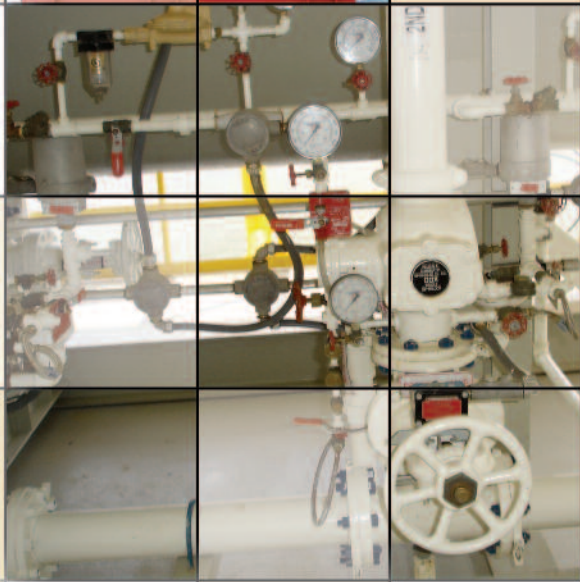
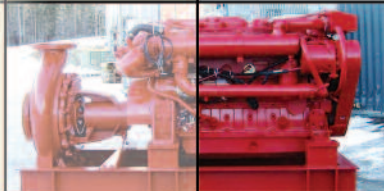
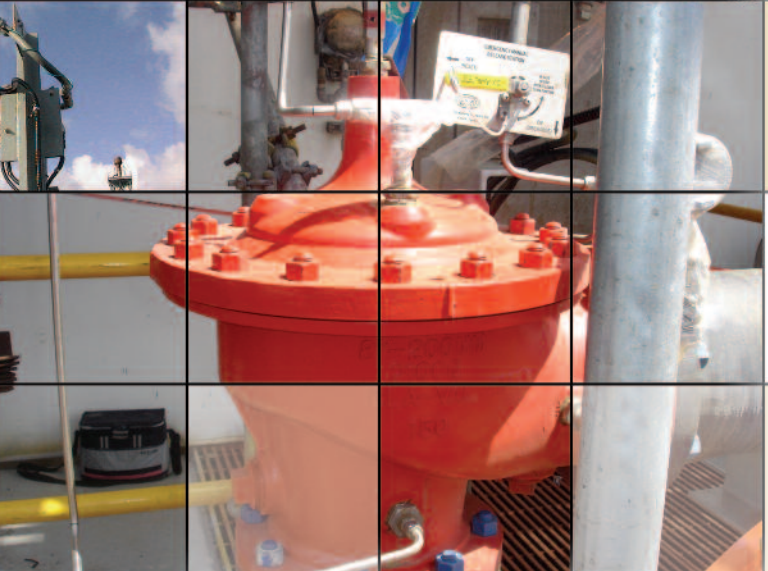
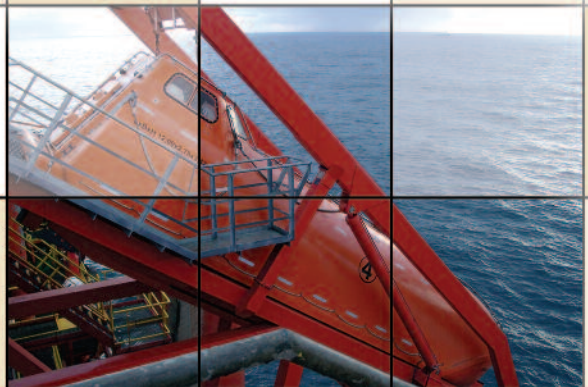
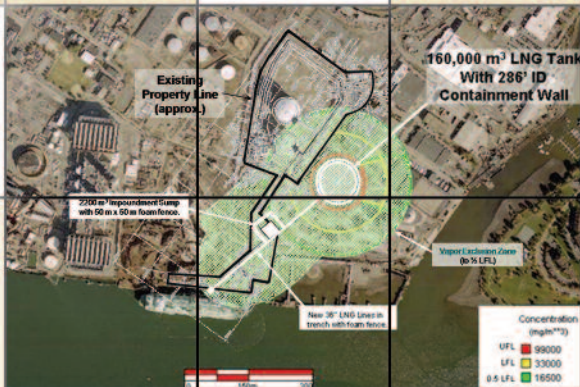


