BECAUSE WE BELIEVE IN THE VALUE
OF MEASURED PROTECTION.

THE MOST ADVANCED SYSTEMS FOR
SECURITY AGAINST THE MOST DELICATE HAZARDS

RG W-FOG SYSTEMS

W-FOG System

for the protection of

TRANSFORMERS

WATER MIST

IN TRANSFORMERS

Transformers modify the voltage of a circuit, raising it (TE) or reducing it (TR) according to the usage needs and power transport.

The losses for damages are not quantified only by the impairment of equipment, but also by the stoppage of the power supply seriously affecting the companies, industries, basic services such as hospitals or urban areas, with important economic repercussions.

RG W-FOG integrates the known extinguishing properties of water with the most advanced technologies, in order to provide optimised extinction based on:

MAXIMUM HEAT ABSORPTION

achieved with the mist, which sprays the water exponentially increasing the surface area of the exchange.

REDUCTION OF CONSUMPTION

90% less water is required, with which the installation (storage, pipes, equipment) is ostensibly optimised.

LOCAL INERTISATION:

the production of vapour dilutes the oxygen around the flame, hindering the combustion until it is suffocated.

WHY USE RG W-FOG

IN TRANSFORMERS

Due to its key function in the power supply network, it is essential to provide them with a fire protection system that is at the same time fast, efficient and harmless for this equipment.

These are critical hazards	Effective and quick	**Autonomous equipments,** automatic activation and immediate action
Vulnerable to fire as well as to its consequences	Avoid damage due to heat and impurities	The temperature drastically goes down. Pulls polluting smoke.
Very sensitive to collateral effects	Damange control	Works through absorption of heat, and not through flooding: does not affect them and reduces the hazard of explosion
They are part of major infrastructure.	Control de daños	Blocks radiation, prevents the spread and can extinguish the fire.
Equipment with variable characteristics	Adaptable and multipurpose system	**Versatile:** fit for solids, liquids and gases kind of fires; all sizes; for rooms or open spaces

CAUSES OF FIRE

The principal causes are electrical failures and internal defects. The primary origin is difficult to discern due to there usually being several mixed.

EXTERNAL FACTORS:

- Overloads and short-circuits
- Surges or frequency reductions
- Work in the proximity
- Inadequate maintenance

INTERNAL FACTORS:

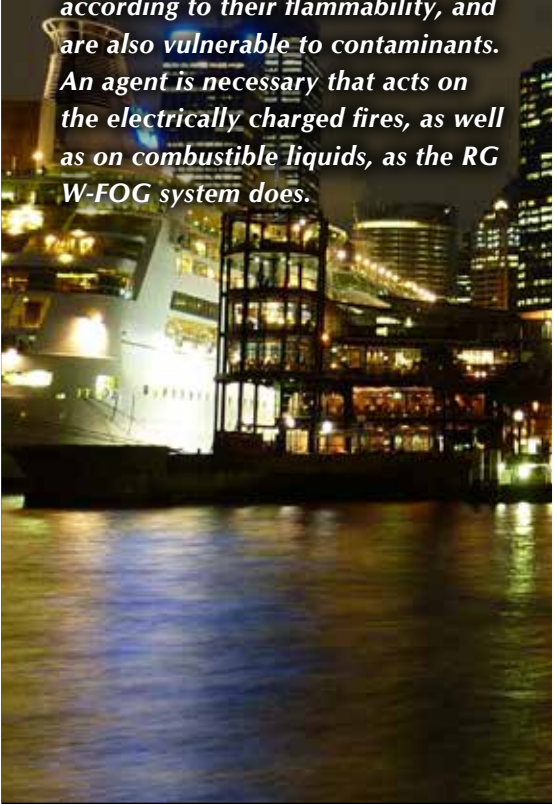
- Ageing, principally, which produces deficient cooling.
- Defects in the magnetic circuit or in the connection.
- Short-circuits in the loops.

In addition to the intrinsic fire hazard, the oil types can catch fire due to electric arcs that subtly vaporise part of the oil, producing breakage or explosions, with spilling and/or spreading of hot fluid. Using water mist contributes to controlling the propagation, suffocating the fire and avoiding the oil in flames from transmitting to other areas or other equipment.

There is a great variety of transformers according to the classification that is used. For the effects of fire protection, they are divided into dry or oil types, according to their morphology.

The former houses the windings in epoxy resin, which is fireproof but a poor refrigerant. The water mist acts by suffocating the source and rapidly cooling the volume.

The oil types dissipate the heat better, but suppose a greater hazard according to their flammability, and are also vulnerable to contaminants. An agent is necessary that acts on the electrically charged fires, as well as on combustible liquids, as the RG W-FOG system does.



COMPONENTS

The misting capacity determines the effectiveness of the complete system, for which reason RG-Systems specifically tests all its nozzles.

OPEN NOZZLES:

are used with dry pipe installations. The detection control panel activates the discharge, which is done through all the nozzles of the network or sub-network.

PUMPING UNITS:

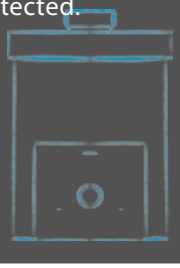
for the protection of the large-sized transformer rooms with higher agent demands, if a prolonged action is foreseen, or else as part of the protection system of larger installations (like a hospital), the diesel or electric pumping units propel the agent through long or complex pipe routes.

BATTERY OF CYLINDERS:

composed of water bottles powered by nitrogen, in a proportion of 3:1. It is supplied fully equipped and according to demand of the design agent, in cylinders of 40, 67, 80 and 140 L.
The activation may be electric and/or manual, electric-striker and pneumatic.

