Automatic fire extinguishing systems for paint spraying plants

Safe for certain.

minimax
With the extreme high degree of automation in painting technology, the risk of fire has also increased. If sources of ignition are not already detected in the origination phase and nipped in the bud, the result can be a devastating fire. The protection of human life and of facilities therefore necessitates the use of special fire protection systems, which are specially adapted to the respective process technology.

Fire risks in painting technology:
- Use of flammable paints or coating materials.
- Formation of explosive concentrations of paint or coating materials.
- Combustion of the spray mist at the powder gun or atomizer, especially with electrostatic painting processes.
- Coated parts which are poorly grounded or not grounded.
- Deposits of coating materials or paints in booths, filters or air scrubbers.
Reliable all-round fire protection
The fire protection concept for paint spraying plants focuses on the extremely fast responding fire extinguishing system. It automatically detects acute fire hazards and fights fires at its incipient phase in several stages, depending on the respective combustion speed, with gaseous extinguishants or water spray.
Parallel to the extinguishing process, it initiates important control actions, e.g. to interrupt the supply of power, paint, air or solvents, to switch off high voltage, machines, robots, conveyors and ventilation systems, to close fire doors and ventilation flaps and to activate the alarm organization. In order to develop a customized and effective fire protection concept, all conditions in the environment must be taken into account.

MINIMAX PROVIDES RELIABLE FIRE PROTECTION

The protection is suitable for:
- electrostatic powder-coating and wet painting systems
- systems with paint robots
- manual and automatic paint spraying plants
- paint ovens and exhaust zones
- ventilation ducts and paint recovery systems

Inlet for workpieces of a powder coating booth
Shuttle non-return valve block for extinguishant release into spraying equipment
Painting processes in particular are subject to the formation of open flames and the rapid spread of fire. Therefore, optical radiation detectors are recommended for first line fire detection, since they can already detect sources of ignition. These fire detectors can be positioned to monitor especially hazardous zones or the painting plant in its entirety.

In order to provide optimum protection for all applications, fire detectors of various types and sensitivities are used; these can also be adapted for specific types of applications.

**2-channel flame detector**
Both channels of this detector operate in different spectral ranges of infrared radiation. Possible signals are compared with the stored typical patterns of a hostile fire, e.g. radiation intensity or flicker frequency. If the signals received by both channels correspond to the saved values, an alarm signal is sent to the fire detection control panel.

**Spark detectors**
Spark detectors are used for special applications, e.g. for monitoring of ducts. They are installed only in dark, closed systems. Their signal receiving circuitry is similar to that of the flame detector; however, they already respond to the slightest infrared radiation and send the converted signal without delay to the fire detection and control panel.
Detectors with advanced fiber optics attachments
These are used for monitoring areas where flame detectors and spark detectors cannot be installed directly in the hazard zone due to limited space or in case of thermal or electromagnetic influences.

Heat detectors
These are recommended as an additional safety measure, since they enable more extensive monitoring in combination with flame detectors. For example, adjoining zones can also be included.

Push-button release
These are installed for the manual activation of local protection and room protection systems along the escape routes.

Fire detectors for explosion hazard zones
The automatic detectors comply with Protection Standard IP65 and therefore fulfill – even under extreme conditions at the installation location – the most important requirement for trouble-free operation.
If the detectors are carried out as Protection Standard Ex-I (inherent safety) they can be used in potentially explosive areas of zones 1 and 2, 21 and 22. These approvals correspond to the latest requirements for equipment in explosion hazard zones (ATEX).
Fire detection control panel – analysis and control
All important components of the automatic fire extinguishing systems for paint spraying plants, such as detectors, activating elements and alarm units, are connected with the fire detection and extinguishing control panel.

In the event of an alarm, the fire detection and control panel registers and verifies the signals sent by the detectors, issues an alarm and activates the extinguishing system and the pre-programmed control functions.

Therefore, the following features are extremely important for the protection of paint spraying plants from fire:

- Alarm analysis – non-delayed (local protection) or after alarm analysis (room protection).
- Programmable safety circuits, e.g. 2-detector or 2-zone dependency
- Monitoring of the extinguishing system for operational reliability and extinguishant supplies.

