

# ENERGY & POWER RISK ENGINEERING

Supporting Your Risk-based Decisions With Insights

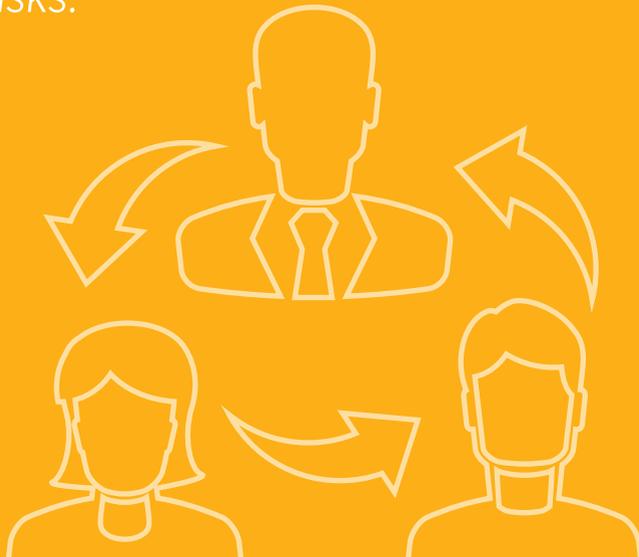




# SHARING OUR KNOWLEDGE

*Sharing our knowledge of best-practices for creating safe and effective working environments is fundamental to our approach.*

*Our thought provoking conferences and seminars, training sessions, best practice guides, and various other publications demonstrate our commitment to supporting you to improve the quality of your risks.*



# OUR ANALYSIS AND INSIGHTS

## THROUGHOUT THE ASSET LIFECYCLE

We are one of the largest risk engineering team within the global energy insurance broking industry. For over 30 years we have supported our clients in successfully managing their cost of risk. Our services are delivered by highly qualified industry experts with hands-on experience in design, construction, operation, and decommissioning across a broad range of energy and power asset types.

Our risk engineering services team is able to provide practical and cost-effective advice and assistance including:



### DESIGN AND CONSTRUCTION

	<b>FUNDAMENTALS</b>	
	<b>CONSTRUCTION UNDERWRITING REPORTS</b>	<b>CONSTRUCTION RISK SURVEYS</b>
	<ul style="list-style-type: none"><li>• Analysis of the project insurance risks and presentation of key technical information to underwriters in a concise report.</li><li>• Quantitative assessment of project estimated maximum losses (EMLs) for transit, construction and commissioning phases.</li><li>• Evaluation of project risk quality.</li></ul>	<ul style="list-style-type: none"><li>• Project update surveys to keep key markets "on-board" and aware of project progress.</li><li>• Focused on project execution with risk improvement recommendations.</li></ul>
	<b>ADVANCED</b>	
	<b>TRANSITIONING TO OPERATIONS</b>	
	<ul style="list-style-type: none"><li>• Pre start-up review of risk control measures.</li><li>• Updated analysis of loss exposures including EMLs.</li><li>• Supports seamless transfer of project to operational phase.</li></ul>	
	<b>BESPOKE</b>	
	<b>DESIGN PHASE RISK REVIEW</b>	<b>PROJECT RISK MAPPING</b>
	<ul style="list-style-type: none"><li>• Review proposed design features and plant layout proposals to minimize the risk of future losses, avoiding expensive retrospective modifications.</li><li>• Risk ranking the design quality to identify gaps in key risk control measures.</li></ul>	<ul style="list-style-type: none"><li>• Identification of project risk exposures.</li><li>• Provision of a risk register.</li><li>• Prioritization of critical risk exposures to enable the development of appropriate control strategies.</li></ul>

# OPERATIONAL



## FUNDAMENTALS

### UNDERWRITING REPORTS AND RISK ASSESSMENT SURVEYS

Detailed risk analysis to support the purchase of insurance by:

- Describing operations.
- Identifying exposures.
- Ranking risks.
- Defining key improvement opportunities and providing assistance on implementation.

### ESTIMATED MAXIMUM LOSS (EML) MODELLING

These bespoke assessments quantify exposures resulting from a wide range of scenarios including losses resulting from vapour cloud explosions, vessel disintegration, and machinery breakdown.



## ADVANCED

### BUSINESS INTERRUPTION (BI) ASSESSMENTS

- Establishes critical interactions between site operations.
- Considers a range of potential loss scenarios.
- Evaluates the financial impact of losses and explores potential risk mitigation strategies.
- Highlights key dependencies including supplier and customer exposures.

### BENCHMARKING REPORTS

Using our proprietary risk-ranking system to provide an absolute measure of risk quality, our benchmarking reports:

- Allow clients to compare their own performance against their global industry peers.
- Provide valuable insight into areas for high-impact improvement and risk reduction - for many of our clients, it has become an important stimulus for change.



## BESPOKE

### PROCESS SAFETY ASSESSMENTS

Bespoke assessments which can provide:

- An assessment of the extent and maturity of an operator's process safety management systems.
- An assessment of the process safety culture at operating sites.

