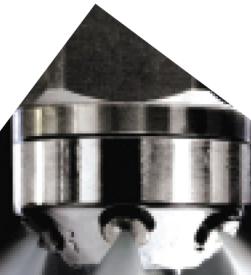




TRI - PARULEX


FIRE SAFETY ENGRS.



TRI-PARULEX FIRE PROTECTION SYSTEMS

WATER MIST FIRE SUPPRESSION SYSTEM

“ A step towards saving our precious water resource ”

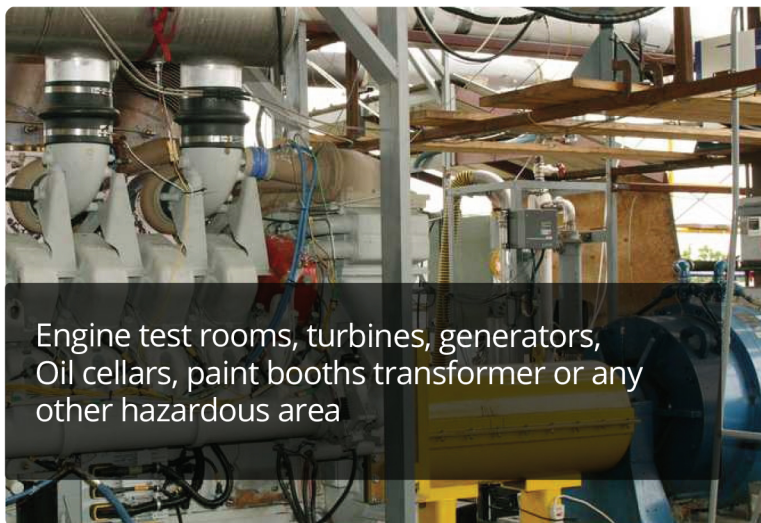
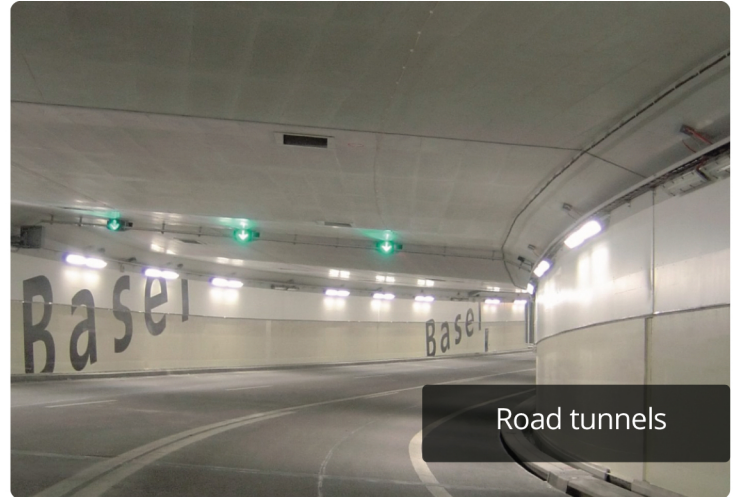
 Highly Effective

 Less water usage

 Less Collateral Damage

www.triparulexfire.com

Major Areas of System Application

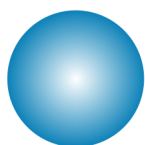


Water Mist System As Per NFPA Standard

Water Mist Systems are characterised by relatively fine water droplets, which assist cooling by evaporative process. Some droplets get entertained to the seat of the fire by air convection, while others reach the fire from above due to high momentum imparted to them.

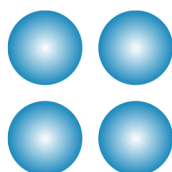
A water spray for which the $Dv_{0.99}^*$ for the flow-weighted cumulative volumetric distribution of water droplets, is less than 1000 microns at the minimum design operating pressure of the water mist nozzle.