The extinguishing system
The Argotec® extinguishing system, which uses carbon dioxide (CO₂), argon (Ar) or nitrogen (N₂) as extinguishants, provides for the optimum protection of paint spraying plants.

The gases extinguish the fire leaving no residue and therefore cause no subsequent damage. The extinguishants used reduce interruptions in operation to a minimum in the event that an room protection system is activated.

If a local protection system is activated, interruptions in operation can even be prevented completely under certain circumstances.
Fire extinguishing systems for painting technology – an important factor in the overall fire protection concept

Despite the importance of a fire extinguishing system, it can of course only be part of a comprehensive fire protection concept. For optimum protection of the entire area, planning must be preceded by a risk analysis and evaluation.

In order to implement a comprehensive fire protection concept, Minimax offers a complete fire protection program: from fire extinguishers to fire and gas detection systems, sprinkler systems and stationary fire extinguishing systems with gaseous extinguishants and structural fire protection. Competent advice and special engineering allow us to find an individual solution for every problem, at a price that is affordable.

Approved, recognized and, often for good reasons, provided Minimax fire extinguishing installations for paint spraying systems consist of tried and tested VdS-approved system components that can be adapted for the individual facilities.

In Germany the design of booth protection systems (total flooding) and local protection systems is regulated by the Verband der Schadenversicherer e.V. in the directive VdS 2093. In addition, the BG safety regulation BGI 764 "Electrostatic Spraying" prescribes the installation of extinguishing systems in electrostatic painting facilities.

24-hour service and maintenance

The Minimax fire protection service is available 24 hours a day in case of emergency. Experienced service technicians provide fast, reliable and competent assistance.

Minimax service does not end with the final inspection of the fire extinguishing system and introduction to it. A maintenance contract with Minimax puts the burden of responsibility on us and reduces your work load. Because only regular maintenance and repairs by competent specialists can ensure the constant operational readiness of the extinguishing system.

The following European standards require the use of extinguishing systems:

**Wet paint spraying systems:**
- **EN 50176**
  Automatic electrostatic spraying installations for flammable liquid spraying material
- **EN 12215**
  Spray booths for application of organic liquid coating materials

**Powder-coating systems:**
- **EN 50177**
  Automatic electrostatic spraying installations for flammable coating powder
- **EN 12981**
  Spray booths for application of organic powder coating material

For detailed information, please refer to the Minimax product sheets.
OUR COMPETENCE

Fire extinguishing systems for painting technology – an important factor in the overall fire protection concept
Despite the importance of a fire extinguishing system, it can of course only be part of a comprehensive fire protection concept. For optimum protection of the entire area, planning must be preceded by a risk analysis and evaluation.

In order to implement a comprehensive fire protection concept, Minimax offers a complete fire protection program: from fire extinguishers to fire and gas detection systems, sprinkler systems and stationary fire extinguishing systems with gaseous extinguishants and structural fire protection. Competent advice and special engineering allow us to find an individual solution for every problem, at a price that is affordable.

Approved, recognized and, often for good reasons, provided Minimax fire extinguishing installations for paint spraying systems consist of tried and tested VdS-approved system components that can be adapted for the individual facilities.

In Germany the design of booth protection systems (total flooding) and local protection systems is regulated by the Verband der Schadenver- sicherer e.V. in the directive VdS 2093. In addition, the BG safety regulation BGI 764 “Electrostatic Spraying” prescribes the installation of extinguishing systems in electrostatic painting facilities.

24-hour service and maintenance
The Minimax fire protection service is available 24 hours a day in case of emergency. Experienced service technicians provide fast, reliable and competent assistance.

Minimax service does not end with the final inspection of the fire extinguishing system and introduction to it. A maintenance contract with Minimax puts the burden of responsibility on us and reduces your work load. Because only regular maintenance and repairs by competent specialists can ensure the constant operational readiness of the extinguishing system.

The following European standards require the use of extinguishing systems:

**Wet paint spraying systems:**

EN 50176
Automatic electrostatic spraying installations for flammable liquid spraying material

EN 12215
Spray booths for application of organic liquid coating materials

**Powder-coating systems:**

EN 50177
Automatic electrostatic spraying installations for flammable coating powder

EN 12981
Spray booths for application of organic powder coating material

For detailed information, please refer to the Minimax product sheets.