Remote controlled monitors - a smart and reliable answer for a safer protection

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Safety is more than just being careful: it includes knowing what is unsafe and how to avoid the careless actions and inactions that can make an area unsafe.
Poor safety practices come from a lack of safety familiarity (need of trainings), while carelessness results from a disregard for that awareness. Both conditions can lead to catastrophe.
Yet, in some cases it may not always be possible to extinguish a fire, and, in such case, the fire should be controlled, and vulnerable equipment should be kept cool.
It is usual to provide a range of means for fighting and controlling fires, and fixed monitors are really useful tools required to provide cooling water spray or foam against radiation and/or to divert vapour clouds away from the source of ignition during fire operations or to deliver dry chemical powder for suppressing fires (for gas fires).

The adaptability of this kind of system is really noteworthy.
In fact, SANCO monitors can be used for the protection of many **fire risks**, such as

- jetty and harbours
- docks
- oil fuel and chemical storage tanks
- chemical plants
- oil refinery processing areas
- LNG cargos, jetty areas
- dyke areas (oil, fuel, chemical storage tanks)
- aircraft hangars
- helicopter loading paths
- offshore helidecks and platforms

Fire risks and extinguishing agents

There are different **types of extinguishing agents** according to each risk to protect, so it is essential to identify when to use one agent rather than another.
For example, water is an extinguishing agent usually always available and it can be operated to cool surfaces exposed to radiation or affected by fire.
A water curtain can be useful to limit the thermal effect of radiation and, in some circumstances, it may be used also to extinguish a jet of burning gas. Water monitors are usually used to cool exposed items, such as equipment and gangways for escape. A water stream can also be used to cool metal supports and deck surfaces during a fire, to prevent weakening and buckling of structures. In the jetty situation, cooling has to be provided for the monitor poles/structures and the gangways between the ship and shore is important for escape.
On the other hand foam extinguishing agent suppresses fire by separating the flames from the fuel surface, retarding vapour release and cooling the surroundings, by excluding oxygen from the flammable vapours, reducing the rate of gas vapours cloud and, subsequently, flash fire or vapour cloud explosion.
In particular, when dealing with hydrocarbon products or flammable liquids, foam can be the most appropriate solution.
Several foam concentrates have been developed over the years, each with particular features.
On the market there are several foam concentrates that

Series of remote controlled monitors employed for oil T-berth

can be according to their nature and they can be chosen according to the type of fire risk to protect, such as the following ones:

- Alcohol-Resistant (AR): as AFFF/AR and FFFP/AR
- Aqueous Film-Forming Foam (AFFF)
- Synthetic foam (S)
- Film-Forming Fluoroprotein Foam (FFFP)
- Fluoroprotein foam (FP)

However, foam concentrates can also be selected according to the expansion ratio (3% or/to 6%), that can be chosen according to the way the system has been designed: a 3% concentrate has a double concentration than a 6%, therefore it requires half the product to produce the same end result. Otherwise, it grants a double autonomy of the foam system.
Also foam is not the most suitable agent for extinguishing a fire coming from liquefied gas (LNG or LPG), while dry chemical powder is the most effective means for fire suppression, while water can be a suitable agent for a cooling effect on gas fires.

A major step forward in the world of fire fighting

The best way to predict the future is to invent it." Alan Kay (American computer scientist)

Technological developments in built-in fire protection measures are becoming familiar, with new extinguishing

Remote controlled monitors on towers

Local control panel (suitable to operate 2 RCM)

equipment and methods and alternative methodologies to emergency awareness.
The development of new products of buildings and relevant contents are creating changing and more challenging fire scenarios nowadays.
This has an effect on fire fighter tactics, protective clothing and equipment, tenability conditions, and it challenges some basic assumptions in the design of buildings for fire.
The resources that are available on site should be such to run an effective initial response to the fire in order to avoid possible uncontrolled catastrophic situations.

The increasing number of fires becoming much larger due to the late arrival of fire team and/or due to the complicated and inaccessible structures built today suggests the use of remote-controlled monitor systems (RCM), particularly recommended for fixed installations.
Fixed monitors may be of course manually operated, but they may be also designed in order to be remotely controlled by means of one or more remote control stations placed in a strategic area that allows a safe operation.
The fire team who is advancing to the fire can rapidly and safely intervene thanks to the help of remote-controlled monitors, that attack and control large fires from a relatively safe distance, such as from the control rooms placed in a safe area and/or from other auxiliary control points.
Remote controlled monitors can be stand alone or they can be part of a monitor network with multiple units controlled from one or more control panels.
The largest system with RCM monitors that I have personally ever been involved to design and manufacture includes an operation & control station (plus various local stations) that controls 36 monitors placed on

towers.