*[99% of the water droplets size discharged from the water mist nozzle at its minimum design pressure is less than 1000 micron in diameter.] (1000 microns = 1mm)



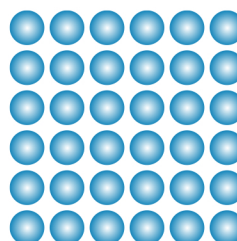
Ordinary water
sprinkler/fog

$Dv_{0.5} = 1000 - 5000 \mu\text{m}$



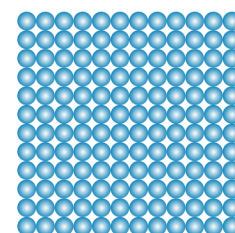
Ordinary low
pressure water mist

$Dv_{0.5} = 200 - 1000 \mu\text{m}$



Intermediate
pressure water mist

$Dv_{0.5} = 100 - 200 \mu\text{m}$



High pressure
water mist

$Dv_{0.5} = <100 \mu\text{m}$

Droplet Diameter	Reaction surface per litre water	Extinguishing System
1 mm	2 m ²	Sprinkler System
0.1 mm	20 m ²	Fine Water Spray
0.01 mm	200 m ²	Water Mist

Water Mist 3 Dimensional Suppression System



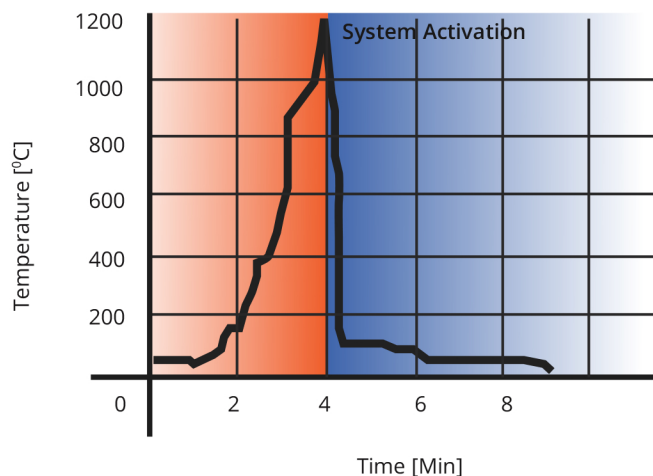
- Cooling – Radiant Heat Absorption
- Inerting – Oxygen depletion at the source of fire
- Separation and Shielding Effect

How does Water Mist System Work

Cooling

As a consequence of the extinguishing water being split up into droplets, a reaction surface is created via which the heat from the fire is absorbed. It takes 335 kJ of energy to heat 1 litre of water from 20 to 100 °C, and an additional 2257 kJ to transform the water to steam.

The larger the reaction surface is, the higher the potential cooling effect is. The smaller the mean droplet size, the more efficient the cooling effect. The smaller droplets, which will tend to fall slower than larger droplets, will have a more efficient cooling effect. The cooling effect refers to the cooling of the air and gases around a fire and not to the cooling of the fire load itself. Thus, water mist is the medium with the highest known heat absorption capacity.



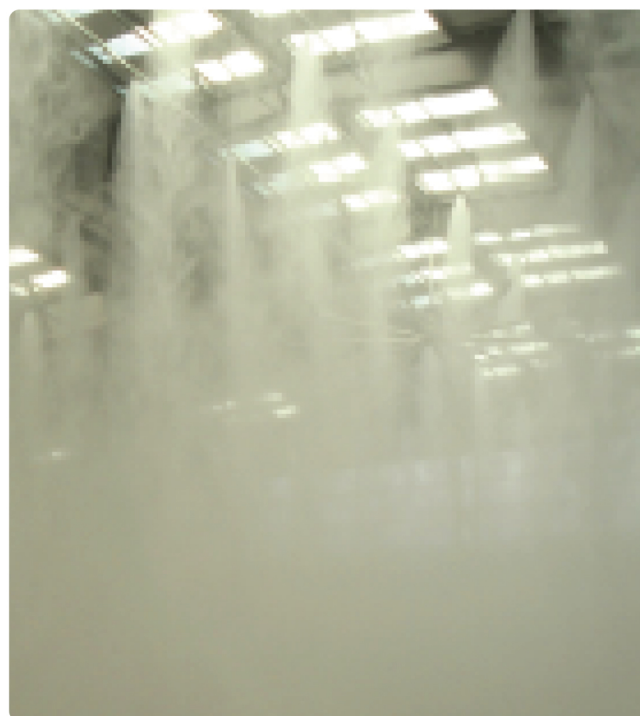
Cooling Effect during an UPTUN Fire Test

(Curves shows temperatures at various locations during a full scale fire test)

Oxygen Depletion

During the evaporation of the water its volume will be increased by 1640 times, which leads to a reduction of the oxygen content in the air at the source of the fire. Thus, the fire will be suffocated and it will be suppressed due to the lack of sufficient oxygen needed for the combustion process.

