charges**

INR 15000/- plus 18% GST

#### **Group of 3 and above**

INR 14000/- plus 18% GST

#### **Group of 5 and above**

INR 13000/- plus 18% GST

### **SAAU PSE**

Risk Assessment, Right first time safe Scale-up, Crystallization, Flow Synthesis

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# Agenda

**Registration and Welcome** 8:30 am

**Process Safety Fundamentals** 9:00 am

- Risk Based Process Safety - an introduction
- Anatomy of reaction runaway
- Thermal Runway- Case studies and lessons learnt
- RBPS application to reaction safety
- Value of process safety testing- Discussion

Tea Break

**Reaction Safety Data Interpretation** 10:30 am

- Process Safety Knowledge- Identification of Chemical Hazards
- Reaction and unit operation PHA: Process Safety testing and analysis
- Stoessel criteria for criticality and optimization of thermal control
- Reactions with gas evolution- Hazard identification and analysis

Lunch Break

**Reaction Safety Data Interpretation** 01::30 pm

- Basis of safety- Converting lab test data to information for Safe scale-up
- Break out session: Characterization and basis of safety for autocatalytic decompositions

**Safe scale-up of reactions- Plant considerations** 02:30 pm

- Reaction safety- leading and lagging metrics and hierarchy of controls
- HAZOP, Risk Matrix and LOPA for thermal safety
- Runaway initiating events for slow and fast exothermic reactions and unit operations

Tea Break

**Safe scale-up of reactions- Plant considerations** 04:00 pm

- Independent Protection Layers- Human factors considerations
- Risk calculation, mitigation, PSSR and follow-up

**Take Away** 05:00 pm

- Course conclusion, Feedback and certificate distribution

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## About the Course Faculty:

### **Dr. Daniel Freiner:**



Dr. Daniel Freiner received his doctorate degree from Federal Institute Of Technology Zurich in Switzerland (ETHZ) in 1994. He started his professional career in a Swiss Instrument company (Mettler-Toledo GmH) for Thermal Reaction Engineering and IR Spectroscopy and became the Asia Team Leader for the Technology Consulting Team. His focus on Reaction Calorimetry allowed him training over 700 scientists in many Process Safety Labs across Asia, Middle East and Africa.

After completing advanced training courses at ETH Zurich about Risk and Safety of Technical Systems (CAS) he became a certified workplace inspector by the Swiss government (ASA) in 2015. He worked in the Swiss Safety Institute (Swissi) in Basel as Laboratory Head and provided support to the building and education of Process Safety Teams in several Chinese companies.

In 2017 and 2018 he was teaching “Methods of Risk Assessment” on Postgraduate level at the Faculty of Chemical Engineering at Nanjing University of Science and Technology, while presenting case studies (How safe is safe enough) in Asian Safety Conferences.

After founding his own Swiss based consulting company in 2016, he is collaborating in expert networks on Risk and Hazards in Chemical Processes. He is advising companies about Safety of Chemical Compounds, Technical Equipment, e.g. Machine Safety (Risk quantification according to ISO13849:2016). He is an active member of the Swiss Thermal Society

### **Dr. Uttamkumar Joshi:**



Dr. Uttamkumar Joshi received his doctorate degree in Chemical Technology from Institute of Chemical Technology (ICT- formerly known as UDCT) in 2007. He started his career as Technology and Application consultant in India MO of Swiss Instrument company (Mettler-Toledo GmH) for Thermal Reaction Engineering and Crystallization. Over the years, he worked closely with the Indian pharma and specialty companies, trained their scientists and played crucial role in wider

acceptance of these technologies and spreading process safety awareness through number of trainings and conferences arranged as part of user meetings.

In 2013, he joined a leading pharma company in Hyderabad to head process safety and engineering department, where he developed in-house expertise in thermal and powder handling safety across the manufacturing sites. He further enhanced the department capabilities in mixing and right first-time scale-up and continuous flow synthesis- the obvious choice to handle highly hazardous and exothermic chemistry.

In 2022, Dr. Joshi started his consultancy firm SAAU PSE and simultaneously obtained his process safety certifications from AIChE-CCPS with the view of using and sharing the Risk Based Process Safety (RBPS) knowledge with the process safety and manufacturing community within Indian subcontinent.