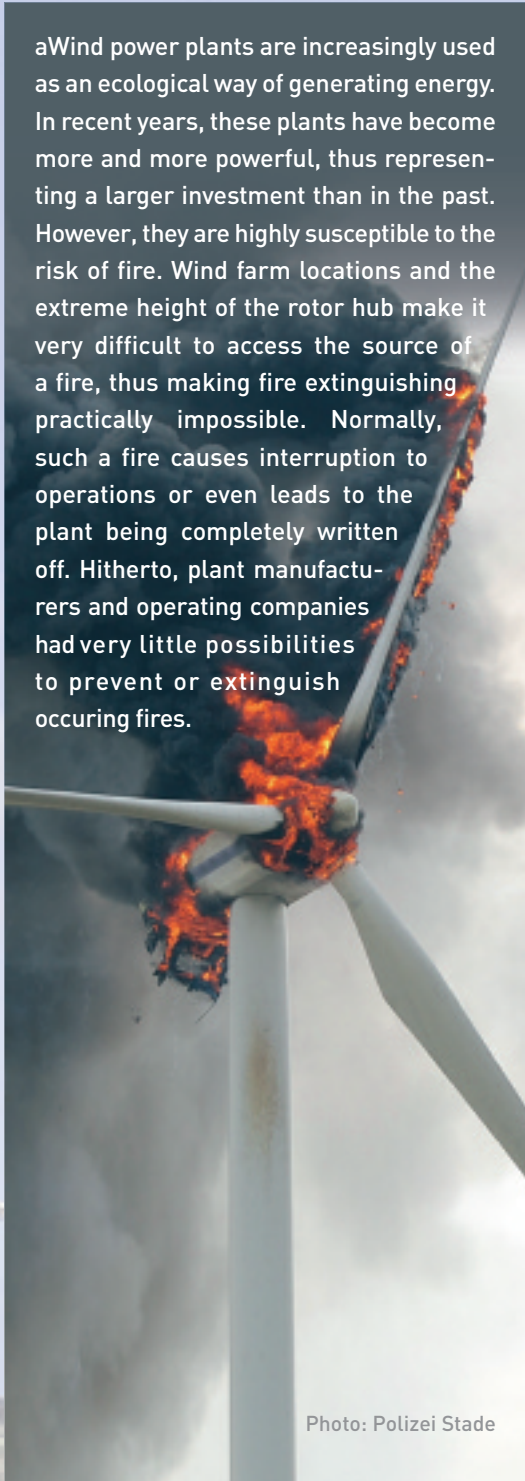


Fire Fighting Systems for Wind Power Plants



Get the Technology

Technology for the future – we offer you first-class fire protection solutions for wind power plants, ensuring crucial operating safety. You focus on clean energy generation – and we see for effective fire protection.



Wind power plants are increasingly used as an ecological way of generating energy. In recent years, these plants have become more and more powerful, thus representing a larger investment than in the past. However, they are highly susceptible to the risk of fire. Wind farm locations and the extreme height of the rotor hub make it very difficult to access the source of a fire, thus making fire extinguishing practically impossible. Normally, such a fire causes interruption to operations or even leads to the plant being completely written off. Hitherto, plant manufacturers and operating companies had very little possibilities to prevent or extinguish occurring fires.

Noske-Kaeser stands for experience, quality and reliability. Our professional skills are based on more than 130 years of experience in the fields of air-conditioning, refrigeration and ventilation as well as the development of fire fighting systems and NBC protective equipment. Commercial and naval vessels, rail and special vehicles throughout the world are equipped with Noske-Kaeser systems and units.

In co-operation with highly regarded partners, Noske-Kaeser develops innovative and customized package solutions for fire protection on large wind power plants. As supplier in chief to the German navy, we benefit from over 50 years of experience in the development and installation of effective fire protection systems meeting highest quality requirements.



