BECAUSE WE BELIEVE IN THE VALUE
OF MEASURED PROTECTION.

THE MOST ADVANCED SYSTEMS FOR
SECURITY AGAINST THE MOST DELICATE HAZARDS

RG SYSTEMS W-FOG

W-FOG System

for the protection of

WIND TURBINES

WATER MIST

IN WIND TURBINES

The fire protection of wind turbines is a recent demand due to the heavy implementation that this equipment has had in recent years.

The sector has had strong growth, encouraged by renewable energy promotion policies and a technological leap that, currently, allows land and maritime farms of large size, performance and installed power.

It deals with complex installations of **a very high cost,** whose principal characteristic regarding the design is that they are found **in distant locations,** unoccupied and not accessible in short time periods.

At the same time, any damage means **prolonged stoppages and interruptions of the service** which penalise the profitability of the investment, entailing **heavy economic losses** and they can even be a total loss if the structure is affected.

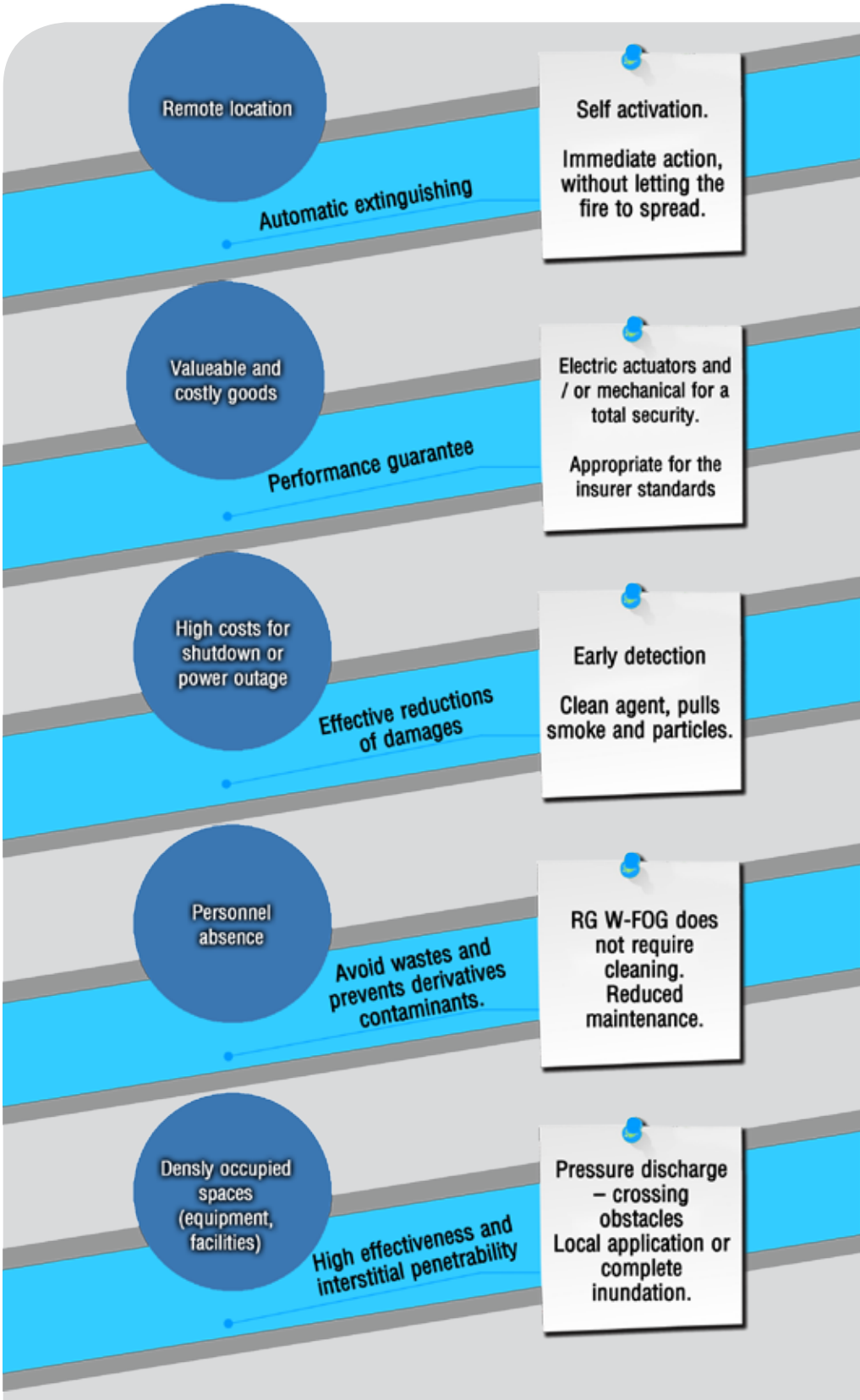
Due to its singular characteristics, it is necessary to use harmless protection: **RG W-FOG water mist is discharged in a minimum amount,** to absorb the heat from the fire and evaporate without leaving residue or affecting the functioning.

