
THE SD200

TRIPLE P PROJECTS LTD

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Those involved in the design and procurement of sprinkler systems are frequently faced with the problem of insufficient water pressure within the town's main system.

In the past they have been able to rely upon the integrity of the Mains System providing sufficient water pressure to operate fire sprinkler systems to their design capability. Reductions in town's main pressure have resulted in many existing sprinkler systems failing to meet their operational requirements.

Where reductions have occurred, it may be necessary to supplement the town's main by installing pumps and tanks. This very traditional method is often impractical or indeed impossible due to space restrictions within the site.



The SD200 has been designed to overcome the problem of low main's pressure. The intelligent system continuously monitors its situation and adapts its response accordingly. It maintains the pressure in the Sprinkler system at the designed level while preventing damage to the town's main.



The SD200 is easily integrated into existing town's main systems. Its compact size and ease of manoeuvrability allows positioning in otherwise inaccessible areas. Its space saving design is especially suitable for congested inner city sites, offices, shops and other town centre developments. It is ideal for existing premises such as schools where the positioning of a conventional pump and tank system is not a viable option due to health, safety and security issues. For new buildings its space and cost saving design is a prime advantage.

System Overview

Sprinkler systems require a guaranteed water supply. For many years the town's main provided a reliable source of water. However, over recent years the Water Industry has pursued a policy of mains pressure reduction. This reduction of pressure has certainly proved to be a successful method of reducing leakage in the mains network. However, this policy frequently results in an inadequate water supply for sprinkler systems.

One solution for improving a "failed" supply is the provision of a dedicated pump and water storage tank. The disadvantage with this option is not only limited to the financial cost. Large water storage tanks require space, which is frequently not available in inner city areas and older buildings. Where there is space, the costs can be prohibitive. With the growing realisation that water is becoming an increasingly scarce resource, sensible conservation strategies need to be recognised as a significant public benefit. Thus, rather than retaining copious amounts of water in storage tanks, the preferred solution has to be to maximise the existing towns supply.

Historically, there have been a number of problems associated with the use of pumps to augment towns' main pressure and the primary development considerations have involved the need for an innovative solution.

In the very simplest terms, the **SD200** Pump is designed to maximise the water supply available from the town main by enhancing the existing available pressure without detriment to the town's main supply.

Typical operation of a sprinkler system:

1. A sprinkler system when in the standby mode is filled with water; with an array of sprinkler heads fitted that act as heat sensors/water control valves. On detecting a rise in temperature, each sprinkler head will operate independently of the others – so a fire may cause one or more sprinklers to operate.
2. A fire will cause a sprinkler head to operate, releasing water from the sprinkler head.
3. Water flows from the town's main through the non-return valve fitted at the site boundary, through the sprinkler alarm control valve & through the installation pipework to the operating sprinkler head(s) located at the seat of the fire.
4. Water flow through the sprinkler alarm valve will initiate a fire alarm signal.

Due to modern water management techniques, the town's mains pressures are frequently reduced. This has resulted in water supplies from town's mains becoming inadequate for sprinkler protection of premises whether for life safety or material damage use.

The **SD200** pump has been developed specifically to enhance the town's main pressures to the fire protection in the event of a fire occurrence, thus complementing current water management techniques.

Sequence of events using the SD200 pump:

1. A sprinkler head operates.
2. If the water pressure available from the town's main is inadequate for correct sprinkler operation, the SD200 pump detects the low pressure and starts running.
3. In the event of a town's main becoming deficient in pressure, the pump controller will automatically reduce the pump speed; thus maintaining a positive suction pressure at all times. The unit is designed to work in a tight envelope where both the minimum and maximum pressures are totally controlled.
4. A by-pass arrangement is fitted to the pump, so that in the event of servicing of the pump & valves, town's main water would continue to be available for fire fighting.

Vacuum and Over-pressurisation prevention

The heart of the SD200 Pump operation is its intelligent controller. Deriving the appropriate signals from sophisticated pressure monitoring, the controller prevents the overloading of the town's main and excessive sprinkler system pressure by tightly controlling the pump motor speed.

A positive suction pressure is maintained at all times by utilising a pressure sensor, thus negating the possibility of a vacuum forming in the towns' mains.

Over-pressurisation of the sprinkler system is prevented by the location of a pressure sensor. This sensor restricts the generation of system pressures to a pre-set figure (Typically 8.0 bars)

Back Flow Prevention

To protect the integrity of the towns' main water supply from possible backflow contamination, a backflow prevention arrangement is provided. While the SD200 pump is in standby mode the pipe work immediately downstream of the backflow preventer is maintained marginally above the town's main pressure. This compensatory pressure is ensured irrespective of backflow from the sprinkler system pipe work into the town's main.

Key Features of the pump:

1. It will only operate in a fire condition where the town's main has a 'low' pressure.
2. It cannot produce vacuums in the suction pipe/town's main, thus protecting the town's main from damage and contamination, (unlike traditional pump systems.)
3. It cannot over pressure the sprinkler system.
4. It has a 'soft start', unlike normal fire pumps which are 'star delta' – so no sudden surges/dips/water hammer in the town's main.
5. Fully complements Water Companies water network management strategies.
6. Cannot cause problems to the town's main when shut down for repair/maintenance.
7. Use of the pump in a fire condition will greatly reduce the quantity of water required for fire fighting purposes – a fraction of the needs of the fire service!

Prior to tendering, a flow and pressure test must be carried out on the mains proposed and the suitability of the pump is evaluated.

One of the important factors taken into consideration by both WRAS and the Water Companies is the relative small amount of fire fighting water needed in the event of fire where automatic fire sprinklers are fitted. Only the necessary amount of fire fighting water needed to either control or extinguish a fire is used, as the system operates in the early stages of a fire situation. Fire brigades traditionally use several hundred or even thousands of times the water needed by an automatic sprinkler system, and cause far more disruption and inconvenience to the water pressures and water quality in the surrounding mains network. In properties without sprinklers, by the time the fire brigade are in attendance and drawing water, the fire will have become much larger and have caused significantly more damage.

Package Features

Industry Standard Pumps

The **SD200** Pump Unit uses a standard range of LPCB approved fire pumps. The arrangement is specifically approved for use without an 'air gap'. The only requirement is for the use of WRAS approved non-return valves (Watts FC check valves are used). The **SD200** Pump Unit is WRAS approved.

Small Footprint

Unlike the large costly water storage tanks associated with conventional pumped systems, the **SD200** Pump Unit has a remarkably small footprint that lends itself to installation in congested areas. It is especially suitable for use in urban built – up areas,

retail stores, offices, care homes, medical premises etc.

The **SD200** units are supplied on a steel frame skid with dimensions of 1000 x 750 x 1200 high. The bypass and suction pipework and valving are fitted external to the frame. The unit has been designed specifically for ease of installation (a hand pallet truck usually being used to move the unit on the premises. The width is based on access through pedestrian doors, thus reducing any additional builders work.

Versatile Assembly Options

The **SD200** Pump Unit is usually supplied as a pre-fabricated unit which has been sized to fit standard doors and openings. However, in the event of severely restricted access sites, the Package can be supplied in kit form and constructed in-situ.

Cost Advantages

- No pump house
- No tank base
- No trace heating and lagging
- No immersion heater
- No fencing or security for tank
- No planning required

Other Features/Benefits

- Space
- Weight
- Lower power consumption
- No water wastage
- Reduced installation time

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