

# hydramist® Case Study - HM Prison Service Accommodation Units

## General Information

HM Prison Service has recognised that, in a cell fire, a standard hose reel offers limited ability to fight a fire. Cell fires are tackled by inserting the fire fighting appliance nozzle through a small 'inundation' point usually located in the cell door. During testing commissioned by HM Prison Service, it was observed that unless the fire was directly in front of the door then little or no water came in contact with the fire.

A significant issue was that smoke from the fire presented a greater risk to both the cell occupants and rescuers than the fire itself.

It was also observed that the use of conventional hose reels consumed large quantities of water. This created extensive water damage resulting in an extended 'turn around time' of the affected cell and frequently caused damage to cells below.

## Specification

We were asked by HM Prison Service to participate in a series of tests held at the British Research Establishment (BRE) using both fixed and hand held high pressure Hydramist® fire suppression systems.

The BRE test criteria set were:

- Inundation to last for 5 minutes after pre-burn and operation of internal cell fire detection systems
- Simulate 'rescue' of an inmate involving opening the door for a set period of one minute
- Re-closing the door and waiting 10 minutes during which time the fire was not to resume

Hydramist® tested both mobile and hosereel mounted hand held lances flowing between 7 and 15 litres/minute and fixed in cell nozzle with glass frangible bulb operation using a locally mounted pump unit flowing 15 litres/minute.

## Results

In all tests Hydramist® successfully extinguished the fire at the first attempt. More importantly, immediately we began to inundate with Hydramist®, the cell temperature, toxic gases & smoke were dramatically reduced to 'tenable' levels ensuring that there was sufficient oxygen throughout the cell to sustain life.

It was observed that during the 'rescue' and ten minute waiting period after inundation that the fire did not resume; temperatures & toxic gases in the cell continued to fall, remaining well below levels that could be harmful to life.



## Design & Installation

Using the building layout drawings, Watermist Ltd. is able to design an installed system sympathetic to the building fabric, structure and other services whilst delivering 21st century fire fighting technology.

Working closely with the various main contractors for the prison service and their Mechanical and Electrical contractors, Watermist Ltd. and our installers Fireworks Fire Protection Ltd. were able to develop a design that satisfied the applications, the buildings and the clients' budgets.

The prison service uses a variety of Hydramist® systems including:

- Mobile 8 unit which has a self-contained 35 metre high pressure hose with lance and nozzle, an integral 35 litre water tank and runs from a standard 3 pin, 13 amp electrical socket
- Fixed hose reel systems where a number of wall mounted hose reels with standard 35 metre hose with lance and nozzle are connected to a plant room mounted pump unit which offers the capacity to run any two hose reels at the same time and a spare back-up pump in case of failure
- Modular Hose Reel wall mounted cabinets containing both 35 metre hose, lance and nozzle & a single phase electric motor and pump.
- Fixed in-cell systems with a nozzle mounted at high level in the cell wall, operated automatically when heat ruptures the frangible bulb mounted in the nozzle, connected to one of our range of either single phase or three phase electrically driven pump units.

The extensive experience of our engineers and the installation methods employed by Fireworks Fire Protection Ltd have enabled all contracts to be carried out to demanding standards, smoothly and to the complete satisfaction of HM Prison Service.

**watermist®**

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