



When “It’s Not Mine” becomes a risk

Interface HAZOP in Practice



TCI RISK MANAGEMENT

Speaker



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MsC Aerospace Engineering

Loves to work in a team, delivering practical solutions to complex problems

Experience and competencies

- >12 years experience as TSE
- Facilitated >100 HAZOP / LOPA workshops
- HAZID/ BowTie / ALARP demonstration
- Consequence Modelling and Quantitative Safety Studies
- Reliability, Availability and Maintainability Studies

About TCI Risk Management

WE GOT THIS

Specialized in different services:

- Facilitation of HAZID and HAZOP workshops
- Functional Safety (FSA, LOPA, SIL)
- BowTie - Barrier Risk Management, incl. Identification of SECE
- Consequence and Physical Effects Modelling (incl. CFD)
- Optimisation of Fire and Gas Detection System Layouts
- Risk Reduction & ALARP
- HSSE / Safety Cases and supporting studies
- HSE Management Systems Development and Implementation
- Reliability, Availability, Maintainability (RAM)

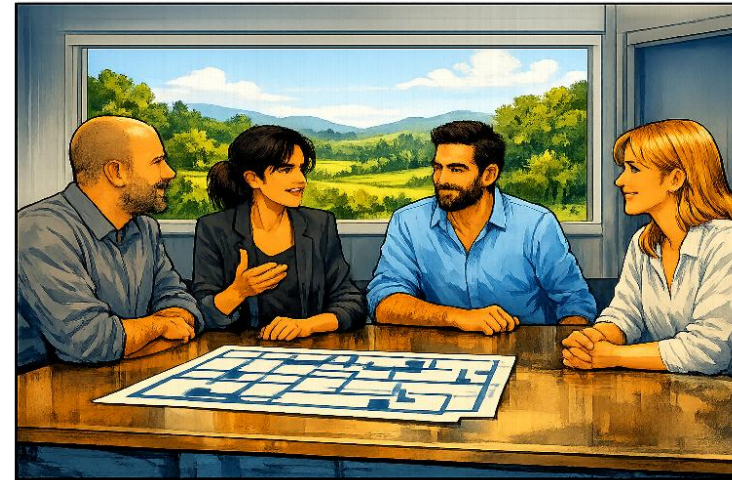
www.tci-rm.com



What is HAZOP

HAZOP:

- Multi-disciplinary
- Aimed at process hazards
- Structured Approach
 - Node
 - Deviation
 - Cause
 - Consequence
 - Safeguard
 - Recommendation
- Causes in the node, Consequences everywhere

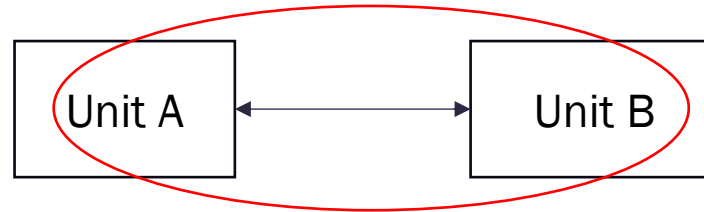


Node: 1. Feed

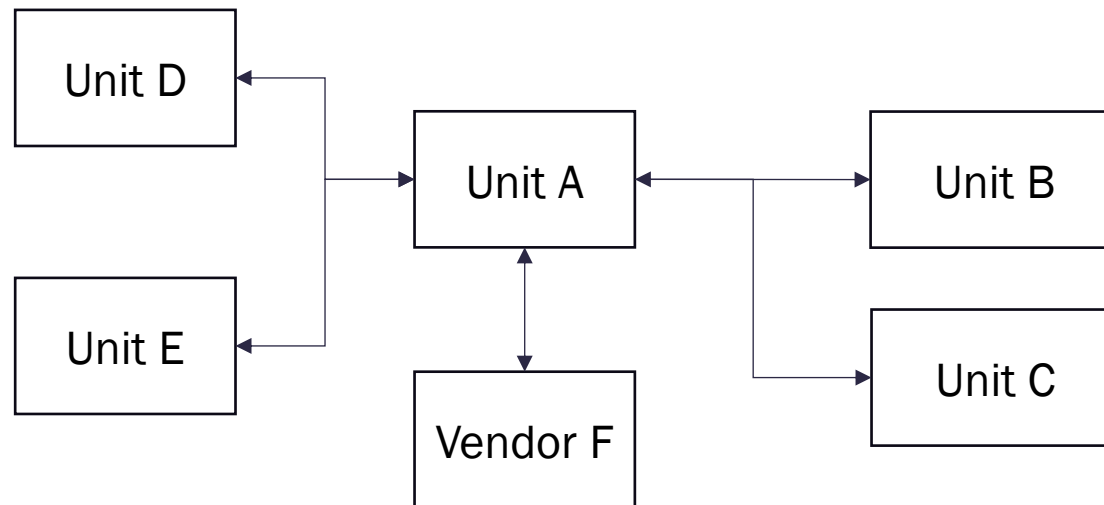
Deviations	Causes	Consequences	Safeguards	Recommendations	
				Recommendations	Responsibility
1. No/low flow	1. Pump failure	1. Upstream tank overflow, LOC, fatalities	1. High level alarm 2. High high level trip	1. Update HH level trip to SIL X	Process Engineer

