Water Spray System Fire Solutions

Protecting People & Property
Wormald Water Spray Systems –
an effective defence against fire

For over a century Wormald has specialised in providing fire protection solutions. When it comes to managing the complexities and dangers of industrial facilities, no other company has our depth of experience, knowledge, skills or technology. Water spray systems have always been an effective defence against fire. Wormald’s advanced technology takes this simple idea to a new level. At the heart of our systems are specialised spray nozzles, positioned at the correct location, to quickly bring fire under control and stop it spreading.

Good design critical to success
Designing a fire suppression system requires special expertise – expertise that Wormald has developed over many years in the business. An in-depth understanding of fire behaviour, along with extensive knowledge of the performance of fire protection components, is needed. Spray systems, and other fire detection and suppression systems, need to work in unison to be effective.

Wormald fire protection design engineers have experience in some of the largest and most complex installations in Australia and have access to a vast array of physical and intellectual resources through the Tyco group – world leaders in fire systems. In designing a system our engineers will analyse your fire risk, investigate the nature of the materials involved, consider likely scenarios and configure a system to effectively combat fire. They’ll present various options, discuss total installation and maintenance costs and help you decide upon the most suitable solution.

Turning a set of nozzles into an effective fire system
Designing a modern spray system requires skill, experience and an eye for detail – it’s much more than connecting a few nozzles. A number of variables need to be considered: the location of piping, the distance of the sprayer from its objective, the available water pressure, the effects of wind/draft, ambient temperature, concentration of chemicals, gas/chemical velocity and the corrosiveness of the environment. Water spray systems must only be designed by experienced professionals who thoroughly understand the capabilities as well as the limitations of the equipment.

Complete fire protection service
Wormald can custom design and install a new fire system for any facility or we can refurbish and upgrade your existing system. We have significant expertise in installing large scale fire systems in complex environments without causing interruption in industries which cannot afford to halt production.

Fact: Our specialist teams offer a complete solution: design, supply, installation, maintenance and technical support, as well as engineering advice, fire training and the development of evacuation plans.
High and Medium Velocity systems – a solution for every situation

Fact: Wormald only use properly trained installation staff and thoroughly test the system so you can be confident of effective fire protection.

High velocity systems – getting under the fire
High velocity systems are often used to protect equipment that incorporate heavy or medium oils; equipment such as transformers, circuit breakers, diesel engines and fuel oil storage tanks, turbo alternator lube oil systems and oil fired boilers.

The high velocity nozzles are specifically designed to discharge a jet of water at high speed. The water jet forms a cone of coarse spray of uniform density which is discharged over a defined area. The coarse spray is able to penetrate the flame zone and reach the surface of the burning oil. The turbulence created by the high velocity spray forms an oil-in-water emulsion on the surface of the oil that will not burn. This “emulsification” is the principal way the fire is extinguished, along with a cooling and smothering effect.

The shape of the spray cone, the fire area contacted and the water flow is all controlled by the nozzle specifications – the orifice size and the shape of the internal swirl plate – along with the water pressure and the orientation of the nozzle.

Medium velocity systems – cooling fire down
Medium velocity sprayers discharge a water spray of finely divided droplets at medium velocity. They are ideal for protecting hazards involving light oils where emulsification from high velocity sprayers is not possible. The fine spray has a high heat absorption rate so medium velocity sprayers are an effective method of protecting adjacent plant and structures from heat during a fire by providing a continuous cooling spray over the exposed surfaces. Keeping nearby equipment cool minimises damage and reduces the risk of explosion.

Medium velocity sprayers can be used in combination with other fire fighting systems – dry chemical and foam can be used effectively under the discharge. The fine spray also works to dilute and disperse flammable vapours.

The sprayers use an external deflector to achieve the desired discharge angle and spray characteristics. Wormald engineers will select the correct sprayers with flow rate, discharge angle and droplet size to best suit your application. Medium velocity sprayers use water economically and so can be used for long periods if required.
Wormald’s high performance precision components

High Velocity Nozzles;
> Directional
> Individual inlet strainers
> Brass or stainless steel
> Internal swirl plate
> Six pattern types
> Variety of orifice sizes
> Recommended discharge pressure – 3.4 bar (min-2.1bar, max-5.5bar)

Medium Velocity Nozzles
> Type D3 - Directional
> Natural, coated or plated bronze or stainless steel
> External deflector
> Orifice sizes from 16 to 32
> Spray angles from 900, 950, 1100, 1250, 1400, and 1600
> Dust plugs available
> Discharge pressure - 1.4 bar to 4.1 bar

Vertical spray patterns
Below is a reference guide showing the overall vertical spray patterns when projecting water horizontally beyond the design parameters. Note: The reference data applies to still air

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