NOTE: The reduction of oxygen content due to the formation of steam only takes place at locations where very high temperature occur. Therefore, a reduction of oxygen content will tend to occur close to the fire rather than where occupants are escaping.



Separation & Shielding Effect

Separation Effect



Water droplets that are located between the flame and fuel surface reduce the radiant heat received by the fuel surface, effectively reflecting the heat. Subsequently the burning rate reduces, and the radiant heat received by any potential fire loads in the surrounding area will reduce, decreasing the likelihood of flame spread due to this 'separation' effect. The 'reflection' effect is dependent on the sufficient generation of very small water droplets – the capacity of the effect increases with decreasing water droplet size.

Shielding Effect

As described above, the water droplets will reduce radiant heat received by surrounding objects.

This 'shielding' effect will help to prevent fire spread and protect occupants escaping away from the fire and emergency services approaching the fire.

Product Component Overview & Services

<p>Fire water storage tank</p> 	<p>Pumps</p>  <p>Plunger Type Vertical inline multistage centrifugal Type</p>	<p>Nozzle heads</p>  <p>Open type Close type</p>
<p>Section valves</p> 	<p>Hosereel</p> 	<p>Piping</p> 
<p>High pressure water mist gun</p> 	<p>Fire test and Simulation</p>  <p>PLC and SCADA</p>	<p>Delivery and Commissioning</p>  <p>Service and Maintenance</p> 

Water Mist System Classification

Working Pressure Classification : Depending on the minimum operating pressure used by the water mist system, the following types of WMS are defined as per NFPA – 750

Minimum Working Pressure	Type of System
> 35 bar	High Pressure System
12 – 35 bar	Medium Pressure System
< 12 bar	Low Pressure System

Droplet Size Classification :

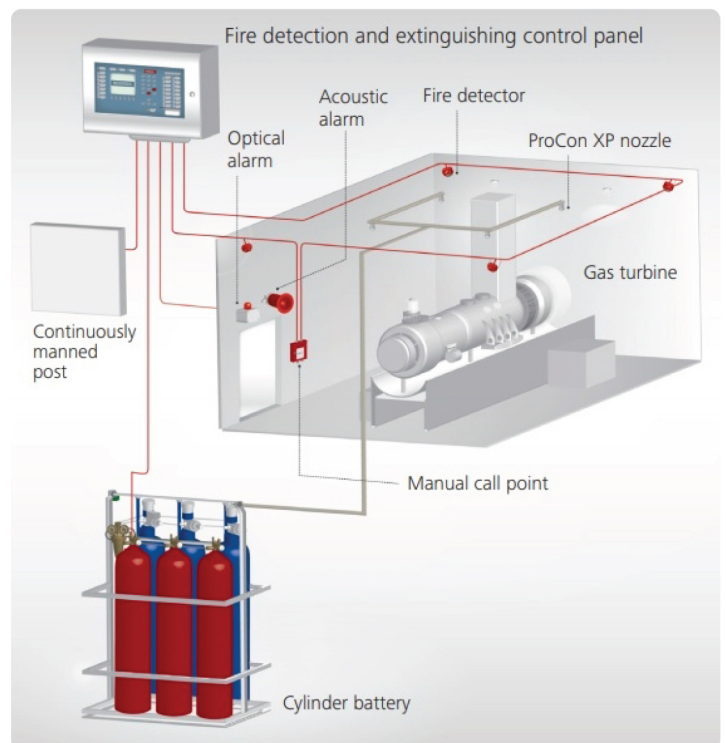
Depending on the mean droplet sizes generated by the water mist system, the following types of WMS are used

Medium Droplet Size (Dv0.99)	Type of System
< 200 microns	Class A
200 – 400 microns	Class B
> 400 microns	Class C

