Experts in fire protection

AMX4004 WEA
Smoke detector for wind turbines

The AMX4004 WEA aspirating smoke detector was developed specially for use in wind turbines, detecting fires very early, with a robust industrial design to protect it from the typically raw service conditions.

Up to three sensors, which can be used in combination, ensure reliable and early warning of fire with an attendant high level of security against false alarms. An integrated air-flow monitoring system also ensures that monitoring functions faultlessly when the switch cabinets are cooled. The aspirating smoke detector is equipped with an automatic adjustment mode to adapt it automatically to the ambient conditions.

The AMX4004 WEA is a reliable and durable piece of equipment which will withstand vibration as well as extreme temperature variations and climatic conditions:

- penetration by salt water and moisture
- cold temperatures, ice and snow
- lightning strike
- industrial atmospheres (e. g., in the vicinity of refineries and chemical factories)

Advantages at a glance

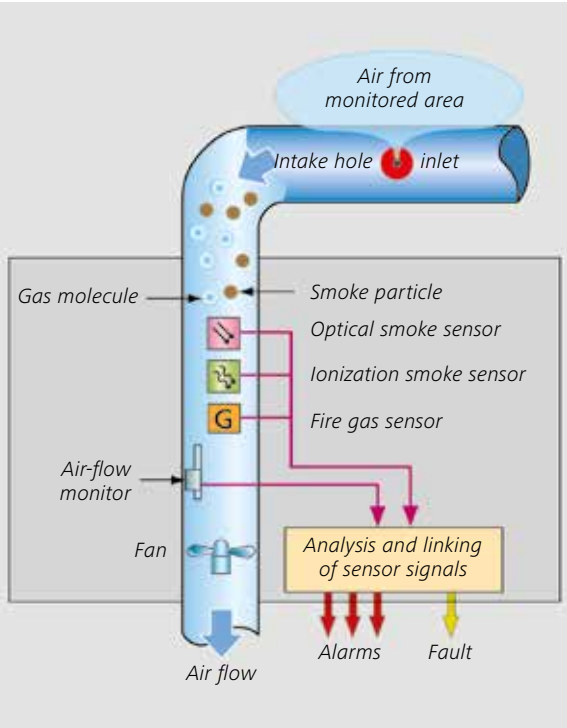
- Multiway analysis enables graded fire alarms
- Free positioning in any suitable place in the nacelle or the tower
- Reliable fire detection and a high level of security against false alarms
- Impervious to the typical raw service conditions
- Integrated automatic calibration ensures optimal adaptation to the ambient conditions
- Approved by FM Global and VdS Schadenverhütung

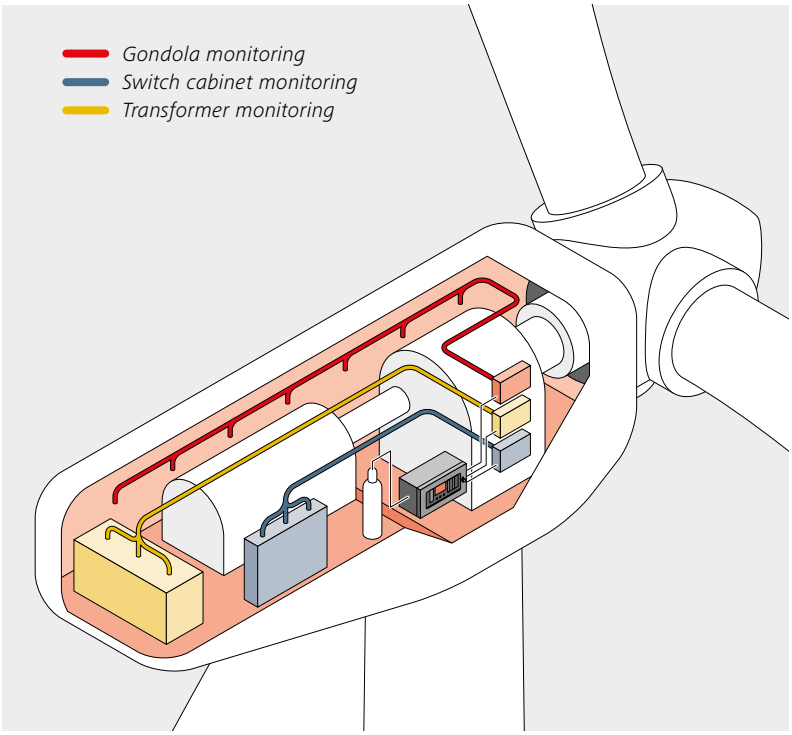
FM APPROVED

VdS

Functionality

The device continuously takes samples of the air in the areas monitored, which is piped to the sensors. The sensors analyze the smoke aerosol and optionally fire gases as well.





Inside the casing of the detector, a fan generates a partial vacuum, which continuously extracts air samples from the area being monitored through a connected system of pipework with tiny perforations. These air samples are led through a series of three different sensors which analyze them for typical fire characteristics – smoke aerosols and CO conflagration gases. The sensor signals are then processed by an intelligent evaluation unit. The transmission of signals is carried out in accordance with the configuration of the particular system.

An integrated air flow sensor monitors the aspirated air for a continuous volume flow. Any exceedance or undershoot of the system-specific configured threshold value is shown on the LCD display and forwarded as a collective fault.

The AMX4004 WEA can be operated either through a fire detection control panel or by means of potential-free contacts to a freely-programmable control (PLC).

Risks

Installation and operation of wind energy plants demand a major capital investment, which can be put at risk by a tiny electrical or mechanical defect causing total destruction by fire. The greatest fire risk emanates from electrical switch cabinets and electronic controls. Apart from lightning strikes when the lightning conductors are defective, a further particular fire risk is presented by all the mechanisms including the hydraulic equipment and braking system. Fire spreads in these areas particularly rapidly. A smouldering fire caused by a defective or overloaded component will nearly always lead to an open outbreak of fire which could even result in a total loss.

The AMX4004 WEA can control an automatic extinguishing system by means of connection to a fire control panel and, if necessary, shut down the wind turbine. Early detection of fire incidents can thus prevent serious consequences, including, in extreme cases, the destruction of the wind turbine.

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