



# Protecting your Future The Benefits of High Pressure Water Mist

**Sam Dickens - Project Engineer**



High pressure water mist sprinkler system for fighting fires

## Introduction

- Brief introduction to Ultra Fog
- The principles of water mist
- Where we can use water mist
- The multiple benefits of water mist



## Ultra Fog - Background

- 1990 Ultra Fog was founded, has since designed & developing high-pressure water mist systems.
- Nov 2010 New Owners, who have invested already >€3 m on testing next generation of nozzles.
- 2012 new UK / USA Divisions.
- 2013 gained ISO 9001 quality system certification.
- 2015 new Italian Division opened.
- 2016 new Polish Division opened.



# Ultra Fog - Experience

Ultra Fog: A World Leader in the Development and Application of custom quality fire protection solutions.



## Rolling Stock

High-speed trains, regional trains, passengers carriages, metro trains and trams.



## Marine Applications

Cruise ships, Ro-Ro, Ro-Pax, tankers, naval vessels, historic ships, special purpose vessels, luxury yachts.



## Land Applications

Hotels, commercial offices, shopping malls, schools, historic buildings, museums, archives, restaurants, construction, care homes, hospitals, power plants.



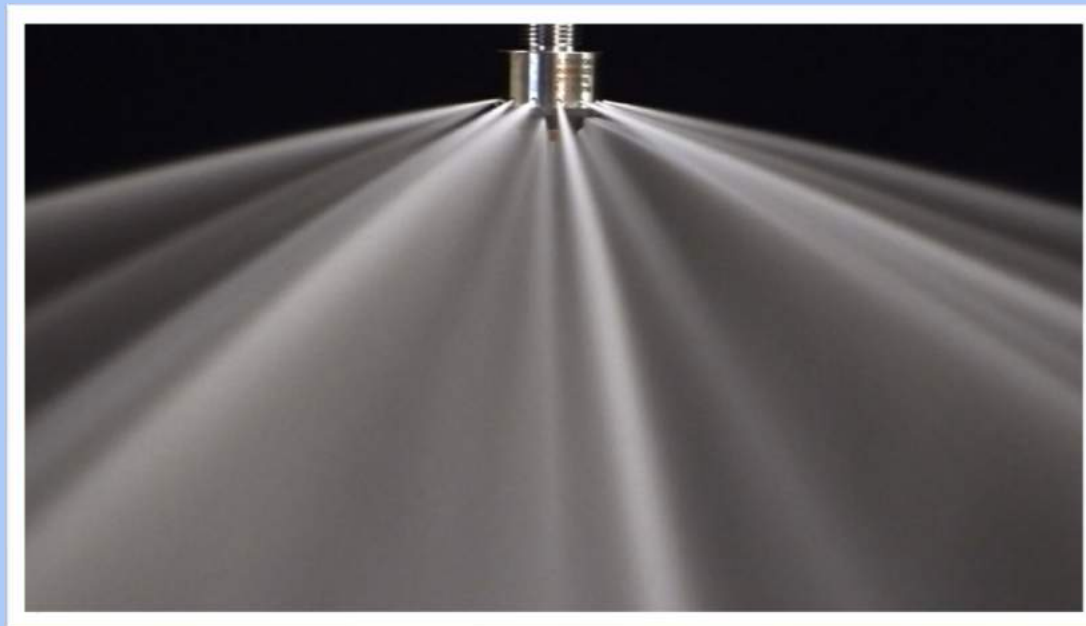
## Offshore Applications

Machinery space, engine rooms, thruster rooms, control rooms, accommodation, spaces, turbine enclosures, galleys, deep fat fryers and ducts, paint lockers.