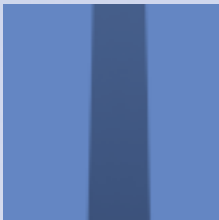
Fire protection for wind power plants

Fire protection generates operating safety – our customized package solutions offer active fire protection including fire detection, remote alarm monitoring and automatic fire fighting systems.



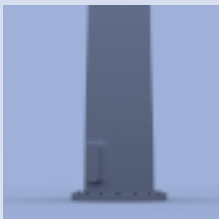
Light foam system

Fire protection in the nacelle – our foam-based fire fighting system provides the nacelle with ideal protection by means of a light foam filling the entire nacelle in just a few minutes and thus, cutting off the fire's oxygen supply.



Inert gas system

Fire protection for electrical systems – our inert gas system offers well-directed protection for control cabinets and switchgear rooms. Due to displacing of oxygen, any occurring fire is extinguished very quickly which effectively avoids damages to the electrical systems.



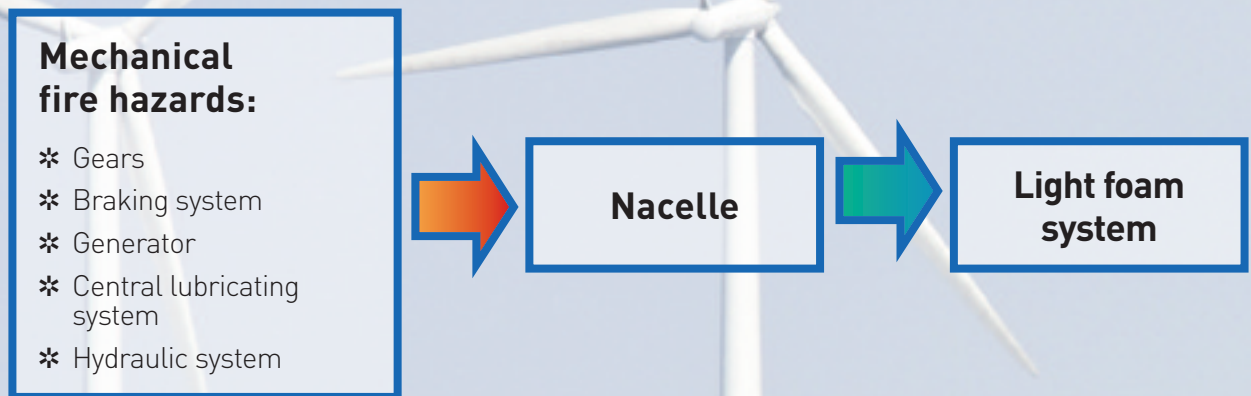
Fire alarm system

Fire protection with overview – our fire alarm system can be freely configured and can monitor all areas as well as control the installed extinguishing systems. The aim is to prevent fires and, in the event of a fire, to extinguish it quickly and effectively.

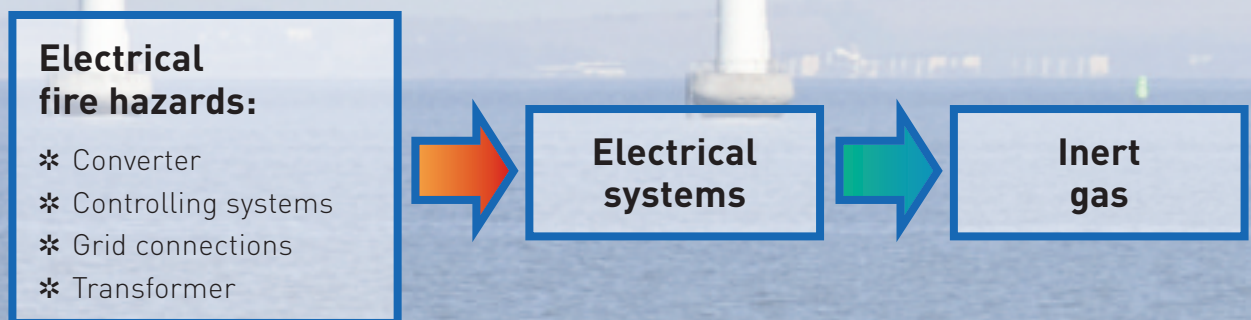
Fire protection for wind power plants

Fire protection generates operating safety – our customized package solutions offer active fire protection including fire detection, remote alarm monitoring and automatic fire fighting systems.