Water Mist Cylinder System

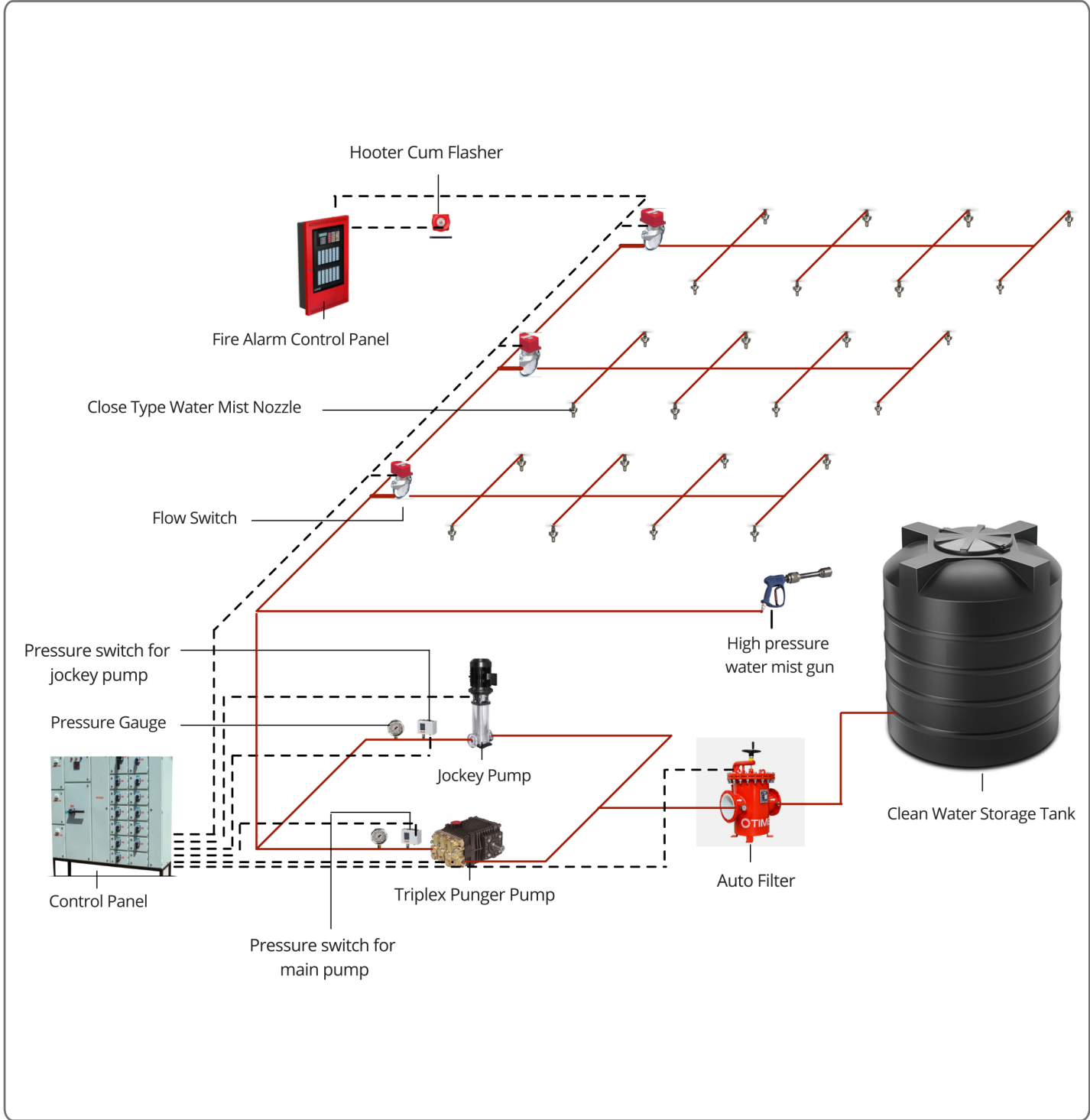
Tri-Parulex Water Mist Fire Protection System can be supplied as self contained Pressure Skid Modules (PSM's). The quantity of water contained is determined by hydraulic calculations based on type and quantity of nozzles installed and the desired system running time.

High pressure lined steel cylinders are used to avoid the possibility of corrosion and internal discolouration of water. Dry Nitrogen gas is used for system pressurisation.



