



AXA MATRIX Risk Consultants

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**Tailored Solutions for the
Power Generation Sector**

AXA MATRIX Risk Consultants Power Generation Sector Practice

The benefits of Risk Consulting in the PowerGen Industry are evident with proven financial impact: fewer hidden risks, effective risk mitigation prioritization, loss reduction, increased productivity, machine availability and confidence in the business' sustainability.

What can we do for your PowerGen business?

In the PowerGen sector, technology is constantly evolving to increase efficiency and extend the viability and commercial attractiveness of green and renewables technology. With innovation comes risk. This often results in insurability issues, including large deductibles and waiting periods. In addition, governmental regulations have an ongoing impact on the PowerGen sector.

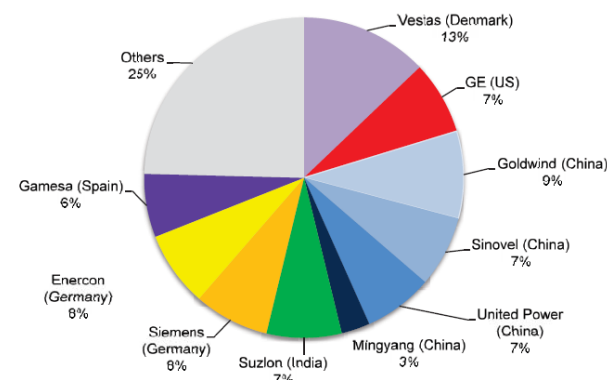
AXA MATRIX consults with and advises some of the world's largest organizations in the power generation sector. Our experience extends from Nuclear to Combined Cycle power plants to wind turbines, as well as hydro and solar. We identify, quantify and mitigate risk in the areas of fire, natural hazards, machinery and equipment, business continuity and interruption, reputation, serial failure risks, and environmental. This includes advocacy for our clients facing claims or new technology.

Some of our recent successes

- In **Laos**, we have achieved risk improvement in collaboration with plant management through the balanced implementation and completion of risk solutions, including reinstatement of active protection to generators, passive protection to grouped cables in a cable gallery, and fire detection to raised flooring in the main control room.
- In **Malaysia**, we have been leading the risk management program at a Gas Turbine peaking plant since 2012. Operating in peaking mode can result in increased thermal and mechanical stress on the Gas Turbines. The adoption of our recommended inspection intervals and maintenance scope resulted in no adverse findings.
- In **Indonesia**, we are providing risk engineering service to a hydroelectric power plant which will undergo Testing and Commissioning in April/May 2015. We conducted a review of the Testing and Commissioning prerequisites program, procedures and method statements, testing schedule, safety management, etc., to ensure the successful execution of the Testing and Commissioning program as well as on schedule start of commercial operations.

- In **Italy**, we developed a Quantitative Fire Risk Assessment methodology and tool applicable to Combined Cycle and Coal Power Plants. The objective is to provide different fire scenarios with associated loss expectancy and frequency of occurrence for each Plant.
- In **Europe/France**, we developed an expertise around the boiler technology domain related to Ultra Super Critical Steam conditions. Our experience and knowledge transfer to customers have quantifiably decreased the occurrence of cracks on boiler tubes resulting in improved reliability and availability.

Figure 4. Turbine manufactures share of global installations (2011) (Source: [62]).



Juliana Subtil Lacerda and Jeroen C.J.M. van den Bergh, "International Diffusion of Renewable Energy Innovations: Lessons from the Lead Markets for Wind Power in China, Germany and USA" (<http://www.mdpi.com/1996-1073/7/12/8236/pdf>). Published by Energies. CC BY 3.0

Stay ahead of your risks...

with AXA MATRIX Risk Consultants

AXA MATRIX Risk Consultants delivers a comprehensive range of risk management and consulting expertise to match the unique risk profile of your local and worldwide operations. Our global network of professionals combines proactive and comprehensive collaboration to help you identify current and future risks and provides pragmatic solutions to optimize and control risk. The AXA MATRIX Risk Consultants risk approach is independent, flexible, and transparent. We focus on empowering our customers to improve business results and protect brand value.

Whatever your business, AXA MATRIX Risk Consultants will help manage your total cost of risk, and be better prepared for a profitable and successful future, staying ahead of your risks.

Our PowerGen Sector Approach

1. We have designed a quantitative risk assessment approach based on fault tree analysis methodology and following treatment of the data with a mathematical/statistical model (Monte Carlo simulation software) to compute different fire risk scenarios, a methodology derived from nuclear plants risk assessment process.

2. Machinery failure has been cited as the main cause of fires in PowerGen. Thus, AXA MATRIX Loss Prevention Engineers assess the installed Machinery and Equipment at facilities and audit the associated maintenance programs to ensure the reliable and pragmatic combination of Planned/Preventative and Condition based maintenance programs to ensure the maximum equipment reliability and cost effective use of resources.

3. We have created a custom Loss Prevention process based on plant subdivisions that allows our customers to receive reports with the same structure even if associated to different technologies (CC, Photovoltaic, Wind, etc.), thereby facilitating data analysis and collection, enhancing the Risk Managers' knowledge and control on the primary exposures.

AXA MATRIX Risk Consultants strives to answer the following questions:

- How do customer risks relate to customer business priorities and trends?
- What exposures and constraints do customer entities face locally?
- How can we leverage and apply effective local or regional solutions?
- How do these risks impact the corporate risk management strategy?
- What is the required investment to control the risks? What is the quantified benefit?
- How do specific Risk Control actions and strategies impact the customers overall risk costs and risk profile?
- How do we include our trading and service partners to develop the most pragmatic and cost effective risk approaches?