Human-HAZOP studies identify the potential for human failures during safety critical operating or maintenance activities and make recommendations to optimise the factors influencing human performance.

Investigations of serious accidents in the process industry regularly highlight human failures as the cause. Human failures can occur during operating and maintenance activities or when front-line staff fail to take action to prevent the escalation of hazardous events.

The UK Health and Safety Executive (HSE) has recognised the importance of human factors and now requires operators of major accident hazard facilities to identify the potential for human failures during safety critical tasks and carry out an assessment of performance influencing factors. The objective is to demonstrate that all reasonable measures have been taken to minimise the risks associated with human failures.

Most companies carry out some form of process hazards analysis during initial process design or periodic assessments of existing facilities, using techniques such as HAZOP studies. These studies usually concentrate on improving the process design and often look to ‘design out’ the human contribution to accidents by providing automated control systems and robust engineered safeguards.

In some cases it is difficult to avoid the potential for human failure causing a significant risk of a major accident, and these safety critical activities require further assessment to demonstrate that risks have been reduced as far as reasonably practicable.

The Human-HAZOP methodology has been designed to review safety critical tasks, allowing a knowledgeable and experienced team to qualitatively assess the factors that influence human performance. The objective is to optimise these factors such that the risk of human failure during key steps is minimised.

What we offer
ABB provides leaders for Human-HAZOP studies using a method based on published sources and guidance from the UK HSE. The diagram in Figure 1 shows the key stages in the Human-HAZOP methodology, designed for the assessment of operating or maintenance tasks where human failure presents a significant risk of a major accident.

Figure 1: The key stages in the Human-HAZOP methodology

- Activity with risk of major accident
  - List key steps in activity
    - Identify credible human failures at each step
      - Assess potential for recovery
        - Assess consequences and risk control measures
          - Optimise performance influencing factors for task
The methodology is similar to HAZOP studies for batch process plants, except that the nodes are key steps in an operating or maintenance activity and the causes of deviations are credible human failures based on operational experience or known failure types in the process industry.

The Human-HAZOP leadership services form part of ABB’s ‘Human Factors in the Workplace’ programme. The methodology builds on ABB’s acknowledged expertise in HAZOP techniques.

**Benefits**

− Helps reduce the risk of accidents caused by human failures
− Provides demonstration that factors influencing human performance have been optimised
− Meets HSE requirements to assess human factors for major accident hazards
− Achieves participation from operations staff in identifying potential improvements to the workplace designed to make errors and omission less likely
− Helps justify claims for human performance made during LOPA (Layer of Protection Analysis) studies
− Studies are effective by using a structured and qualitative methodology based on published guidance

**Why ABB**

− ABB consultants are highly experienced in leading HAZOP’s and in developing practical approaches to human factors
− ABB offer pragmatic advice and solutions based on a sound technical understanding and operational experience gained working on major hazard sites in the process industry

For further information please contact:

**ABB Consulting**
Daresbury Park
Daresbury
Warrington
Cheshire, WA4 4BT
United Kingdom
Phone: +44 (0)1925 741111
Fax: +44 (0)1925 741212
E-Mail: contact@gb.abb.com

[www.abb.com/consulting](http://www.abb.com/consulting)

ABB Consulting provides technical and engineering services to improve performance in the areas of compliance, operations and engineering to customers in the chemical, petrochemical, oil & gas, power, pharmaceuticals, metals and consumer industries worldwide.