## Water Mist Principles

- Water + high pressure + special design nozzles = Water mist
- High pressure creates smaller droplets
- Small droplets give you a larger surface area
- Larger surface area gives you a faster heat transfer
- Ultimately giving faster fire suppression and less damage



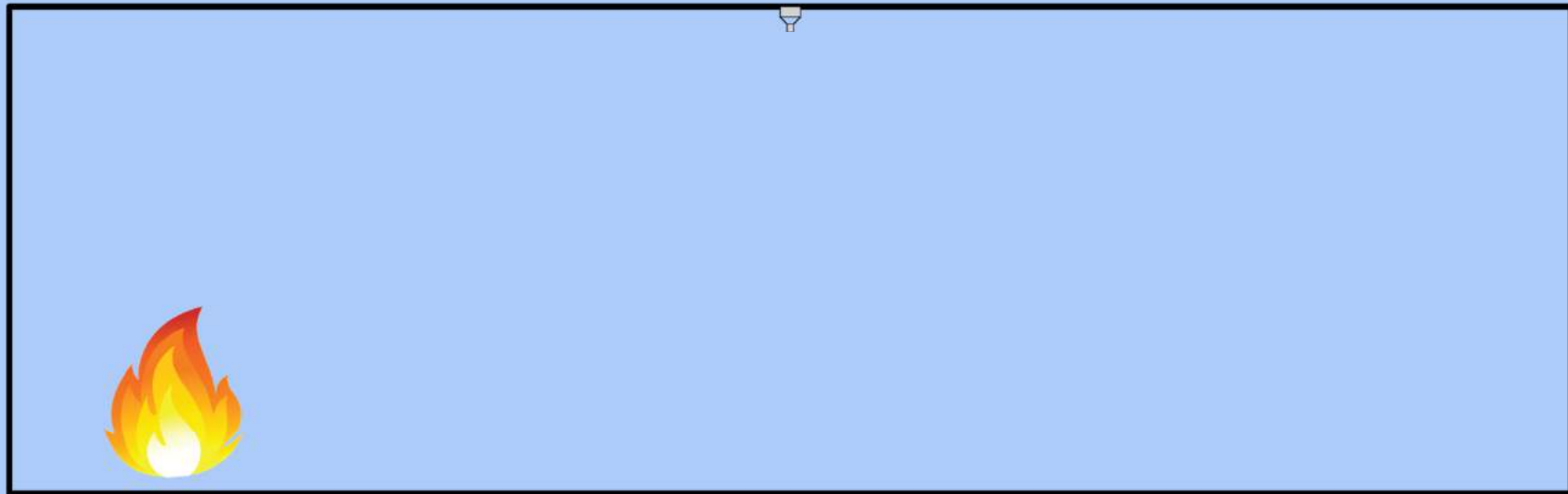
# Water Mist Principles



Nozzle type 603-260-061-0



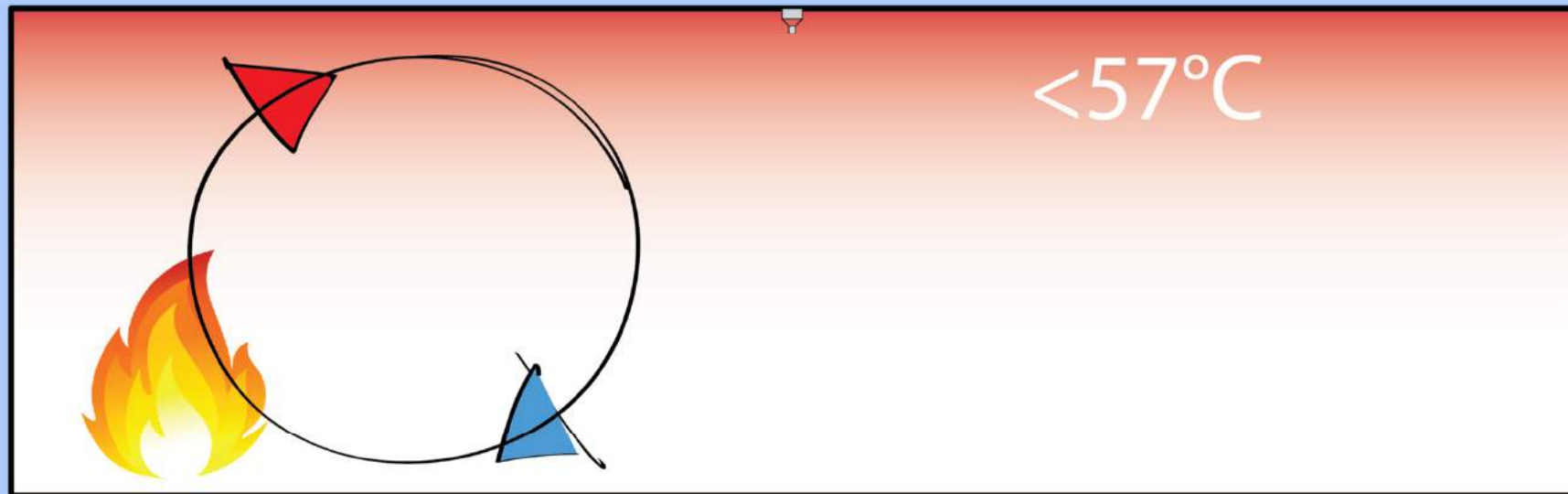
## In practice



- 48m<sup>2</sup> cabin – Single nozzle – 32 l/min