What is Interface HAZOP

Simple



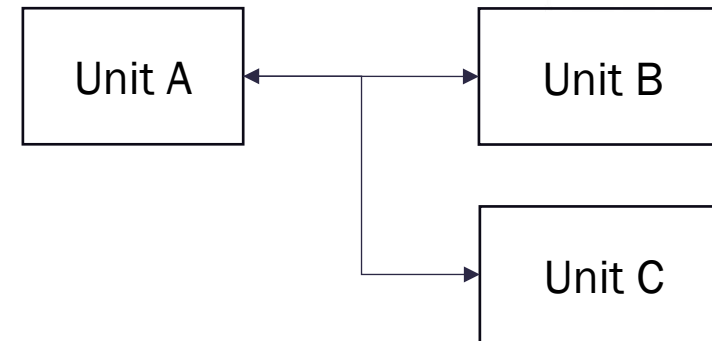
Complex



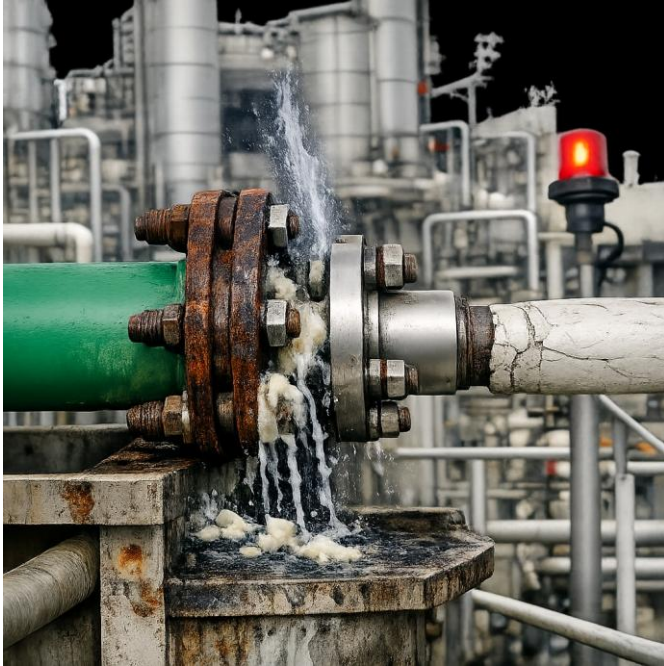
Why do Interface HAZOP

Because “It’s Not Mine” is a risk

- Scenarios exported between A and B, such as:
 - Pressure
 - Temperature
 - Composition
- New connections introduced between B and C