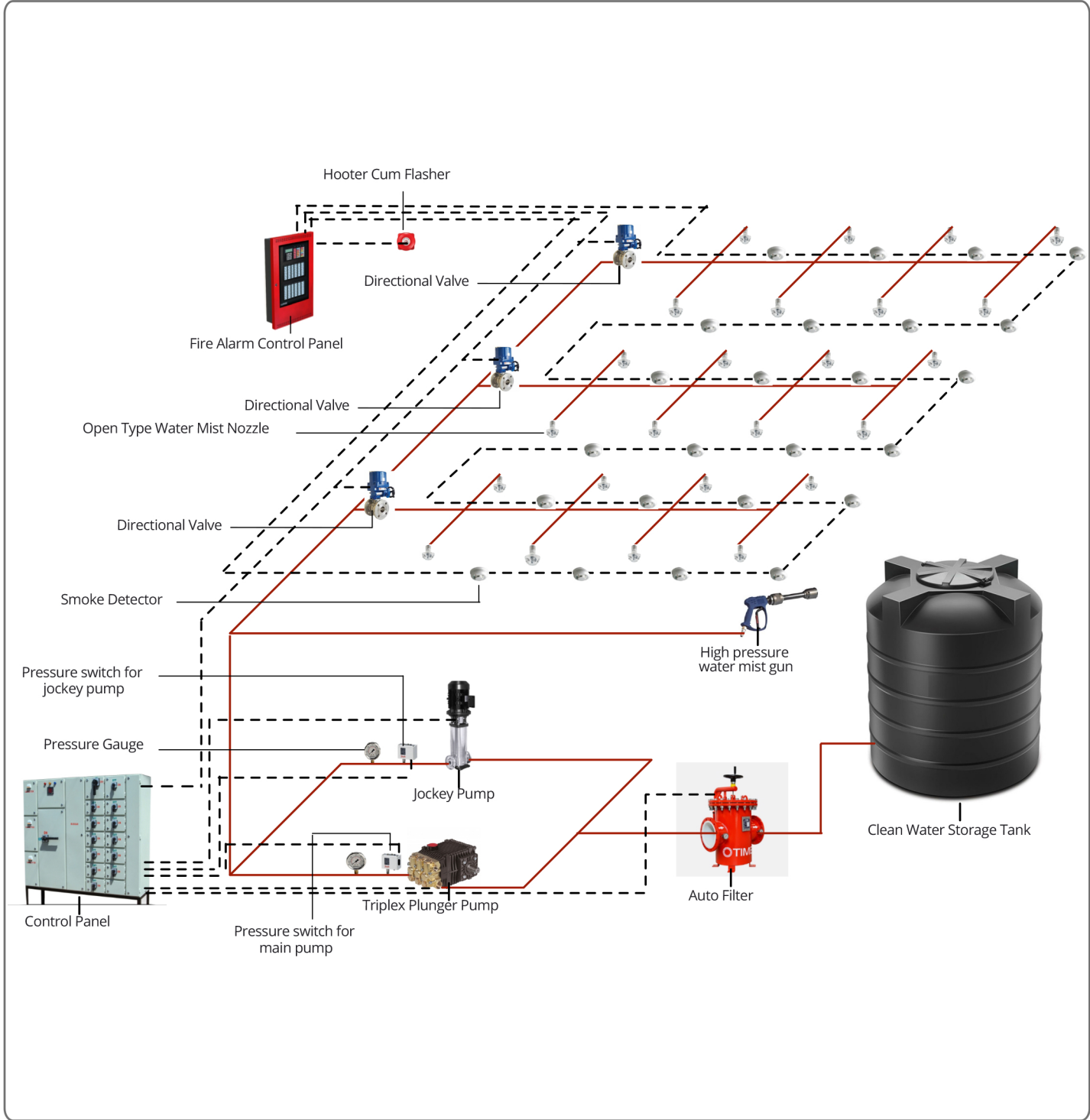
General Arrangement of Water Mist Pump System

CLOSED SYSTEM



General Arrangement of Water Mist Pump System

OPEN SYSTEM



Water Mist System Activation



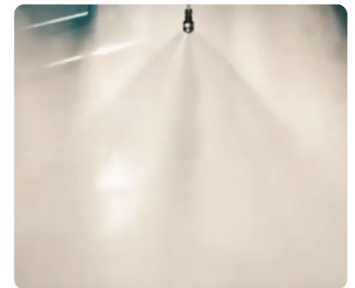
Water Mist Ativation
T = 0 Seconds



Water Mist Ativation
T = 05 Seconds



Water Mist Ativation
T = 15 Seconds



Water Mist Suppression
T = 30 Seconds

Water Mist Semi Fixed / Mobile Units / Equipment's (with OR without Foam Additive)



Semi-Fixed, Electric



Semi-Fixed,



Mobile,



Water Mist

Water Mist Cooling System

Our Water Mist Cooling Systems are a simple, inexpensive and appealing way to lower temperature by 10-12 °C outdoors and indoors without wetting in Hot and Dry Areas.



