

Minimizing risks

IECEX ensures the safety of personnel and equipment in fossil fuel extraction

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While many countries throughout the world are integrating renewable energy sources into their energy mix, they still rely heavily on fossil fuels.

According to the IEA (International Energy Agency), as primary sources of electricity generation, oil, gas and coal together account for the lion's share (67,4%) of the world's supply (IEA 2010).

The pros and cons

There are several advantages to having such a high share of fossil fuels in the world's energy mix. Very large amounts of electricity can be generated in one place, fairly cheaply, using coal; transporting oil and gas to power stations is easy; gas-fired power stations are efficient; and fossil-fuelled power stations can be built almost anywhere as long as they can receive large quantities of fuel.

There are drawbacks as well. Pollution is one: burning any fossil fuel produces CO₂ (carbon dioxide) which contributes to the greenhouse effect. In addition, oil, gas and coal are not renewable energy sources. Last but not least, coal mining, oil drilling and gas extraction sites are considered hazardous areas where the

risk of explosion, oil spills or gas leaks is high and always present, and workers at these sites are often exposed to harsh and extreme conditions.

Safety in potentially explosive areas relies largely on the proper and safe interaction of equipment and human factors.

Equipment failures

- 14 May 2014: an explosion in a Turkish coal mine killed more than 200 miners. The blast was allegedly caused by an electrical fault that in turn triggered a power cut. This rendered the mine cages unusable, trapping hundreds inside the pit.
- 25 March 2012: a gas leak forced the total evacuation of the Elgin offshore platform in the North Sea. In addition to oil and gas spilling into the sea for months, the incident cost billions of dollars in lost production and clean-up according to the operator.
- 21 April 2010: an explosion on a semi-submersible offshore platform in the Gulf of Mexico killed 11 and injured 16. Some 5 million barrels of oil were released, resulting in the biggest oil spill to date and costing tens of billions of dollars

in compensation and clean-up expenses.

These disasters, resulting from equipment, installation or maintenance failures, illustrate the major risks and costs that may be encountered in Ex (explosive) areas. Many other less serious accidents go largely unreported.

The IEC has the solution

While there is no guarantee that working in Ex atmospheres can be 100% risk-free, the oil and gas industry and the mining sector have tools at their disposal to make their environment as safe as possible.

The IEC, together with one of its Conformity Assessment Systems, IECEX (IEC System for Certification to Standards Relating to Equipment for Use in Explosive Atmospheres), provides very specific compliance tools for those manufacturing, repairing or operating the equipment used in hazardous areas.



Offshore oil rig

Built to IEC International Standards, tested and certified by IECEX

IEC International Standards prepared by IEC TC (Technical Committee) 31: Equipment for explosive atmospheres, provide designers, manufacturers, installers, maintenance and repair specialists with the specifications and requirements against which Ex equipment has to be built, installed, maintained and repaired. Market



Worker collecting data on a gas well

demand for these Standards has increased significantly in recent years and many countries have adopted them.

IECEX has put in place a number of Certification Schemes that provide assurance that

- equipment and systems are manufactured and operated according to the highest International Standards of safety
- service providers including repair and overhaul workshops comply with IEC safety Standards
- persons involved in these areas are competent to apply the strict safety standards

Safety and protection

A great number of companies rely on IECEX for the testing and certification of their products. Manufacturers have to meet the very strict requirements specified in the IEC 60079 series of International Standards on explosive atmospheres as well as those put in place by national or regional regulations and legislation. Proving adherence to those requirements can be costly and time-intensive. An IECEX certificate is like a passport for manufacturers of Ex equipment: it provides clear proof of compliance with International Standards and it certifies that the equipment in question carries the requisite level of protection.

Maintenance and repair of Ex equipment

Because Ex equipment has a much higher capital cost than the same equipment used elsewhere, repairing it is often more cost-effective than replacing it. The IECEX Certified Service Facilities Scheme assesses and certifies that organizations and workshops that provide repair and overhaul services to the Ex industry do so according to the strict requirements of IEC 60079-19, *Explosive atmospheres - Part 19: Equipment repair, overhaul and reclamation*. This ensures that the unique Ex safety features are not compromised during the repair or overhaul process. The System includes on-site audits prior to

issuing the IECEX Certificate, as well as periodic audit reports.

Highly-skilled workforce

To cover all safety aspects in Ex environments and to complement the Certified Equipment Scheme, IECEX has developed the IECEX Certification of Personnel Competence Scheme for assessing and certifying individuals working in potentially hazardous areas.

The IECEX CoPC (Certificate of Personnel Competence) provides independent proof that the certificate holder has the requisite qualifications and experience for working on electrical equipment located in hazardous areas and can implement IEC International Standards covering explosive atmospheres.

For the CoPC, competence is defined as “the ability to apply knowledge” rather than simply assessing knowledge. In this sense, the assessment of persons evaluates their ability to perform certain Ex-related tasks.

To learn more about IECEX and its Schemes, go to: www.iecex.com



Coal mine excavator