



**Gas leak detection for boiler rooms
in commercial and industrial property**

Boiler House fact sheet



Gas leak detection for boiler rooms in commercial and industrial property.

Detectors



Sensepoint



Sensepoint Plus



Signalpoint

The Hazard:

Natural gas is one of the most widely used fuels for heating commercial and industrial property. In the event of an undetected leak it can present an explosive risk leading to structural damage, the loss of life or an expensive waste of fuel.

Most boiler plant rooms are visited infrequently and therefore any leak will go undetected. An automatic gas detection system will provide early warning of a gas release during unmanned periods.

Honeywell Analytics has manufactured, installed and serviced gas detection systems for nearly 50 years. These systems detect a gas release and generate an alarm before it reaches dangerous concentrations.

This fact sheet aims to provide an overview of gas detection as used in boiler plant rooms for commercial and industrial property.

For recommendations related to a specific project or site, our team of Area Managers are on hand to offer advice, a site survey and product demonstrations all **free of charge**.

Gas Facts:

Natural gas is predominately Methane. It is approximately half the weight of air and will rise towards the ceiling or roof space of a plant room.

Each and every flammable gas has a minimum and maximum concentration in air, when if ignited will generate an explosion. This is called the explosive or flammable range.

The minimum gas concentration in air that will generate an explosion; if ignited; is called the 'Lower Flammable Limit' (LFL). The LFL for Methane is 4.4%* by volume.

This value is now ratified across Europe replacing the former British Lower Explosive Level (LEL) of 5.0% by volume.

Potential sources of ignition can include any uncertified electrical equipment, e.g. lighting, switches control panels etc.

Honeywell Analytics gas detection systems are designed to provide a minimum of two stages of alarm prior to the Lower Flammable Level being reached.

Boiler Plant Room Ventilation:

The prime objective for boiler plant room ventilation is to ensure an adequate supply of combustion air. It can also help reduce the build up of a flammable gas concentration, however this can not be guaranteed. It is for this very reason that gas detection systems are so widely used.

The Detection System:

A gas detection system consists of a number of strategically located sensors hard wired to a control panel. Upon the detection of gas, alarm relay contacts within the control panel are used to activate audible and visual alarms. Should the gas concentration reach a higher level, a second set of contacts are used to remove the power to an electrically operated solenoid valve fitted to the gas supply line.

Another option is to use gas sensors that provide an output suitable for direct interface to a Building Management System (BMS). The BMS then cuts the gas supply and switches off any potential ignition sources.



Gas Sensors:

Several types of gas sensor are available on the market. The most reliable are the catalytic bead type. These are more specific and less prone to false alarms than the lower cost Solid State or Semi-Conductor types which are affected by changes in ambient temperature and humidity. The best catalytic bead detectors are 'poison resistant' which offer a longer operational life, typically 3-5 years or more.

Gas fired boiler rooms are usually designated as a 'safe area' i.e. not requiring hazardous area certified equipment. However it is considered good practice to use certified gas sensors to remove the possibility of the sensor being the source of ignition. This permits the operation of the gas sensors when all other potential ignition sources have been switched off at the 2nd of higher alarm level.

Not all gas sensors on the market are certified to the latest European, hazardous area and performance standards**.

Honeywell Analytics produces gas sensors certified to the latest European; ATEX; regulations.

Location of Gas Sensors:

Natural gas is lighter than air and therefore gas sensors should be located over potential leak areas. These include:

- The gas burner assembly
- The gas train assembly
- The pressure boosters (if fitted)
- The gas shut-off valve
- The combustion air intake
- The gas meter

On a small gas boiler installation a number of these points may be close together requiring a single point of detection. On installations using large shell type boilers (as in hospitals, factories or large blocks of flats) it may be necessary to fit one detector over each of these areas.

Consideration must be paid to mechanical ventilation and its likely effect upon the path of leaking gas when locating a gas sensor.

