YOUR TRUSTED ADVISOR ON THE
JOURNEY TO A SUSTAINABLE FUTURE

GENESIS

CAPABILITY OVERVIEW

Technical Safety and Risk

Genesis never compromises on safety and integrity. We proactively improve HSE in all project phases from concept selection to operations.

Whether you are looking for new onshore or offshore development, hydrogen production and storage or carbon capture and sequestration, Genesis provides a full range of technical, process and functional services that support secure performance throughout a facility's lifecycle.

We carefully follow the steps of hazard identification, risk quantification, mitigation and reduction, and management to ensure safety remains a top priority.

Technical Safety and Risk

HOW WE CAN HELP

- Offering safety support to projects as part of multidisciplinary engineering teams or as standalone services.
- Realising value in project design through safety guiding documents.
- Putting risk and opportunities in perspective through workshops, safety studies and assessments.
- Identifying and managing safety and risk issues according to best practices.
- Ensuring residual risks meet client and regulatory requirements.

On a global scale, we provide:

- Expertise in local regulations and laws (e.g. NOPSEMA, UKHSE, DOSH).
- Proficiency in specialist studies (e.g. Mercury Dispersion, CFD).

HOW WE ADD VALUE

- Aligning our safety measures with client goals and objectives.
- Emphasising risk appropriate decisions, avoiding unnecessary design provisions.
- Providing informed decision-making opportunities for the client while ensuring transparency and replicability.
- Identifying wider implications, risks and opportunities.
- Incorporating best-in-class decision analysis methods and tools.
- Applying our global experience and best practices.

WHAT SETS US APART

- Local offices with access to a global network of experts across 15 locations with regular knowledge sharing coordinated by Communities of Practice groups.
- Support across asset lifecycles and all types of development.
- Bespoke services to match the client's philosophy and budget.
- Partnership approach in managing engineering safety solutions.
- Proven track record and internal quality review mechanism.
- In-house engineering and project management expertise to refine and optimise design solutions.
- Safety as part of multidiscipline engineering and standalone services.
- Access to Technip Energies' database for FEED & EPC safety incidents.
- World-leading expertise in carbon capture and storage projects.

OUR SERVICES

Comprehensive technical safety support includes:

- Hazard Identification (HAZID) Study
- Hazard and Operability (HAZOP) Study
- Safety Integrity Level (SIL) Assessment, including Layers of Protection Analysis (LOPA)
- SIL Verification and Safety Requirement Specifications (SRS)
- ALARP Demonstration and Workshop
- Fire and Explosion Analysis (FEA)
- Consequence Modelling for CO_2, Methanol, Ammonia, etc.
- Quantitative Risk Assessment (QRA)
- Pipeline Risk Assessment
- Dropped Object Study
- Ship Collision Study
- Smoke and Gas Ingress Analysis (SGIA)
- Temporary Refuge Impairment Analysis (TRIA)
- Emergency Systems Survivability Analysis (ESSA)
- Escape, Evacuation and Rescue Analysis (EERA)
- Thermal Plume Studies
- Flare Radiation, Dispersion and Vent Studies
- 3D Fire and Gas Mapping
- 3D Fire and Explosion Modelling
- Non-Hydrocarbon Hazard Analysis (NHHA)
- Emergency Response Strategy
- Safety Case
- Safety Critical Elements Performance Standards (SCEPS)
- Technical Notes for Decision-Making Process
- COMAH Report
- Building Risk Assessment (BRA)
- Health Risk Assessment (HRA)
- Independent Technical Safety Review
- Safety Philosophies / Plan
- Safety Engineering Design
- Reliability, Availability and Maintainability (RAM)
- Failure Mode, Effect and Criticality Analysis (FMECA)
- Subsea Isolation Valve Assessment

Technical Safety and Risk

AVAILABLE TOOLS

Verified In-house Tools:

- Risk Analysis Software
- Dropped Object Analysis Workbook
- FW System Design Calculation

Industry Tools:

- DNV PHAST (Process Hazard Assessment Simulation Tool)
- DNV MAROS
- DNV SAFETI
- Shell FRED
- Gexcon FLACS-CFD
- Flaresim (Radiation Simulation Tool)
- PHA-PRO
- BOW-TIE XP
- Isograph Reliability Workbench with Fault++
- PIPENET (Hydraulic Calculation Software)
- Insight Numerics Detect3D

RECENT PROJECTS

Carbon Capture and Storage Projects:

- Northern Endurance Partnership (NEP) Pre-FEED and FEED CCUS Project
- Baytown Energy Centre Carbon Capture Unit FEED HAZOP
- Louisiana Carbon Capture and Storage Project FEED/EPC HAZOP LOPA and SIL Verification
- LaBarge Carbon Capture Project SIL Verification

Hydrogen Projects:

- Net Zero Teesside Power (NZT Power)
- Acorn Hydrogen Project
- Hyrasia One Pre-FEED
- Aberdeen Hydrogen Hub Pre-FEED
- Baytown Blue Hydrogen/Ammonia FEED Dispersion Analysis and SIL Classification/Verification
- Hydrogen Hub Project Pre-FEED/FEED HAZID and Facility Siting Study
- Hydrogen Refuelling Station EPC HAZOP/LOPA
- South Texas Green Energy Project Layout Studies for Hydrogen/Ammonia Production and Storage Facility
- Magallanes GH2 Project Concept and Pre-FEED

LNG and Gas Projects:

- Gorgon and Wheatstone LNG Projects and Operations Support
- North Field Production Sustainability Project
- Qatar Gas NFPS Compression Pre-FEED and FEED Project
- Etinde Project Onshore Gas Plant FEED
- Barossa FPSO Safety Cases and Execution Support
- Installation Support Vessel Safety Case

Other Energy Projects:

- Limbayong and Bestari QRA Studies
- QatarEnergy Halul Crude Stabilisation and Zero Routine Flaring Feasibility & Concept Optimisation Project
- BP Offshore Ubadari, Tangguh EGR/CCUS and Tangguh Onshore Compression (UCC) Pre-FEED and FEED Projects
- ExxonMobil Downstream HAZOPs

CONTACT US

Inquiries regarding our technical safety services can be sent to:

enquiries@genesisenergies.com

GENESIS

Your trusted advisor on the journey to a sustainable future

TECHNIP ENERGIES

GENESIS