WHY USE RG W-FOG

IN WIND TURBINES

The equipment of RG W-FOG water mist is very appropriate as it adapts to the particularities of the location, accessibility and functioning of the windmills.

It allows the **extinction design to be customised for these singular hazards**, guaranteeing automated functioning and without the need for external contributions (neither of water nor of power), even in the most remote or unfavourable locations.



EXTINCTION IN WIND TURBINES

CAUSES OF FIRE:

- Electrical failures
- Mechanical failures
- Overheating by excess speed of the rotor
- Accumulation of dirt or oils next to hot surfaces
- Maintenance work
- Lightning
- Forest fires

RG W-FOG acts on wind turbines according to the known extinguishing principles of the water joined to the features of high-pressure misting:

COOLING:

Water has a great capacity of heat absorption: vaporising 1 kilo at 20ºC captures 2.6 MJ (0.6 Mcal). The misting in droplets allows this exchange to be fast and efficient: **it "freezes" the fire.**

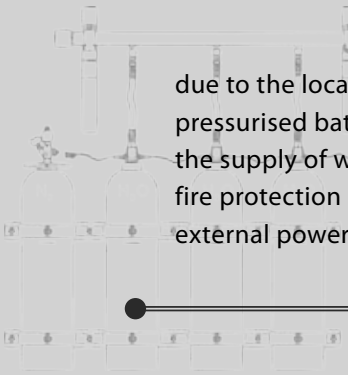
INERTISATION:

With the evaporation, it increases the size 1,700 times. Since the nozzles discharge near the source, a displacement of the surrounding air takes place: by separating fuel and oxygen, combustion is impeded.

BLOCKING RADIATION:

The drops that do not evaporate remain in suspension. The misting effectiveness of the nozzles produces a fog that blocks and confines the irradiated heat: **propagation is avoided.**

COMPONENTS



due to the location, generally remote, of the wind farms, pressurised batteries with nitrogen are used to guarantee the supply of water and the autonomous functioning of the fire protection equipment, even without the provision of external power.

Cylinders

They have no fuse element, so that, when activated, all the nozzles of the affected area are discharged.

Open nozzles

Protect several hazards simultaneously with the same equipment.

Directional valves

RG SYSTEMS HAVE CENTRAL TK, A THERMAL-MECHANICAL SYSTEM OF REDUNDANT AND AUTONOMOUS DETECTION, WHICH FUNCTIONS WITHOUT EXTERNAL POWER SUPPLY IN VIEW OF A HEAT SOURCE. IT CAN BE INSTALLED AS SIMPLE DETECTION (TK-SIMPLEX: POSITIVE IN ONE LINE) OR CROSSED (TK-COMPLEX: NEEDS POSITIVE IN IN CROSSED LINES).

