

VBKOM

CAPABILITY STATEMENT:
HAZARD AND OPERABILITY STUDIES (HAZOP)

A plant is safest, and cheapest to fix, while it is still on paper. VBKOM facilitates HAZOPs and hazard studies across the full project lifecycle, bringing process, engineering and operational expertise into one room. We find hazards while they can still be designed out, so the plant that gets built is one that can be run safely and as intended.

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THE CHEAPEST HAZARD TO FIX IS THE ONE FOUND ON PAPER.

Every processing plant makes promises before it is built.

Material will flow as designed. Pressures, temperatures and levels will stay in range. Operators will be able to start up, run, maintain and shut down the plant. When something does go wrong, it will fail safely.

Most of those promises are made on drawings, long before steel is ordered. A hazard and operability (HAZOP) study tests them systematically, node by node, while a change still costs a drawing revision rather than a retrofit, a delayed ramp-up or an incident.

PROCESS SAFETY

How could this go wrong, and is it safeguarded?

A HAZOP asks what happens when the process deviates from its design intent: too much flow, no flow, reverse flow, too hot, too high. It identifies credible loss-of-containment and other major hazard scenarios, and tests whether the safeguards are adequate.

OPERABILITY

Can it actually be run as intended?

A safe plant that is hard to operate still costs money. The same study exposes design and procedural gaps that would otherwise surface as downtime, workarounds, maintenance difficulty or a ramp-up that never reaches nameplate.

Junior or mid-tier, the hazards are the same.

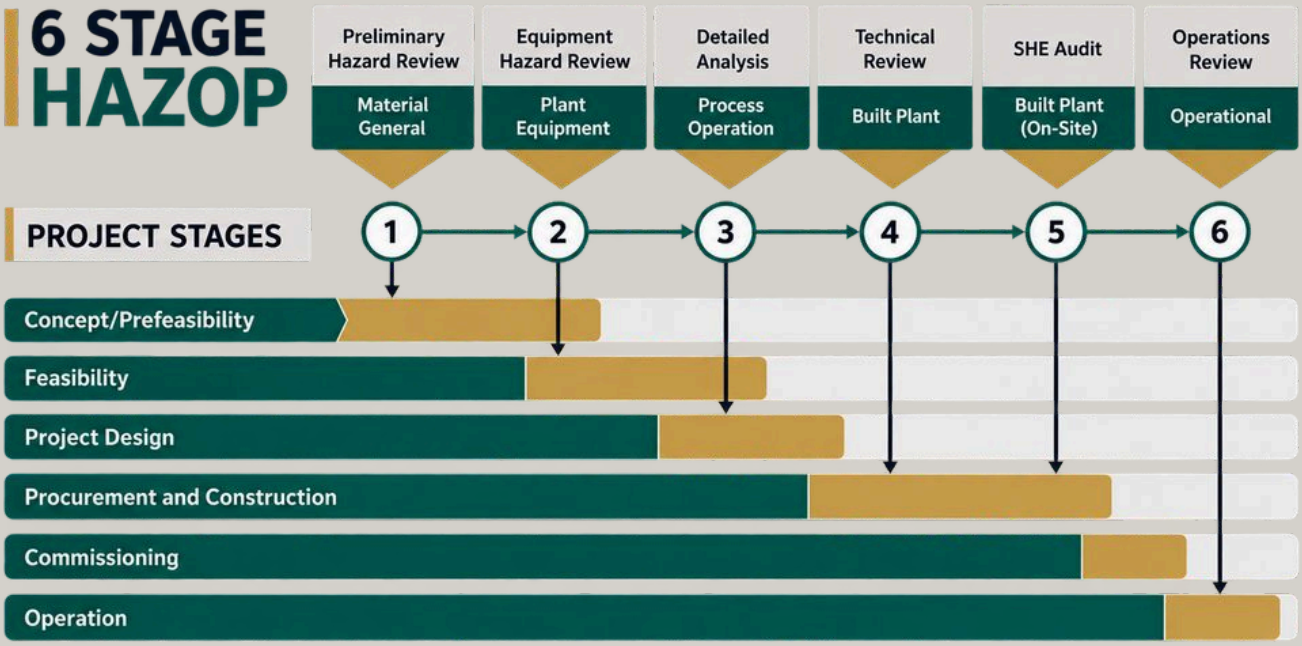
A junior building its first pilot or demonstration plant carries the same process hazards as a major, with far fewer people to catch them. For a lean, listed developer, a hazard found late means a schedule slip, a capital overrun and possibly an announcement to the market.

