

## Firemac FM Fire Ducts: Case Study: Hamad Medical City, Doha, Qatar



Hamad Medical City  
Ventilation, Pressurisation and Basement Car  
Park Ducts  
Doha  
Qatar

The Hamad Bin Khalifa Medical City in Doha is spread across three hospitals and provides a full range of care.

The total capacity is 1,100 beds, and is the second largest healthcare development in the Middle East, with a QR1bn budget.

Firemac FM Fire Ducts are installed across the development and provide a variety of applications including fire resistant ventilation, pressurisation, basement, and kitchen extract ducts.

### Hamad Medical City: Performance Specifications of Firemac FM Fire Ducts

- Ventilation Ducts / Smoke Outlet Ducts
- Pressurisation Ducts
- Basement Car Park Ducts
- Kitchen Extract Ducts

### Fire resistance period

- 2 hours Uninsulated
- 2 hours Insulated

### Pressurisation Ducts

Pressurisation ductwork is typically used in protected stairways, lobbies, safe areas, corridors and fire fighting shafts. This type of ductwork is a special form of mechanical ventilation which maintains positive pressure in critical areas to prevent smoke entering from adjacent compartments.

Pressurisation ducts must be able to maintain an air supply to these critical areas for the duration of a fire, and because of this fire dampers cannot be used.

In addition to pressurisation ducts Firemac FM Fire Ducts were also used to provide fire protection for the building's ventilation, basement car parks and kitchen extract systems. These were a mixture of insulated and uninsulated systems.

Firemac FM Fire Ducts do not require insulation when handling temperatures up to 350°C. If a duct is not within 500mm of other combustible materials it is not normally required to be insulated even in fully developed fires. Where insulation is required Firemac FM Fire Ducts, with the addition of suitable density rock mineral wool, satisfy the stability, integrity and insulation performance of BS476: Part 24: 1987 (ISO 6944:1985) for 2 hours.

### Insulation

Following the guidance in BS9999, installing an uninsulated fire resisting duct system is normally acceptable to the approval authorities when personnel or combustibles are at least 500mm from the duct.

Sometimes fire engineers are only concerned about the temperatures on the outer surface of the duct when it is exposed to much lower internal air temperatures, e.g. 300°C or 400°C. In this case additional rock wool may not be required.

Thermal or acoustic insulation can be fitted to the outside of the duct for ambient, non fire conditions. This insulation material must be non combustible, and is normally a rock or glass mineral wool.

Class O acoustic insulation can normally be used inside the duct.