CONTROL VALVES:

allow the routing of different independent hazards, in order to protect them simultaneously with a single piece of equipment. With an electrical drive, they allow the moving towards the equipment in which the fire has been detected.



MECHANICAL DETECTION CONTROL PANELS:

provide redundant autonomous detection, composed of calibrated thermal fuses that mechanically activate the extinction, even after a power outage or explosion. They are supplied in two versions: to be activated through a breakage in a line, or with double confirmation, which requires a positive in each crossed line.

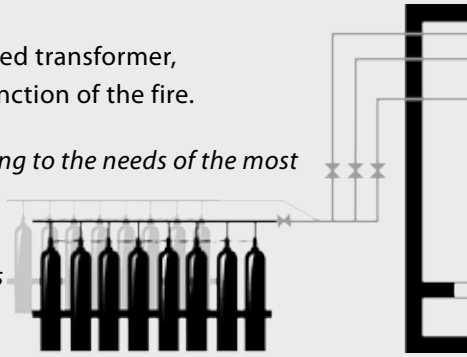
INSTALLATION EXAMPLE

The RG W-FOG water mist equipment is highly recommended for use in transformers, both dry and oil types. They only need to be located in the interior, but for the application it is not necessary for it to be a closed area.

We can find transformers in compartments with grates or with extractors for ventilation, as well as equipment in large open industrial areas that make total flooding unfeasible.

Large transformerrooms
or with several transformers

The local application is used on the affected transformer, since the objective is the control and extinction of the fire.



***Battery or pressure unit**, according to the needs of the most unfavourable hazard to protect.*

***Backup systems**: a reserve battery of cylinders: for greater security, in case a second discharge is required, or a diesel and electric pumping unit, to guarantee the action even in view of mechanical or electrical supply failures.*

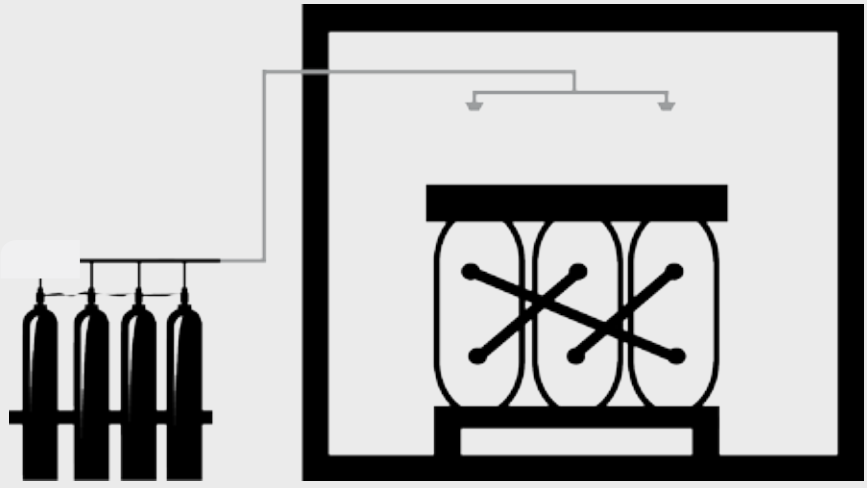
FOR THE TOTAL FLOODING OF THE AREA:

Pumping unit:

formed by a bench with control panel, collector and pumps:

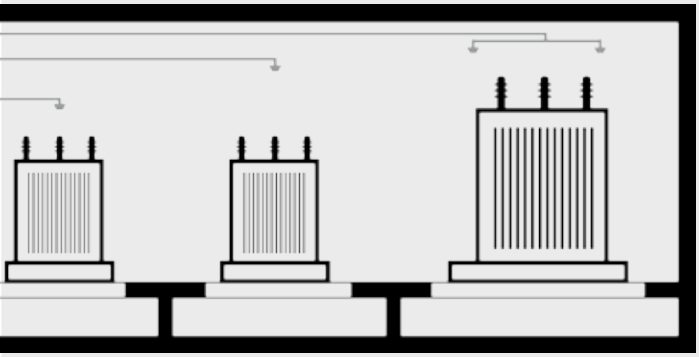
- electric RG W-FOG UAP
- diesel RG W-FOG UAPD
- mixed, with electric and diesel pumps.

These will be: principal unit(s), auxiliary unit (optional) and jockey unit (wet pipe and pre-action). The configuration is adjustable in number and power, according to demand.



In all cases, the RG W-FOG water mist's effect of the entraining the smoke impedes harmful particles from damaging this delicate equipment, while favouring that the fog remains a longer time in suspension, avoiding the re-ignitions and effectively cooling the hazard.

***Control valves**: direct the agent to the affected transformer.*



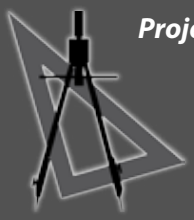
***Open nozzles:** for an intense discharge in the entire affected area.*

***Blocking valve:** to isolate the installation in case of maintenance tasks.*

Small and medium rooms or small isolated transformers

Total flooding is used in rooms and the local application in open spaces. Due to the lesser demand for water, the most appropriate option is to use self-pressurising batteries, predesigned for the most unfavourable case with the necessary cylinders of water and nitrogen, during the discharge time.
If various independent rooms are to be protected, the total flooding installation will be used, with open nozzles for an intense discharge in the entire affected areas, as well as control valves.

COMMITMENT



Project

Instalation

Support

Trainig

The design of the extinction with water mist is very flexible and adapts to the specific needs.

It allows, on the one hand, the action against the fire in a harmless manner, while avoiding the propagation and possible re-ignitions.

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