For mid-tier operators expanding or modifying plant, a HAZOP makes sure a change doesn't quietly undo the safety of what already works. In both cases, financiers, insurers and regulators will often expect to see one.

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SIX HAZARD STUDIES, MATCHED TO THE PROJECT STAGE.

A hazard study is not a single event at the end of design. VBKOM follows a six-stage approach in which each study is matched to the decisions being made at that point in the project, from early material and equipment choices to the plant in operation.



HOW WE RUN EVERY STUDY

01

PREPARE

A briefing document goes to every participant well before the session, so the room arrives informed and the time is spent on hazards, not orientation.

02

FACILITATE

Independent facilitation of key project stakeholders, with technical specialists brought in where the study needs them.

03

REPORT

A risk register and response plan, with every action owned and dated, then reviewed and approved.

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CONNECTED JUDGEMENT ACROSS EVERY HAZARD STUDY

Process hazards rarely come from one isolated decision. They come from the connections between the materials, the process route, the equipment, the control philosophy and the people who will operate the plant.

VBKOM brings those connections into each study, so clients understand what matters, where the risk sits and what needs to change.

THE EARLY CHOICES

Hazard Studies 1 and 2

What hazards are we designing in?

The materials, process route and major equipment chosen early fix much of a plant's hazard profile. The preliminary and equipment hazard reviews examine those choices while they are still open.

They also cover the legislative, regulatory and environmental requirements the project will have to meet.

- Preliminary hazard review of materials and process
- Equipment hazard review
- Project risk breakdown structure
- Environmental impact assessment (EIA) risks
- Legislative and regulatory requirements
- Design-for-safety criteria and HSE planning

THE HAZOP

Hazard Study 3

Does the design hold up when the process deviates?

This is the study most people mean by a HAZOP. A multidisciplinary team works through the piping and instrumentation diagrams (P&IDs), control loops and operating procedures node by node, testing each design intent against credible deviations.

The emphasis is on loss of containment and operational hazards, and on eliminating significant hazards in design rather than managing them in operation.

- Node-by-node review of P&IDs and control loops
- Operating procedure review
- Loss-of-containment and major-hazard scenarios
- Adequacy of safeguards
- Operability and maintainability findings

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THE BUILD

Hazard Studies 4 and 5

Is what's being built what was designed?

A safe design only protects people if it survives construction.

Before construction, the technical review checks that earlier study actions have been closed out in the design and looks at construction risks.

Before commissioning, an on-site SHE audit checks the built plant against company standards, legislation and the intended design.

- Close-out verification of earlier hazard study actions
- Construction risk review
- On-site safety, health and environment (SHE) audit
- Emergency management systems and safety procedures
- Commissioning procedures and practices

THE OPERATION

Hazard Study 6

Can it be run, and shut down, safely?

Once the plant is running, the operations review identifies hazards that only show up in real operation. It also checks that shutdown is planned in line with the design's safety, health and environmental requirements.

- Operational hazard review
- Shutdown planning and review
- Safety, health and environment compliance

THE BIGGER PICTURE

Project risk

What do the findings mean for cost, schedule and the business case?

Hazard studies don't stand alone. VBKOM connects their findings to the wider project risk picture, from root causes and response plans to Monte Carlo modelling of cost and schedule uncertainty, so boards and investors can see what the risk means for the project.

- Risk identification and project risk breakdown structures
- Qualitative risk assessment against your own risk criteria
- Risk response planning with owners and timelines
- Quantitative cost and schedule risk analysis

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FROM HAZARD REGISTER TO DECISION CONFIDENCE

A HAZOP is only as useful as what happens after it. VBKOM brings independent facilitation, practical process and mining experience, and the discipline to see every action owned and closed out.

The result is a plant designed to be safe, built as it was designed, and ready to run. You also get a clear record of how its risks were understood, to show your board, your financiers and your regulator.

DESIGN IT SAFE.
BUILD IT AS DESIGNED.
RUN IT AS INTENDED.

TLet's talk about your next hazard study.

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