Activation:

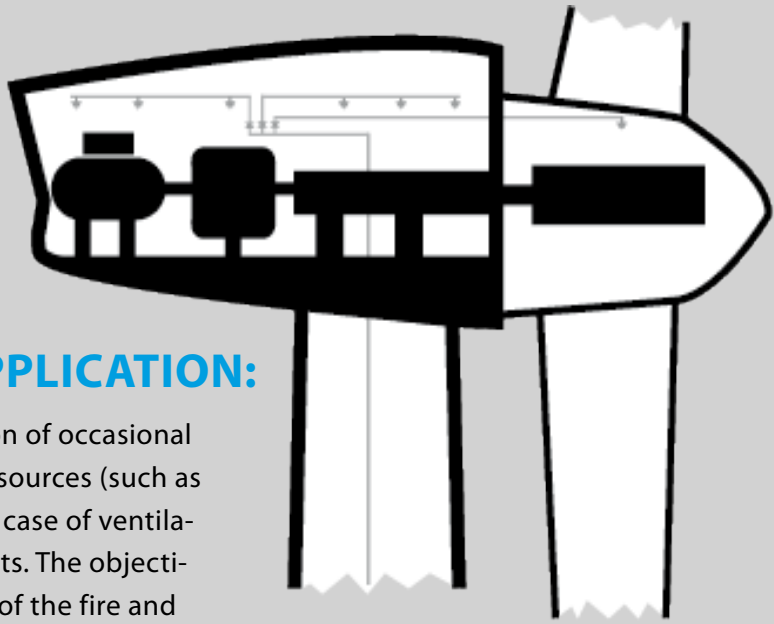
is recommended to ensure these important investments with double detection that avoids the disablement of the extinction equipment if the electrical activation fails.

INSTALLATION EXAMPLE

Water mist is the only clean and ecological agent recommended for the protection from all the hazards present in a wind turbine: *nacelle, rotor, electrical installations (including substation), transformer, inverter, cabinets and hydraulic systems.*

Due to its versatility, it is useful both for rooms and for equipment, being able to be used in total flooding or as a local application.

The different configuration alternatives –dry pipes, wet pipes or pre-action– make possible its adaptation to hazards of variable sizes and protection demands.

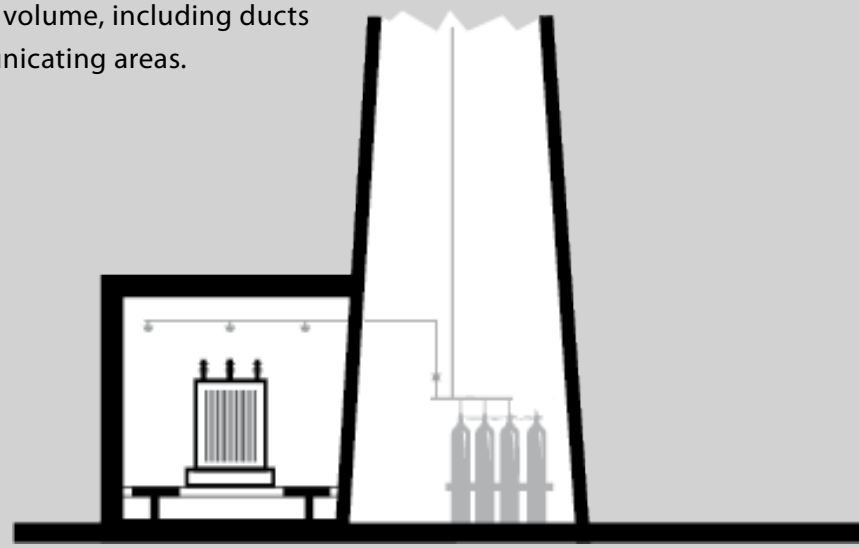


LOCAL APPLICATION:

For the protection of occasional and unconfined sources (such as machinery) or in case of ventilation or air currents. The objective is the control of the fire and its extinction.

TOTAL FLOODING:

It provides complete protection of the entire volume, including ducts or communicating areas.



RG-Systems offers guarantee and security for all the actors involved.

CLIENT

security guarantee in the protection of these costly installations. Immediate resumption of the production.

INSURANCE COMPANY

A proven design is offered according to applicable regulations, adapted to each case and accompanied by a complete dossier justifying the adopted solution.

INSTALLER:

reduction of diameters and less weight of the installation. Technical sheets are supplied to facilitate the assembly, as well as maintenance manuals and after-sales support (incidents, spare parts, reloading, etc.)

CERTIFYING ORGANISATION:

All the products have approvals and declarations of suitability according to tests by entities of recognised international prestige.

COMMITMENT

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