Technical Safety Engineering

Providing Design Safety Support for Projects



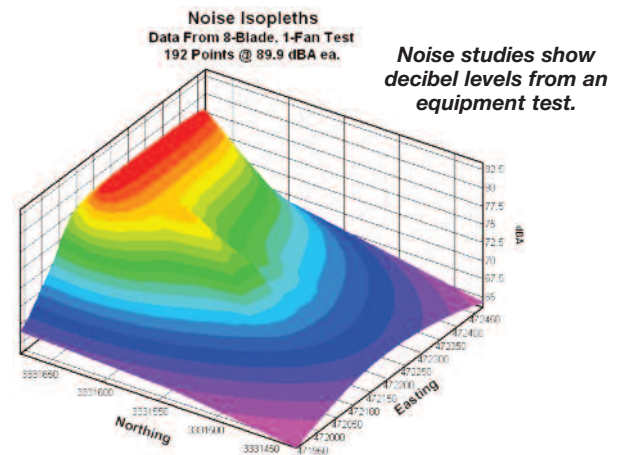
Improving Safety, Minimizing Risk

Mustang's Technical Safety Engineering group performs the technical functions of the Health, Safety, and Environment (HSE) Scope on projects in all industry sectors. The group provides a range of services from one-off studies to complete management of safety and risk as part of a fully integrated project team on major projects. Comprised of experts in the areas of environmental, fire protection, and process safety, the group's goals are to provide a safe, high quality engineering design. This design shall reduce safety, environmental, and asset risk to levels that are tolerable by all project stakeholders (clients, regulators, and the public).

Mustang's Technical Safety Engineering group has successfully supported projects:

- Large and small in scope
- Both new build and brownfield
- For major international operating companies, national oil and gas companies, and small independents
- Destined for prescriptive (Code-based) and performance (Risk-based) regulatory regimes
- Domestic and international (UK, Norway, Western Australia, the Middle East, India among others)

In order to add the most value, Technical Safety should be addressed at the earliest possible stage of any project with focus on inherently safer design and regulatory compliance. Ideally, the effort begins as early as the conceptual phase, but most certainly starts in earnest during the FEED stage. If safety considerations are not incorporated into the project's design prior to the detailed design phase, potential costly changes and schedule delays may occur. The Technical Safety Engineering Group understands the concept of fit-for- purpose and makes certain that all safety features are incorporated early, with proper justification.



Environmental

The Technical Safety Engineering group's environmental specialists have years of experience designing equipment and processes for protecting the environment. They are experts in Waste Water Treatment, Flare and Emissions Reduction, CO2 Sequestration, and permitting support. They are intimately familiar with global regulatory standards and understand how to guide the project team through environmentally sensitive projects. They support the project by providing studies and assessments cover all areas of environmental concerns, including:

- Environmental Impact Assessments (EIA)
- Greenhouse Gas and Emissions Studies
- Effluent Discharge and Waste Management Studies
- Flare, Vent , and Exhaust Impact Studies (CFD)
- Noise Studies
- Spill Prevention and Control Counter measures (SPCC) Planning Support
- Gas Dispersion and Natural Ventilation Studies (CFD)