### LOSS CONTROL WORKSHOPS

A range of detailed workshops are available in a number of subject areas, such as:

- Operational systems of work.
- Management of change and pre-startup safety review.
- Business interruption analysis.
- Process safety management.
- Risk benchmarking.



## DECOMMISSIONING



### FUNDAMENTALS

#### RISK PROFILING

- Thorough identification of all decommissioning risks.
- Develop a strategy that minimizes your cost and risk profile.
- Project management tool to assign responsibilities to project risk issues at the start of the decommissioning project.

#### DECOMMISSIONING MODELLING OPTIONS

- Working together to identify and model decommissioning options.
- Establish estimated maximum loss values through all phases of decommissioning.

#### ALIGNING RISKS WITH INSURANCE

- Early consideration of insurance to help achieve cost reductions.
- Align decommissioning all risks policy limits to activities.

## POST LOSS SUPPORT



### FUNDAMENTALS

#### LOSS ANALYSIS

- Identify root causes of losses and lessons to be learned to improve performance and reduce the risk of future losses.

#### CLAIMS SUPPORT

- Providing engineering based evidence to support your claims and maximize the return.
- Working with you on engineering aspects of losses and rebuild projects, to ensure effective communication to adjusters and insurers.

*Our expertise enables us to work with you in many ways to improve and understand your risk profile.*

# BENEFITS



Identification of areas where risks could be reduced

*An independent review of your plant and systems by an outside expert will provide recommendations for high impact risk improvements – this could significantly change your risk profile for the better.*



Significant savings

*There is the potential for significant savings to your total cost of risk.*



Demonstrable strategic planning

*You will be able to clearly demonstrate the logic behind your insurance risk finance decision-making process and resulting program structure.*



Industry wide benchmarks

*You will gain access to comparative data that will help provide insight in support of your organization's wider operational excellence goals.*

# OUR CREDENTIALS

We support our clients in successfully managing their cost of risk. Our team of highly qualified industry experts have practical experience in design, construction, operation, and maintenance across a broad range of energy and power risks. From the earliest planning stage to the last operational phase, our team provides practical and cost-effective advice and assistance.



A network of over 40 dedicated energy and power risk engineers.



Offices located across 4 continents.



9 languages spoken.



40 year history of collecting data.



Risk engineers with direct industry experience, that are fully trained in risk management.



Integral part of the insurance teams.

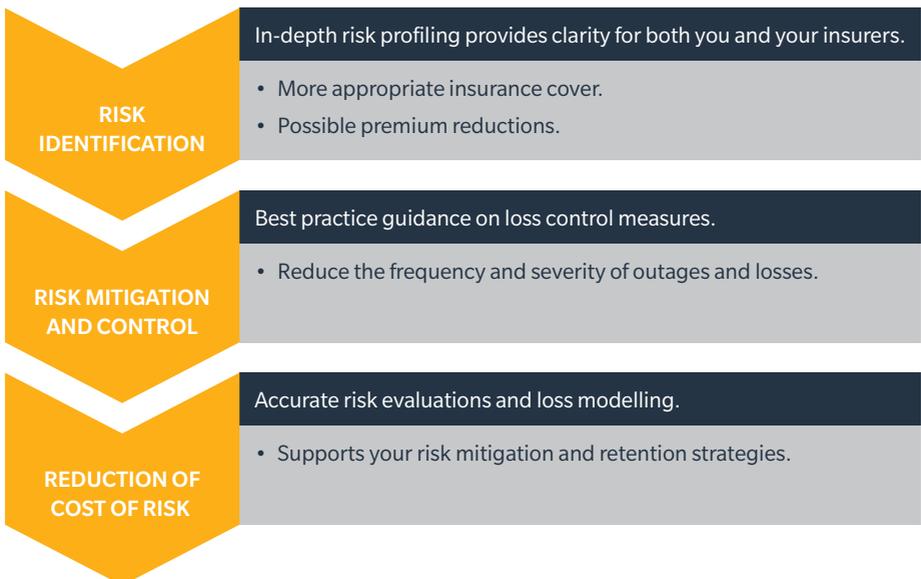
# HOW WE SUPPORT YOU

Marsh's Global Energy Risk Engineering (GERE) team works with you to reduce the likelihood and consequence of incidents and losses and, when losses do occur, that your financial exposure to these losses is within tolerable limits. We have developed unique tools, services and innovative approaches to traditional loss prevention that support this work.

From our five energy engineering hubs across the world, we work closely with underwriters to provide them with best-in-class risk engineering underwriting submissions that support enhanced risk differentiation – often leading to a reduction in premium costs.

Our risk engineers use a common set of methodologies and tools to assess and analyze your risk. In the 40 years we have been doing this work we have visited thousands of sites all over the world. The data and insights collected have been compiled into one of the most comprehensive risk database of its kind in the industry. We draw on this data to rank your risks, benchmark you against your peers, and, coupled with our deep industry experience, we deliver insight that empowers your decision making.

## SUPPORTING YOUR:



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