Monitors can be operated and moved thanks to:

- the valve for feeding the monitor, that opens/closes
- horizontal rotation movement (normally between 340° and 360°)
- vertical rotation movement (usually -75° + 80°)
- setting of stream control (in case of water nozzle the flow can be adjusted jet/fog, in case of foam barrel with the possibility to change the shape of the jet)

Moreover, water network valves can be opened/closed in order to activate the external cooling system for cooling poles and/or the safety escape ways (as above mentioned).

Remote-controlled monitors come in three main types:

A) electrically operated (the most employed)
B) electro-hydraulically operated (more utilized)
C) hydraulically operated (not used anymore due to the complicated and difficult maintenance that is required)

The above monitors can be supplied in several versions:
- for safe area
- for hazardous zone, explosion proof according to EXe or EXd or ATEX (for electrical equipment and for associated devices mounted with the monitor).

Moreover, the body can be made in stainless steel or marine bronze and, in some cases, they can be made of a special alloy suitable for very low temperatures (-35°C or even -40°C)
Monitors for fixed installation can be located on the top a pole or a platform with variable heights, usually between 6 and 25 meters, or they can even be placed on tower of ships.
At the base of the pole (or platform) a control panel can be installed, often in EXd execution, connected to a console placed in a safe area on which all signals and controls of other monitors of the same type (RCM) are collected and the valves used for controlling the water/foam line.
This kind of monitor is particularly suitable for fire risks such as docks and jetties.
In case of jetty protection, the fire appliance is not limited to RCM but it also includes:

- escape ways for personnel (with relevant spray nozzle net)
- hydrants, suitable to deliver water (for cooling, sometimes the hydrant can be foam type and it comes with relevant devices to product it)
- fire cabinets for hydrants (stainless steel or GRP made) complete with all accessories (hoses, nozzles, etc.)
- large size hose reels (1 ½" x 30 or 40 mt not kinkable hoses) able to spray water or foam thanks to a built-in foam concentrate tank (usually of 200 lt capacity)

In relation with electrically operated RCM the water feeding is made through a water pumping station, activated by the control panels and all the operations are controlled by the same main control panel.
This kind of system is really reliable, it quickly provides action thanks to electrical remote controlled devices. It does not need any particular maintenance.
The console can be installed also 250-300 meters away from the monitor, thus allowing the operator to interface by a local control panel or even by a master control panel and sometimes the monitors can be wireless controlled.
On the same pole both a foam monitor and a dry chemical monitor can be mounted, because they can be employed in a independent way on flammable

Remote controlled fire monitor to be fixed on top of pole

liquids (foam monitor) or flammable gases (dry chemical monitors) or event they can work simultaneously for both type of risks a twin agent system. Dry chemical is the fastest means for extinguishing the fire and foam AFFF or AFFF/AR seals permanently the fire, preventing the fire re-ignition. The most known dry chemical powders are Ultrex K, Monnex and Purple K.

These monitors can be also coupled with thermal imaging fire detection system in order to efficiently detect hot spots and extinguish fires in an automatic way.

An ideal fire control system would be able to properly identify the fire, activate a fire suppression system, and then turn itself off.
This may result in lower false alarms, it will provide enhanced detection, improve efficiencies, and use several sensing technologies.
Some examples of fire detection technologies called “trace” and VID (video) systems, that can be integrated with remote-controlled fire fighting monitors.
An important development is toward more specific products and more specialized systems for specific applications and niche markets.

We, SANCO, are available to supply customized protection schemes to provide a verified level of confidence, whenever and wherever needed.

Nico Zorzetto

Nico Zorzetto, Export & Marketing Director as well as shareholder of Sanco S.p.A., has been working in the fire fighting field for the last 40 years. Even if he graduated in Economics, he has always been dedicating its interest to technological innovation for “reliable products”.
He has been participating to the realization of several new products and systems; in particular he is co-creator of airmobile fire fighting systems (fixed type and rotating wing) for the fire fighting of bushfires. He has been publishing several articles – national and International - relevant to fire fighting subjects.
He operates also with national and International organizations for the Civil Protection Organizations, as well as with security matters, with jobs also with NATO.

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