AUREL d.o.o. PLINODOJAVNI SUSTAVI
Borongajska cesta 81b Zagreb, tel. 01/230-15-48, mob. 098/282-052, mail: aurel@aurel.hr, www.aurel.hr

The explanation of the need for gas detection system installation into boiler rooms and the varieties of system realizations

Due to frequently asked questions on the need to install **gas detection** system into boiler rooms as well as their design (**Ex-proof or Non Ex-proof**) we would like to explain the entire problematics of installation and help you out with specific cases.

We are the manufacturers of gas detection systems and we are present on the market for years. We are able to assist you by advising you about the process with regard to all the regulations, laws and practices.

According to the Regulations in Croatia boiler rooms which must be equipped with a gas detection system are:

- boiler rooms of more than 50 kW power
- boiler rooms which are below the ground
- boiler rooms which are part of buildings where more or less frequently a larger number of people gathers (theatres, cinemas, schools, hospitals, kindergartens, halls, aged care homes etc.)
- gas detection systems has to be installed if that is stipulated in the studies on safety at work or fire protection and if that is ordered by the project documentation
- gas detection can be installed on the user's demand even if it is not determined by the law.

The criteria for the appropriate equipment

The boiler room is the area where in normal conditions the explosive atmosphere is not expected, but can appear in conditions of malfunctioning. **Therefore, the area of boiler rooms should be perceived as a hazardous area (Zone 2) unless stated otherwise in the project documentation.**

According to the Regulations on technical normative for designing, construction, operation and maintenance of boiler rooms, after forced shut down when gas detection system alarm goes off – a ventilation fan should be Ex-proof as all other equipment that is under voltage after alarming, such as emergency lighting.

Subsequently, gas detectors should be Ex-proof, due to the need for gas detection even on occasions when power supply is shut down – so it could be known that the gas concentration has fallen under the allowed level in order to let the boiler room **safely work again.**

Apart from it, the gas leak surveillance is necessary **even during maintenance and overhaul when the power supply in boiler room is shut down.** There is also the number of unpredictable hazardous situations of gas leak that can potentially harm the boiler room.

To ensure that the gas detection system is constantly working it should be **power supplied before the Main Switch in the electrical circuit or by the battery unit**.

The main supply should always be done over the **special** electrical circuit with a **separately** labeled fuse that is specifically used for gas detection.

It is highly recommendable to place a gas detection unit out of the hazardous area because the central unit doesn't have to be Ex-proof. (The central unit can be Ex-proof under high costs.) On the other hand, the gas detectors are **connected within the hazardous area and they had to be Ex-proof.**

Project task:

- To ensure the constant surveillance of the hazardous area
- Avoid interfering with Ex-proof protection of the hazardous area
- Comply with the Regulations on technical normative on design, construction, operation process and maintenance of boiler rooms
- Comply with the Regulations on Ex-proof protection of electrical equipment in hazardous areas
- Upon construction, project should be made in comply with the area classification if one is made by the relevant institution

A frequently asked question is why Non Ex-proof gas detectors must not be used in boiler rooms.

The reason for that are above mentioned facts as well as the Regulations and the law on Ex-proof protection of electrical equipment in hazardous areas.

AUREL d.o.o. PLINODOJAVNI SUSTAVI
Borongajska cesta 81b Zagreb, tel. 01/230-15-48, mob. 098/282-052, mail: aurel@aurel.hr, www.aurel.hr

Non-Ex proof detectors should be used exclusively in those places which got the approval by the relevant institution that the case of hazardous situation would not happen there.

There is an assumption that if gas detectors are not Ex-proof, then the gas detection system turns off as well as electrical power in the boiler room.

In this case there is a disadvantage of not being able to determine when the explosive **atmosphere disappeared.** That cannot be determined without the gas detection system turned on, and in a situation like that, the Regulations have not been followed because you have not achieved **the space surveillance.**

In Croatian Regulations it is ordered that the gas detection is used only as a control option, with protective performance on the level sound and flash light alarm. But, in practice, there are systems which are constructed in a way that they have sound and flash light alarm and the executive function of shutting down the boiler room, turning on the enforced ventilation, automatic closing of the gas valve etc. Although, this may be a bit more than the Regulations suggest, these functions only improve safety, and as such become the rule of good technical practice.

Every project documentation on gas and explosive gas detection should be made based on these facts. **It is important to notice that there should be clear written instructions enclosed on what to do in case when the alarm goes off.**

We hope that we thoroughly explained the importance as well as the varieties of system realizations and that it is important to deal with protection through the project task while complying with all the norms, standards and regulations.

Aurel Ltd.

AUREL d.o.o. PLINODOJAVNI SUSTAVI
Borongajska cesta 81b Zagreb, tel. 01/230-15-48, mob. 098/282-052, mail: aurel@aurel.hr, www.aurel.hr