## In practice

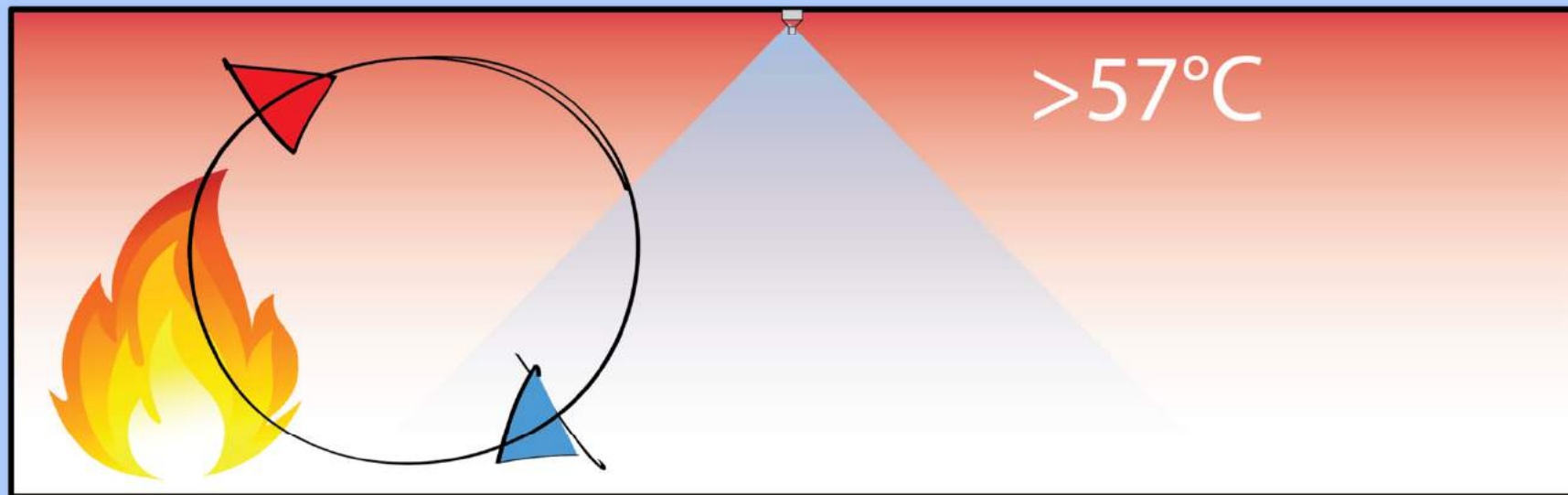


- Temperature increases, convection occurs





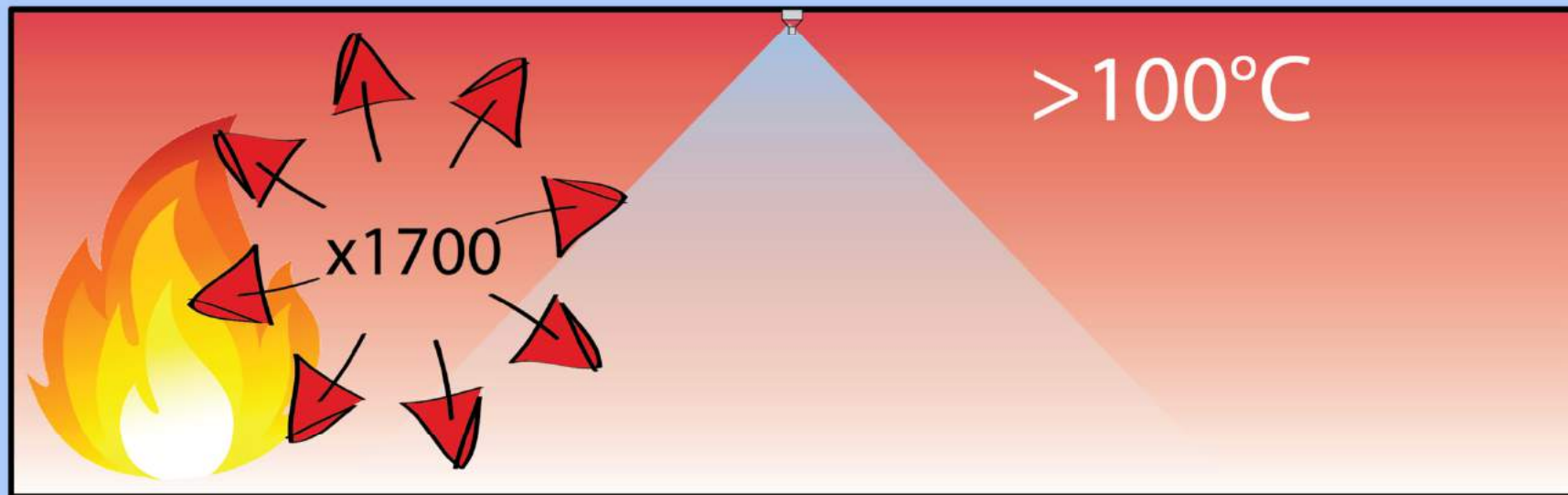
## In practice



- Nozzle activates releasing 2 million droplets per second



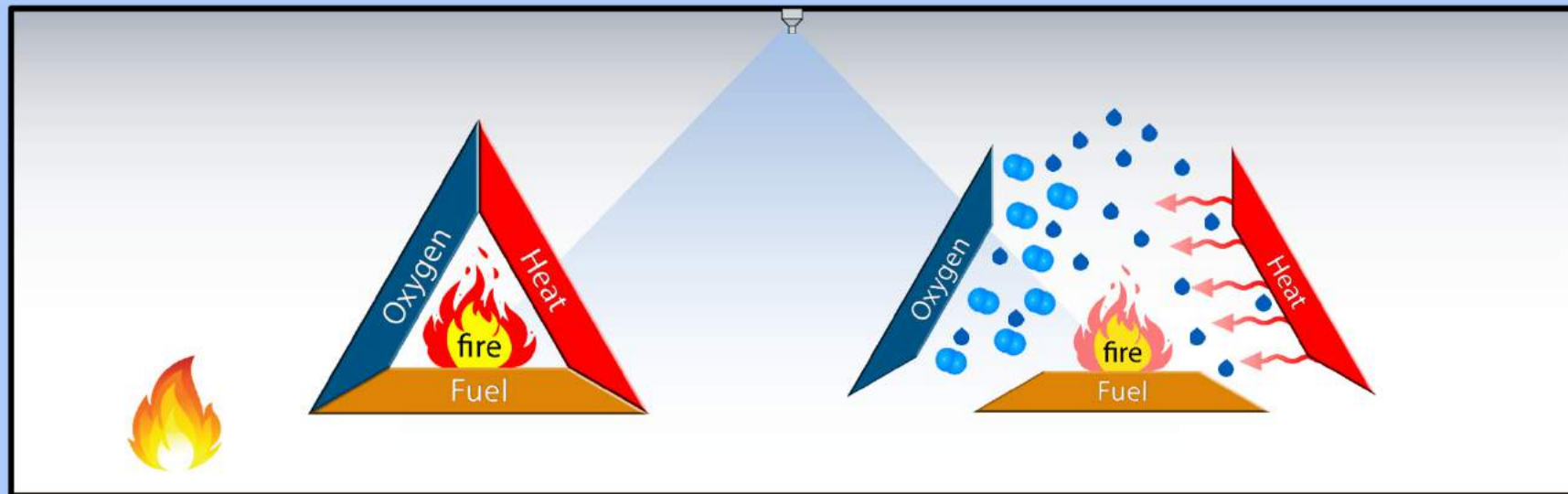