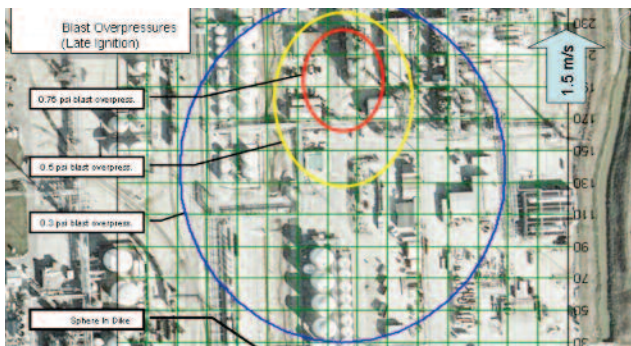




Fire Protection

Mustang's fire protection experts have the background and practical expertise to understand how fires originate and spread and how they can be controlled. These specialists have accumulated knowledge and experience with a variety of fire codes and industry design standards. They design the projects active and passive fire protection systems. Activities include:

- Design and specification of Fire Water Systems – Tank and Pump sizing, Sprinkler and Water Spray Systems, FW P&IDs
- Design and specification of Foam Systems
- Design and specification of Fixed Suppression Systems – Dry Chemical, Gaseous Extinguishing (CO₂, Clean Agent), and Water Mist Systems)
- Fire and Gas Detection Layouts
- Fire Fighting, Safety Equipment, and Egress Location Plans
- Passive Fire Protection (Fire proofing, Fire and Blast Resistant Barrier/Building requirements)



Fire and Explosion Risk Assessment

Process Safety

Many of Mustang's safety engineers come from chemical engineering backgrounds and have extensive experience in conducting process hazards analysis (PHA) within all industry segments, using any number of industry recognized or client specific methodologies. Examples include:

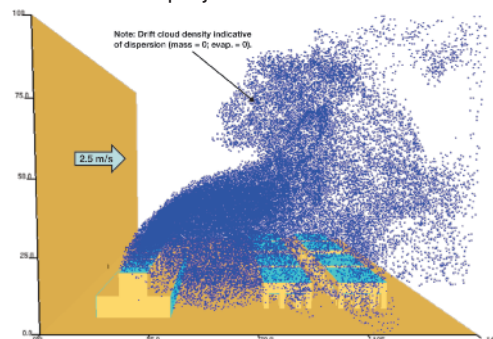
- Hazard Identification Studies (HAZID)
- Hazard and Operability Studies (HAZOP)
- Safety Integrity Level (SIL) Assignments, Layer of Protection Analysis (LOPA) for example
- API 14 J Checklist Reviews
- Safety Management of Change (MOC) reviews

The accompanying reports are provided to provide a clear, auditable record. These as a minimum, meet the documentation requirements of 29CFR1910 (PSM) and 30CFR250 BOEMRE SEMS (API RP 75).

For risk or performance based designs, Formal Safety Assessments are conducted to evaluate potential consequences and the likelihood of Major Accident Hazards. Some examples of these studies/assessments/activities are:

- Quantitative Risk Assessment (QRA)
- Fire and Explosion Risk Assessment (FERA)
- Escape, Evacuation, and Rescue Assessment (EERA)
- Dropped Object Assessment (DOA)
- ALARP demonstration
- Essential Systems Survivability Assessment (ESSA)
- Identification of Safety Critical Elements, and development of performance standards

Action Tracking Registers and final close-out documentation are provided for each project.



Specialized vapor dispersion studies help identify personnel risks.



The word **Mustang** conveys energy, vitality and full-spiritedness. That image accurately describes Mustang's people.

Mustang has established a worldwide reputation for quality engineering design, construction and project management and inspection services. Our focus encompasses upstream oil and gas, midstream projects, process plants, pipeline, automation and control, and industrial and manufacturing. Our professionals are fully backed by a hands-on management team, a solid support staff and cutting edge systems.

Our philosophy is simple – deliver the highest quality, highest value project on time, within budget and with no surprises. That's our goal, backed by Mustang energy and innovation.



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Email: technicalsafty@mustangeng.com

www.mustangeng.com