Location of Control Equipment:

Most gas detection control panels are not certified for use in hazardous areas and should be mounted away from the gas installation. An ideal location would be outside the boiler plant room so that gas readings can be checked prior to entry.

Control panels are available in a number of mechanical configurations for ease of application, these include:

- Din rail mounting for inclusion within other plant control panels
- Wall mounting
- Rack mounting

An alternative power supply in the event of power failure is also good practice and battery back-up systems are also available.

Further Considerations:

This Fact Sheet is concerned with Natural Gas fired boiler installations. For installations using Liquefied Petroleum Gas (LPG), which is heavier than air, gas sensors would need to be mounted near to the floor or in pipe and cable ducts.

Routine Service:

All safety systems including gas detection systems should be regularly serviced to ensure safe and reliable operation. Commercial / industrial gas detection systems are typically serviced and recalibrated twice a year.

This routine service should only be undertaken by the manufacturer or an approved service agent.

Contact your local Honeywell Analytics representative for further information and assistance in selecting the best system for your application.

References:

EN50073: 1999 Guide for selection, installation, use and maintenance of apparatus for the detection and measurement of combustible gases or Oxygen.

*BS EN 61779-1: 2000 electrical apparatus for the detection and measurement of flammable gases - Part 1: General requirements and test methods

**EN60079 Series, Electrical Apparatus for use in explosive atmospheres

Controllers



Unipoint



Touchpoint 4



System 57

Our Product Range



Fixed Gas Monitoring

Honeywell Analytics offers a wide range of fixed gas detection solutions for a diverse array of industries and applications including: Commercial properties, industrial applications, semiconductor manufacturers, energy plants and petrochemical sites.

- » Detection of flammable, oxygen and toxic gases (including exotics)
- » Innovative use of 4 core sensing technologies – paper tape, electrochemical cell, catalytic bead and infrared
- » Capability to detect down to Parts Per Billion (ppb) or Percent by Volume (%v/v)
- » Cost effective regulatory compliance solutions

Portable Gas Monitoring

When it comes to personal protection from gas hazards, Honeywell Analytics has a wide range of reliable solutions ideally suited for use in confined or enclosed spaces. These include:

- » Detection of flammable, oxygen and toxic gases
- » Single gas personal monitors – worn by the individual
- » Multi-gas portable gas monitors – used for confined space entry and regulatory compliance
- » Multi-gas transportable monitors – used for temporary protection of area during site construction and maintenance activities

Technical Services

At Honeywell Analytics, we believe in the value of great service and customer care. Our key commitment is providing complete and total customer satisfaction. Here are just a few of the services we can offer:

- » Full technical support
- » Expert team on hand to answer questions and queries
- » Fully equipped workshops to ensure quick turnaround on repairs
- » Comprehensive service engineer network
- » Training on product use and maintenance
- » Mobile calibration service
- » Customised programmes of preventative/corrective maintenance
- » Extended warranties on products

Find out more

www.honeywellanalytics.com

Contact Honeywell Analytics:

Europe, Middle East, Africa

Life Safety Distribution AG
Wilstrasse 11-U31
CH-8610 Uster
Switzerland
Tel: +41 (0)44 943 4300
Fax: +41 (0)44 943 4398
gasdetection@honeywell.com

Americas

Honeywell Analytics Distribution, Inc.
405 Barclay Blvd.
Lincolnshire, IL 60069
USA
Tel: +1 847 955 8200
Toll free: +1 800 538 0363
Fax: +1 847 955 8208
detectgas@honeywell.com

Asia Pacific

Honeywell Analytics Asia Pacific
#508, Kolon Science Valley (1)
187-10 Guro-Dong, Guro-Gu
Seoul, 152-050,
Korea
Tel: +82 (0)2 2025 0307
Fax: +82 (0)2 2025 0329
analytics.ap@honeywell.com

Technical Services

ha.emea.service@honeywell.com

www.honeywell.com

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10/07

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