Why do Interface HAZOP

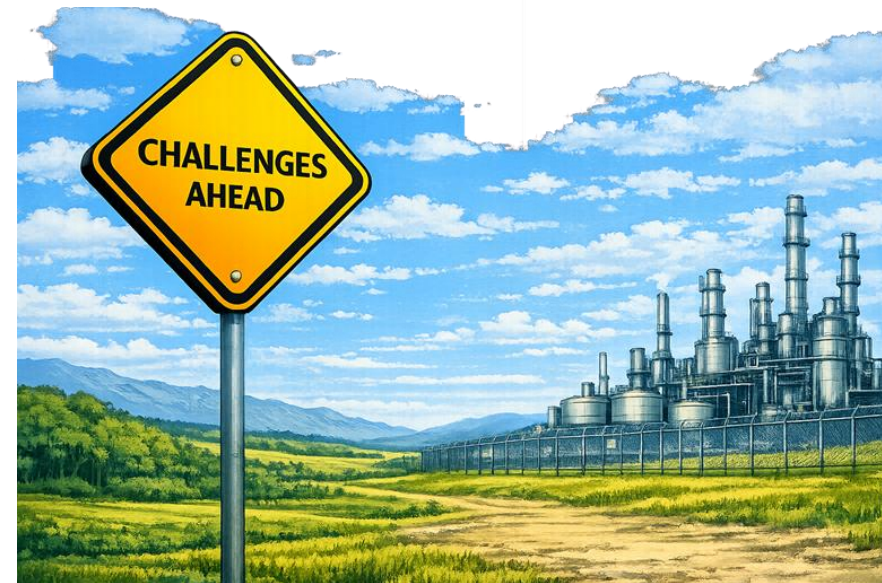


Interface HAZOP Challenges

Interface HAZOP

- Ownership
 - “It’s not mine”
- Underestimated
 - “It’s just a few lines / connections”
 - Impact on design
- Planning
 - Needs several HAZOP teams in 1 room
- Consistency
 - Different approaches used across companies
- Design Discussions

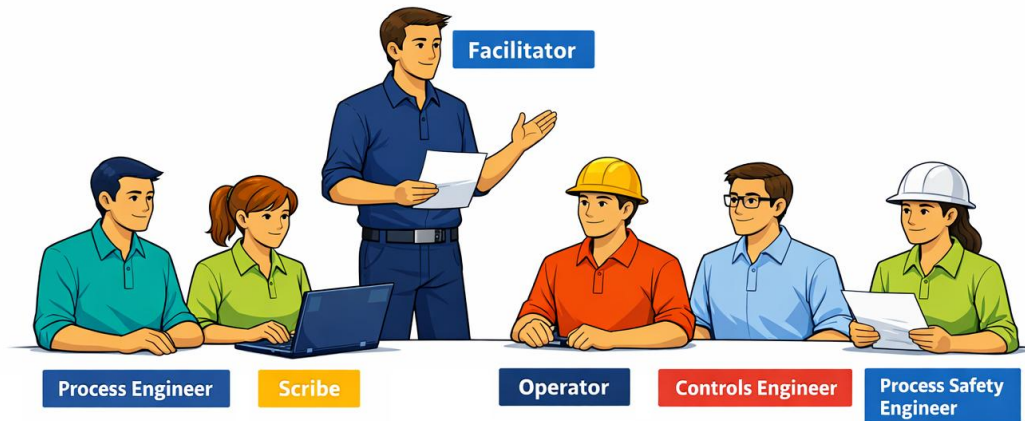
Preparation is key!



Preparations

Preparing the stakeholders

- Team composition
 - All relevant disciplines
 - For each owner
 - Balance vs overcrowding
 - Independent facilitator
- Terms of Reference
 - Risk Assessment Matrix
 - Tolerability targets
 - Key assumptions
 - Level of detail