Farm House



Railway Stations



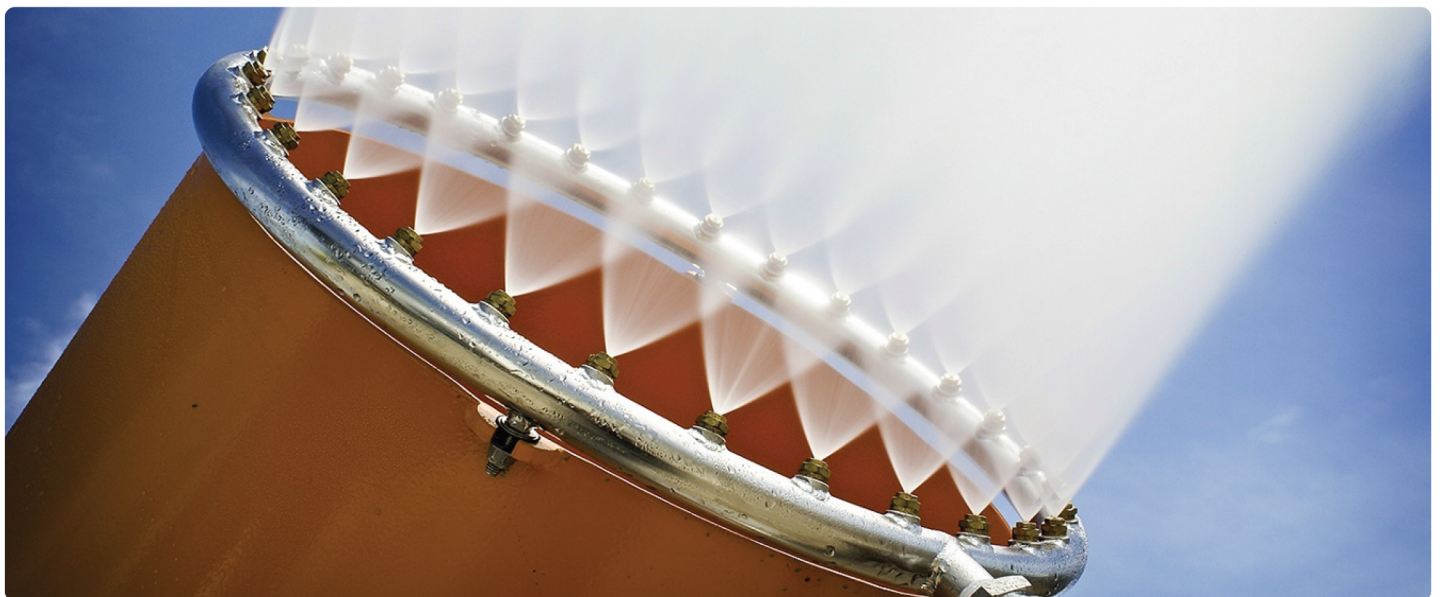
Industry Shed



Poultry Farm

Water Mist Dust Suppression System

Our water mist dust suppression systems emit very fine droplets of water, which suppresses airborne dust without wetting. This protects your staff against dust-related respiratory conditions such as silicosis and COPD. The microscopic water droplets agglomerate dust, forcing it to fall from the air.



About Us

- Established in 1996 and serving for your safety from more than 23 years
- Our services include Consultation, Design & Engg. , Supply, Installation, Testing & Commissioning, System Upgradation and after Sales service.
- We have expertise in national and international design practices such as NBC, TAC, NFPA, FM Global, OISD, BIS etc.
- We are equipped and conversant with the latest design softwares like AUTOCAD, SprinCAL, PIPENET etc.

Our Products

- Water Mist Fire Suppression System
- Nitrogen Injection & Oil Evacuation System (NIOES / NIFPS)
- Foam Based Fire Protection System
- Gas Based Fire Suppression System
- HWW / MVW Water Spray System
- Compressed Air Foam (CAF) Portable Units
- Quick Detection & Fire Suppression System
- Fire Detection & Alarm System
- First Aid Fire Extinguishers

Our Partners