## In practice



- Vapourisation, expansion, cooling



## In practice



- Break the triangle!

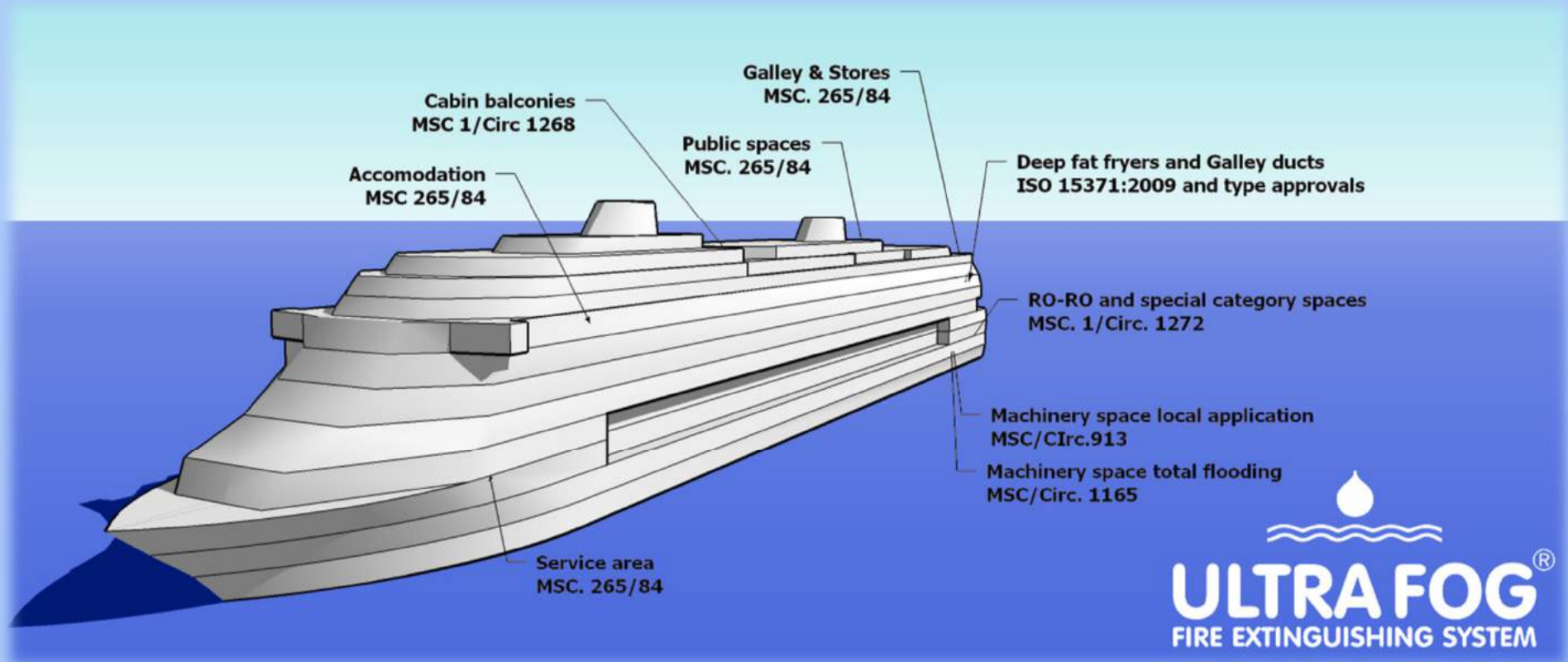


## Where can water mist be used?

- Cruise ships
- Ro-Ro
- Ro-Pax
- Tankers
- Military Vessels
- Historic Ships
- Luxury yachts