Fire hazards occur in electrical and mechanical components of wind power plants, whereby components containing oil represent the main source of fire in mechanical components.



Fire hazards associated with mechanical components are located in the nacelle. Due to the high air exchange rate, fire extinguishing gases are in this case ineffective. Instead, light foam is used which is supplied in the exact amount to completely fill the nacelle.



Electrical fire hazards are generally associated with the base of the tower. Here, inert gas is used which is fed directly into the control cabinets and housings ensuring that any fire is extinguished without leaving any residue.

A blue square icon with a white vertical bar on the left side, resembling a stylized 'L' or a door frame.

Light foam system

Fire protection in the nacelle – our foam-based fire fighting system provides the nacelle with ideal protection by means of a light foam filling the entire nacelle in just a few minutes and thus, cutting off the fire's oxygen supply.



Functioning of light foam system:

A fire alarm centre or a pneumatic detection system triggers the actuator of the nitrogen (N₂) bottle valve. The valve opens, nitrogen enters a water container and thus, expels the water. The water flows through a mixing device which adds foam agent to the water in a defined ratio. The resulting mixture is distributed evenly to the foam generators by means of pipelines. Hence, from a small volume of liquid the foam generators create a large volume of foam.

Your advantages:

- * Reliable fire extinguishing
- * Highly effective, even in areas which are not gas-tight
- * Light foam presents no hazard to human beings
- * Light foam is rapidly biodegradable
- * Light foam prevents damage to closed switchgears

Inert gas system

Fire protection for electrical systems – our inert gas system offers well-directed protection for control cabinets and switchgear rooms. Due to displacing of oxygen, any occurring fire is extinguished very quickly which effectively avoids damages to the electrical systems.



Functioning of inert gas system:

Inert gas is stored under high pressure in steel bottles to reduce space required. Depending on the size of the area to be protected, one or more bottles are connected to a manifold. The pipeline is laid directly to the objects in need of protection. The system is activated by an electrical impulse from the fire alarm centre. The switchgear units can be protected as groups by a central inert gas system, or individually by separate systems, section by section.

Your advantages:

- * Immediate fire fighting
- * No damage to electrical switchgear
- * High degree of operating safety
- * Fire extinguishing without leaving residues
- * Non-toxic extinguishing agent



Fire alarm system

Fire protection with overview – our fire alarm system can be freely configured and can monitor all areas as well as control the installed extinguishing systems. The aim is to prevent fires and, in the event of a fire, to extinguish it quickly and effectively.

During servicing the fire protection system can be switched over to manual operation, meaning that an alarm can only be initiated by the fire alarm centre itself or by the press-button fire alarm in the relevant detection area. To prevent the occurrence of false alarms and false trippings, the system works on the basis of dual detector interdependency. The operating status of all detectors is permanently monitored, thus it can be clearly distinguished between a malfunction and a genuine alarm.




As the largest open area, the nacelle can be fitted with ultraviolet flame detectors; at particularly sensitive points with heat sensors or with smoke detectors. Switchgears are generally equipped both with smoke and heat detectors. Each area will be equipped in addition to the automatic fire detection system with at least one press-button fire alarm for manual activation of the system. All detectors, alarms and actuators are connected to a ring circuit, keeping the necessary cabling to a minimum.

In connection with an alarm management system, the fire protection systems of entire wind farms can be centralised at a permanently manned station and all operating parameters can be visualized and recorded.

Your advantages:

- * High flexibility due to free configuration
- * Reliability of detection based on new alarm technology
- * High degree of operating safety due to fire prevention
- * Minimum cabling required
- * Remote monitoring of all wind farm systems possible

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- Air Conditioning
 - Refrigeration
 - Fire Fighting
 - NBC Protection
 - Piping
 - Service

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