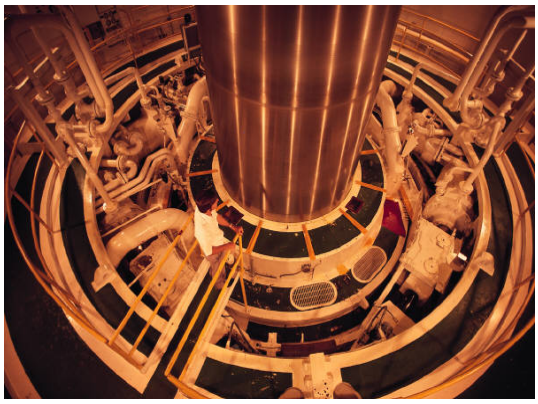
Risk Analysis (HAZOP)

Risk Assessment of Industrial and Water Treatment Processes.

All production and treatment plants and processes contain inherent risks, regardless of industry type. Risks have the potential to impact not only on worker safety and the environment, but also on systems operability and company profits. To manage and minimise risks, a detailed HAZOP study is required.

The term HAZOP refers to a *HAZard and OPerability study*, which is a hazard identification technique developed by the process industries, and now widely applied as part of any risk management strategy. The HAZOP technique is a framework that enables a team of people with the appropriate skills to systematically examine a process or plant and identify potential hazards and operational problems that might arise as a result of deviations from the intended operating conditions. A HAZOP involves a multi-disciplinary team, with the HAZOP leader facilitating input from a variety of experts, each with very specific knowledge or understanding of a component of the plant and or process. The HAZOP investigation can be used to manage design and construction risks related to aspects concerning the design intent and operation of the process.

Sustainable Solutions International (SSI) Pty Ltd has developed a HAZOP software package that streamlines the HAZOP process and provides a structured risk assessment and design review process.



All industrial processes benefit from a thorough HAZOP analysis.

HAZOP Analysis

The objectives of a HAZOP investigation are to determine a list of actions required to assess, and if required increase, the overall safety and operability of an industrial process. These objectives include:

1. To detect the potential hazards of a plant or process to:
   - Worker health and safety,
   - Product quality and customer health,
   - Environmental pollution,
   - Operational failures that result in down-time,
   - Construction risk,
   - Equipment selection risks.

2. To document the existing design safeguards to prevent the above hazards;
3. To identify further safeguards, if required, to further prevent the above hazards;
4. To determine a clear course of action to improve the safety and operability of the plant or process.

A HAZOP analysis can encompass risk analysis of specific life cycle stages of the plant, or comprehensively cover the complete life of the plant, including:

- Concept and location selection
- Detailed design
- Construction and installation
- Commissioning
- Operation
- Decommissioning and site clean up

The detailed design stage is generally the best time for a HAZOP analysis as this allows any changes required to be made with minimal cost.

What are the Benefits of performing a Risk Analysis?

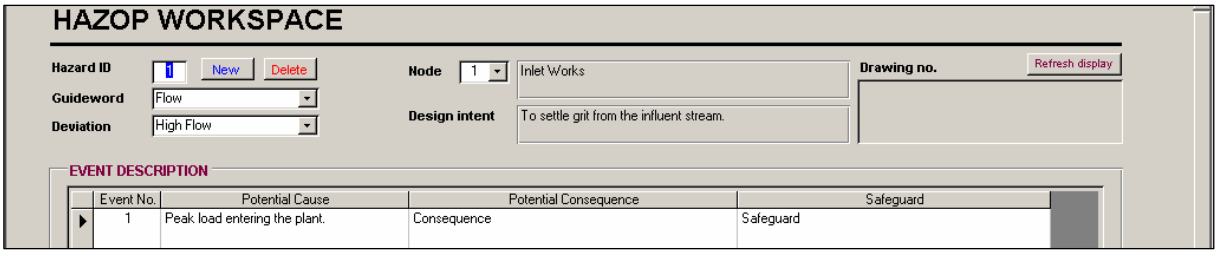
The benefits of performing a HAZOP include:

Identification and awareness of the **causes** of operational failure

Identification of the potential **hazards** associated with system failure

Identification and **mitigation of risks**

Improved operational **efficiency and reliability**



A sneak preview of the SSI HAZOP software workshop interface

What we deliver…

SSI work one-on-one with our clients to complete a thorough hazard analysis of their existing or proposed technology. After the completion of the analysis using our own hazard assessment software package, SSI is able to generate a HAZOP report and a hierarchical recommendations list.

SSI's HAZOP facilitation experience ensures your process receives thorough risk assessment and delivers recommendations which are both practical and effective.

Key Projects

Coppabella Mining Camp

SSI conducted a HAZOP on the WWTP, and a HACCP on the recycled water produced as part of a sustainable Water and Wastewater Management Plan developed by SSI for this remote mining camp catering for 1800 people with no access to council supplied water or sewerage. SSI was also involved in the design and construction of water and wastewater treatment plants.

The Ecovillage at Currumbin

SSI conducted a HAZOP on the WWTP, and a HACCP on the recycled water produced as part of the integrated water management strategy for this village of 144 eco-homes, leading to the development of new passive water treatment technologies which allowed the recycling of waste water for non-potable domestic uses.

Clybucca BP Roadhouse

SSI performed a detailed WWTP performance assessment and site water audit to reduce water consumption at the site. A HAZOP analysis was completed by SSI as part of the design and construction of a new WWTP for the site.

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