# Specifically within Marine

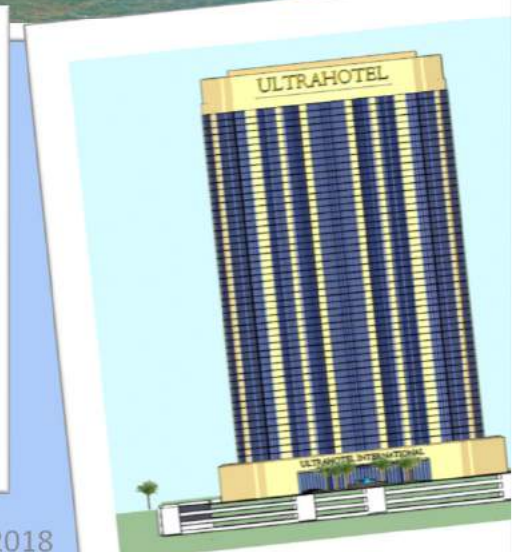


# Visual Example

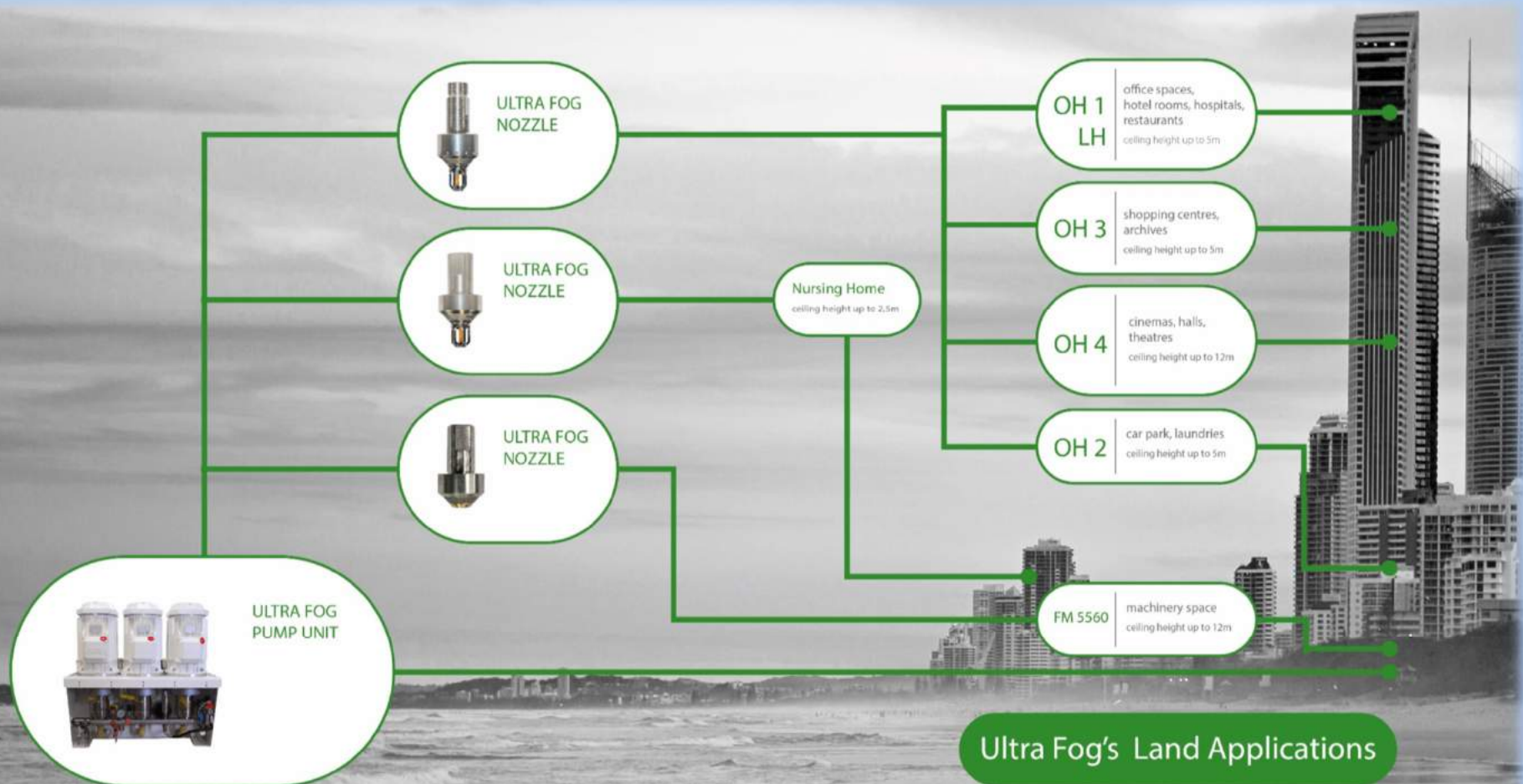


## Where can water mist be used? Land...

- Hotels
- Residential
- Commercial offices
- Shopping malls
- Schools
- Historic buildings
- Museums
- Archive stores
- Restaurants
- Construction
- Care homes
- Hospitals
- Deep fat fryers
- Transformers
- Helicopter hangers



# Specifically within Land





## Land – Visual Example

FIRE TEST, 1 M2  
POOL FIRE, WITH  
HELICOPTER FUELE



## Where can water mist be used? Offshore...

- Drilling rigs
- Windpower power plants
- FPSOs
- Machinery spaces
- Control rooms
- Turbine enclosures



# Specifically within Offshore



Ultra Fog's Offshore Applications

# Where can water mist be used? Rolling Stock...

- High-speed trains
- Regional trains
- Passenger carriages
- Metro trains
- Trams



