

# Transformers and Electrical Machinery Protection Guide

## Several solutions for the same risk.

**Transformers or electrical machines (e.g., Turbines) pose a significant fire risk. With high temperatures inside, high pressures of oil for cooling, high electric arcs voltage, internal equipment, braking systems, ... An early and faultless detection of a fire in a transformer or electrical machine, will allow to execute the necessary maneuvers so that the fire does not go further.**

Transformers and electrical machines are subject to fire due to various causes. Often the fire occurs due to a failure or deterioration in the insulation of the transformer. This produces electric arcs that overheat the cooling oil and can break the tanks that contain it and generate a fire. Fire can also be generated due to lightning and occasionally dirt from insulators.

Proper maintenance can reduce risks. Fault protection through shielding, grounding, lightning rods, switches, and relays can help reduce the risk of fire.



Despite this, fires can happen. A suitable fire detection system, coupled with an extinguishing or cooling system, in addition to passive protection, will minimize the risks.

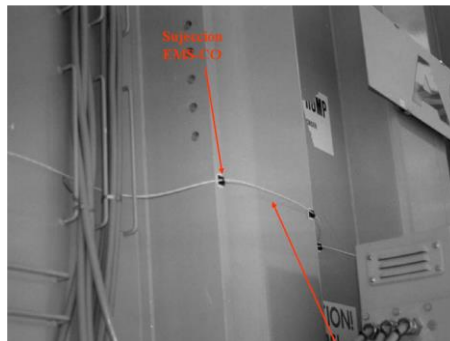
TASC, within its fire detection product range, offers three solutions that can be individual or complementary.

### SENSOR CABLE PROTECTION

It is a cheap and effective solution to detect fire or simply overheating. The TASC digital sensor cable can be easily installed with the necessary fittings to the extinguishing pipe itself:



Or glued to the transformer itself to detect overheating as soon as possible:



The sensor cable will provide the necessary signals to activate the extinguishing or cooling system and to isolate the transformer or electrical machine.

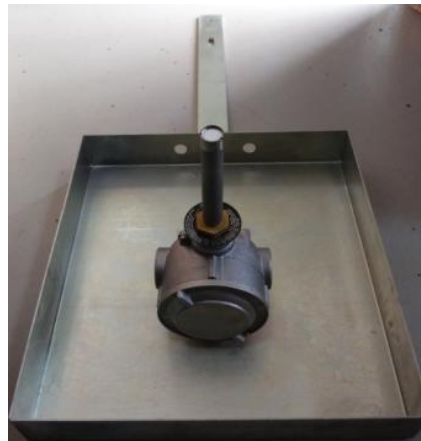
It has the advantage of being able to be installed indoors or outdoors and is practically immune to electromagnetic interference produced by electrical energy.

### PROTECTION BY FENWAL DETECTORS

It is a protection very similar to that of the sensor cable, it is about installing these detectors in the vicinity of the riskiest elements.

They have the advantage of thermovelocimetry (Rate of Rise) that the digital sensor cable does not have.

For earlier detection, heat retention plates are usually used.



### FLAME DETECTOR PROTECTION

Due to breakdowns in the tanks or circuits that contain the cooling oil of the transformers, there can be leaks of this oil. The normal thing is that there is a bucket so that the oil spill is confined to a specific area delimited by the cubeto. This oil can ignite and cause a fire outside the transformer or electrical machine.

The best solution for this type of fire is the installation of flame detectors because their response speed is higher than thermal detectors.



For these cases we recommend a combined UV/IR flame detector, which is suitable for both indoor and outdoor use.

Electricity consumption is growing exponentially around the world, so there are more possibilities of overheating or fire in transformers or electrical machines. Adequate fire protection and the maintenance or renewal of the fleet of this type of equipment will result in greater security in the supply of electricity for users and companies.

For any questions or clarification about this guide and request prices and references you can contact us at the following email addresses:

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