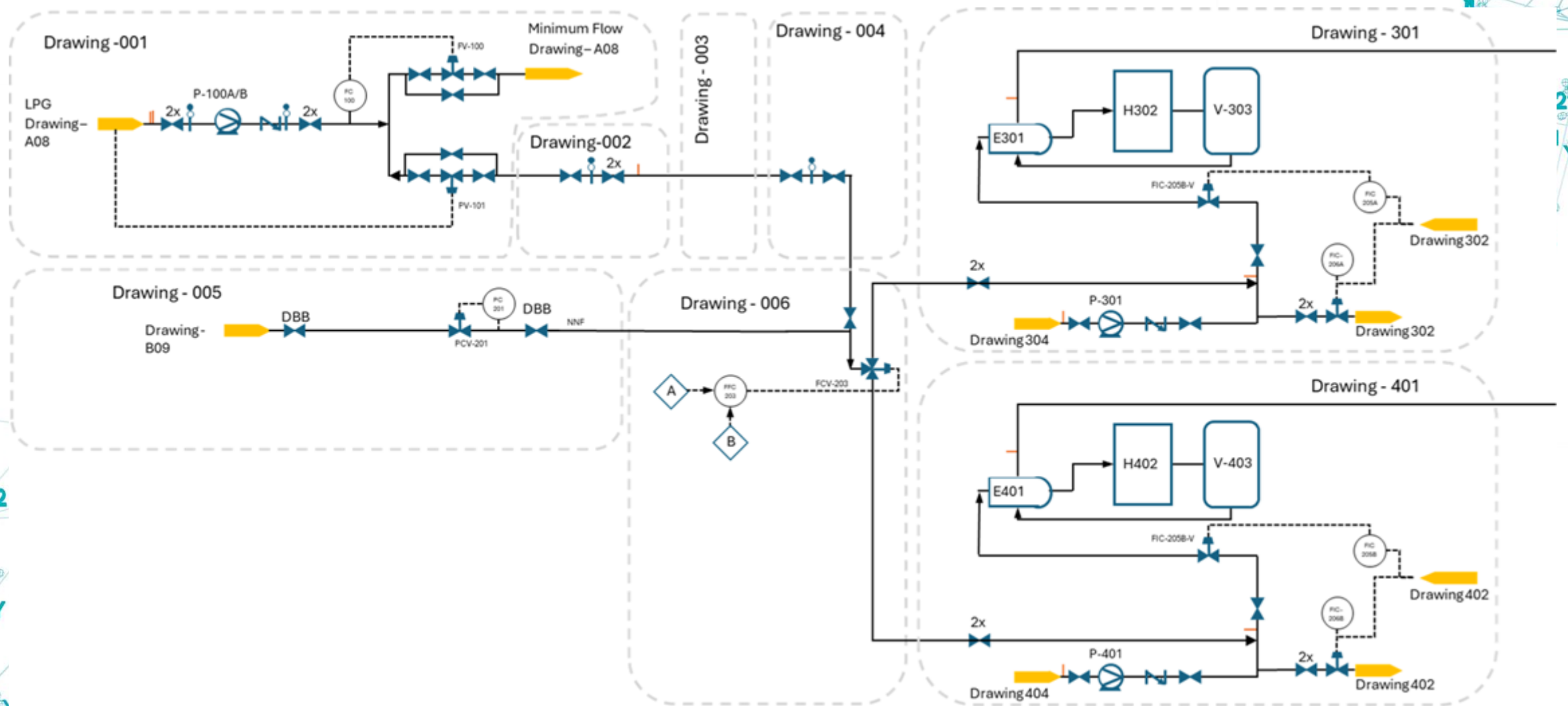


Preparations

Preparing the scope

- Define HAZOP scope, nodes and structure
- Obtain data
 - Detailed drawings (P&IDs)
 - Overview drawings (PFDs)
 - Existing HAZOPs
 - Process/ design data
- Prepare node-specific overview drawings

Preparations



Preparations

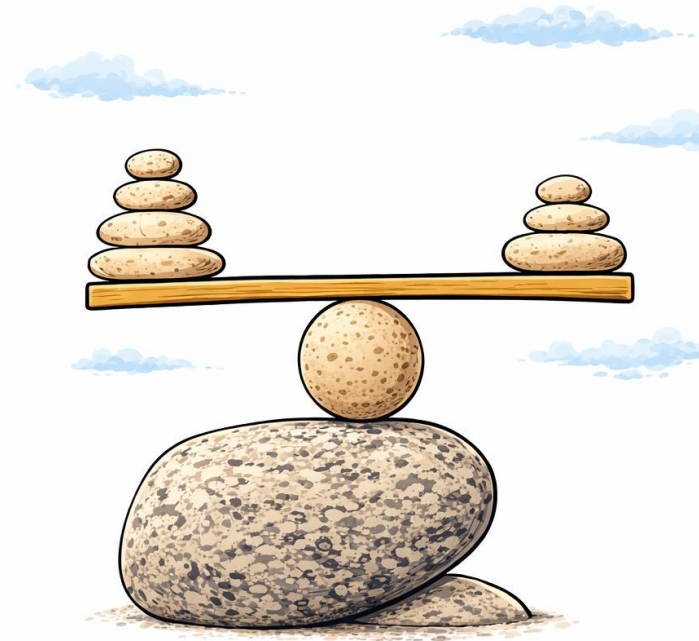
Preparing the facilitation team

- Be pro-active in addressing concerns
 - Address conflicting assumptions
 - Differentiate between critical and nice-to-have
- Identify key risks from original HAZOPs
 - High risk scenarios
 - Existing (interface) recommendations (and close-out)
 - Key topics (e.g. backflow, pressure, temperature, composition)
 - Create a (mental) checklist



Workshop

- Zoom out
 - Use high level drawings
- Balance opinions
 - Between disciplines
 - Between owners
- Limit design discussions
 - Limit \neq Prevent



Workshop

- Create ownership
 - Who owns the risk
 - Who owns the barriers
 - Who owns the recommendation
- Be precise in recommendations
 - What
 - Where
 - Why
 - Who
 - When (?)

Post-Workshop

- Closing the recommendations
 - Impact on other units?
 - Management of Change between teams / units
 - Re-HAZOP required?
- Ensure Ownership!



Conclusions

Yes, “it’s not mine” is a risk

- Create ownership
- Ensure consistency
- Create high level drawings
- Do not underestimate
 - Planning
 - Scope
 - Preparation
 - Potential impact on design
- Maintain balance in the workshop
- Proper close-out is as important as the workshop

Have a safe and secure day!

**THANK YOU
FOR YOUR
ATTENTION**

Questions?



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