

Worker Safety

The Gas and Flame Safety Approach for the Power Generation Industry

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The power generation industry fuels the core of our modern everyday life. In 2019, energy consumption in the US reached 3.99 trillion kilowatt-hours (kWh), a 13-fold increase since 1950 according to *Statista*.

This increased usage comes with increased risk. No matter the fuel source or process, for workers in the energy sector, producing electricity brings a series of occupational hazards. Learn more about the best ways to address them.

Worker safety risks

In a power plant, a variety of hazards can lead to severe accidents. Some of the most common power plant hazards include electrical shocks and burns, boiler fires, explosions and hazardous gases.

When it comes to worker health, long-term exposure to toxic gases has a wide range of health effects, including heart and lung diseases. In nuclear plants, there's a high risk of prolonged exposure to radiation, which causes radiation sickness. In coal-fired plants, workers can be exposed to ammonia (NH₃) used in the Selective Catalytic Reduction (SCR) process to remove nitrogen oxides produced during combustion.

Consequently, PPE is a mandatory requirement for these challenging working environments. But there's also the abundance of potentially explosive atmospheres, which requires additional layers of protection.

The invisible danger

To produce energy, different fuels are used and emit different gases, which may be released via leaks, venting and flaring. These combustible gases can ignite, causing catastrophic explosions, fires and other serious accidents.

Occasional escapes of gas can occur in boiler pipework and burners, generator cooling, onsite water treatment, confined spaces, etc. Methane and carbon monoxide, for instance, may accumulate in pipelines, containers and other confined spaces, while coal conveyors pile up highly combustible coal dust.

In geothermal energy, hydrogen sulfide can build up in tanks, vaults and other poorly ventilated areas. In battery rooms, hydrogen leaks may occur at the generator bearings and shaft seals, in the seal oil supply system, and from the H₂ supply piping, mechanicals and purity/purging cabinet.

Hydrogen sulfide is a corrosive, colorless and extremely toxic gas. It is the second most common cause of workplace inhalation fatalities behind carbon monoxide, according to *PowerMag*. But more importantly, it can ignite easily to produce toxic vapors and gases, such as sulfur dioxide.

If combustion occurs before gas detection is possible, flame detection becomes the last line of defense

to protect personnel and assets.

Every gas hazard manifestation requires adequate safeguards.

A layered safety approach

Single detection technology can have limited effectiveness. To reduce hazard propagation and ensure total site safety, plants require a robust, multi-layered gas detection strategy.

A mixed technology approach for gas and flame detection means that each solution complements the effectiveness of the next. Since each layer acts independently, system reliability can be increased using mixed technologies.

Read more about the four gas detection layers of your total site protection.

With more than 50 years of experience in industrial safety, Honeywell offers a complete portfolio of portable and fixed gas and flame detection solutions that meet the evolving needs of the energy industry and comply with international standards, for enhanced safety and productivity.

Best-selling portable gas detectors include the Honeywell BW™ Ultra, the Honeywell BW™ Clip4, and the Honeywell XNX Universal Transmitter and FS20X Flame Detector, designed with infrared and ultraviolet sensing technologies.

Honeywell's durable software solutions combine reporting capabilities and streamline device management to reduce administrative processes, accelerate task completion, drive compliance and generate cost savings.

Power your gas detection system with Honeywell. Discover their comprehensive portfolio for the power generation industry.

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