HAZOP Training for Chemical Manufacturing

Service Objectives

- Apply the HAZOP method rigorously for batch and continuous units aligned to IEC 61882; reference SIS lifecycle concepts per IEC 61511 when protections are credited.
- Define clear design intents and parameters; select appropriate guide words; map credible causes and consequences reflecting kinetics, heat/mass transfer, and material compatibility.
- Design workshop structure, pre-reading, and document control; capture traceable actions that integrate with MOC and maintenance systems.
- Differentiate inherently safer design options, engineered safeguards, and administrative controls for robust risk reduction.
- Emphasise reaction hazards (SADT, adiabatic temperature rise, decomposition), flammable atmospheres/HAC, powder and dust explosion risks, relief/vent interfaces (API 520/521), and human factors.
- Develop critical causal reasoning, prioritise recommendations, scope pre-LOPA where suitable, and deliver verifiable, owner-assigned actions.

> Designed for UAE chemical plants: strengthens compliance evidence for OSHAD and Dubai Municipality, integrates outputs with MOC/CMMS, and recommends 8–12 delegates for optimal workshop quality. Pre-reading issued one week prior.

Who This Service Is For

- Process safety engineers (PSM elements) and HSE professionals who verify risk reduction before start-up.
- Production managers and process/project engineers managing scale-up, new formulations, or debottlenecking.
- Control and instrumentation teams configuring SIS, alarms, and trips.
- QA/quality leads, shift supervisors, control room operators, and maintenance planners in daily batch/continuous operations.
- Organisations introducing reactors or modifying agitation/heat-removal, expanding tank farms, standardising solvents, or adding nitrogen blanketing/inerting.
- Teams addressing scenarios such as loss of agitation, blocked vents, mischarging, vacuum failure, and overpressure.

Duration & Process Overview

- Formats: 1-day awareness; 2-day practitioner; 3-day facilitator workshop with live practice on sanitised P&IDs and procedures.

- Delivery: on-site, virtual, or hybrid; captures site-specific context (charging, sampling, nitrogen, utilities, waste tie-ins).
- Materials: English (Arabic on request); pre-reading packages (e.g., node sheets, action logs) issued one week prior.
- Cohort: 8–12 delegates recommended; larger groups split; multi-site manufacturers supported with harmonised curriculum.

Methodology

Six modules engineered around UAE chemical plant workflows and documentation (P&IDs/PFDs, batch records, interlock matrices, alarm rationalisation, and HAC drawings).

Phase	Objective	Deliverable
Module 1 — Foundations & Study Planning	Define study setup, scope, node strategy, and document control.	Study plan, node list, document pack checklist.
Module 2 — Parameters & Guide Words	Apply parameters/guide words to reactors, tanks, and transfers.	Prepared node sheets for critical equipment and transfers.
Module 3 — Reaction Hazards & Relief/Venting	Integrate runaway mechanisms and relief/venting interfaces.	Scenario set with relief and safeguarding notes.
Module 4 — Flammable Liquids & Powders	Address HAC, ignition controls, and dust explosion basics.	Actionable ignition control and dust management measures.
Module 5 — Human Factors in Batch Operations	Strengthen manual charging, sampling, cleaning, and sequences.	Improved procedures and checklists.
Module 6 — Recording & Close-out	Ensure action traceability, owners, due dates; link to MOC/PSM.	Traceable action register with owners and due dates.

Module 1 — Foundations, scope, and study planning

- Key focus: study setup, scope, and documentation control.

Module 2 — Parameters and guide words

- Key focus: parameters/guide words for reactors, tanks, and transfers.

Module 3 — Reaction hazards and relief/venting

- Key focus: runaway mechanisms and relief/venting interface points.

Module 4 — Flammable liquids and powders

- Key focus: hazardous area risks, ignition control, dust explosion basics.

Module 5 — Human factors in batch operations

- Key focus: charging, sampling, cleaning, start-up/shutdown sequences.

Module 6 — Recording, actions, and close-out

- Key focus: action registers, safeguard credit rules, tag-level traceability.