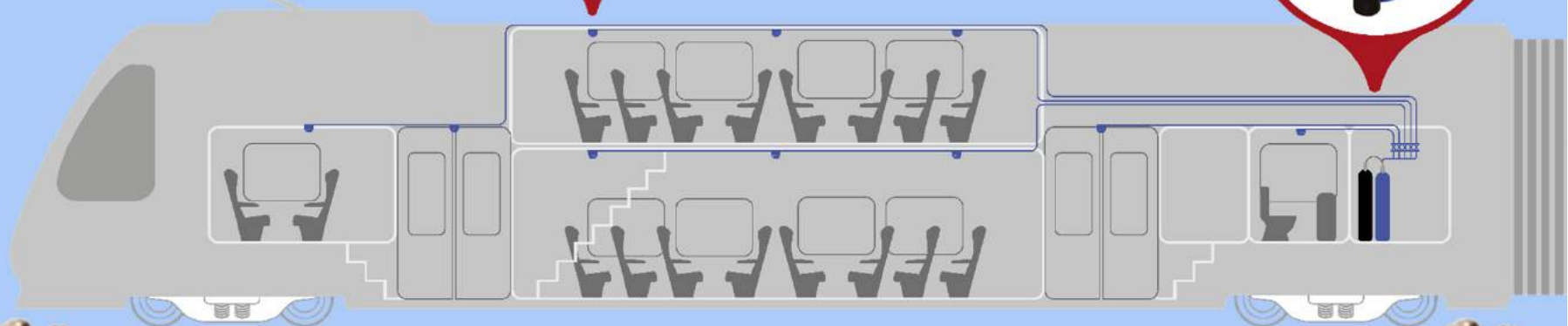
Ultra Fog Nozzle

Double Deck Train:  
Flow 7 L/min at 60 Bar  
Spacing 4m

Single Deck Train:  
Flow 5,8 L/min at 40 Bar  
Spacing 4m



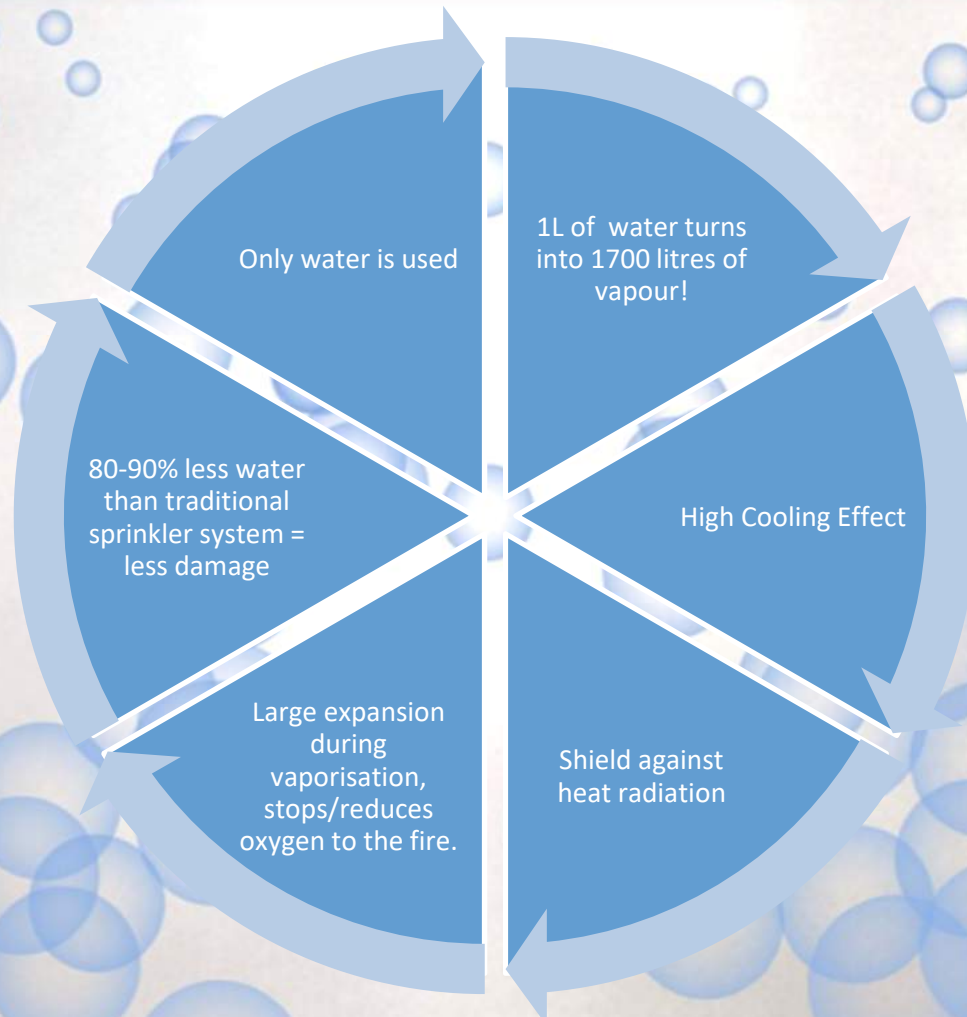
Accumulator Unit



Standard



# The Benefits Of Watermist



# The Benefits

Comparison against conventional sprinkler systems

- 80% less water used
- Smaller tanks / water consumption
- Reduced pipework size
- Cleaner stainless steel pipework used
- Less space, less weight
- Faster fire suppression = less damage

Conventional sprinkler



# The Benefits

## Recovery / Clean Up Post Fire

- Less water means less water damage, less clean up time
- Less damage replacement costs
- Small bulb is the only part to be replaced post fire
- No chemicals to clean up
- Quick restart

### Water Quantity Example

- $10\text{mH} \times 10\text{mW} \times 5\text{mH} = 500\text{m}^3 = 9 \times \text{k}0.73 \text{ nozzles}$
- = 66 l/min.
- = 0.66 l/m<sup>2</sup>/min
- 0.66 mm water depth per min per m<sup>2</sup>.



# The Benefits

## Environmental

- Only water is used
- Abundant supply
- No chemicals used in the water
- No harm to humans





## The Benefits

Aesthetically

- Modern looking stainless steel design
- Unnoticeable in the ceiling
- Can be painted





# The Benefits

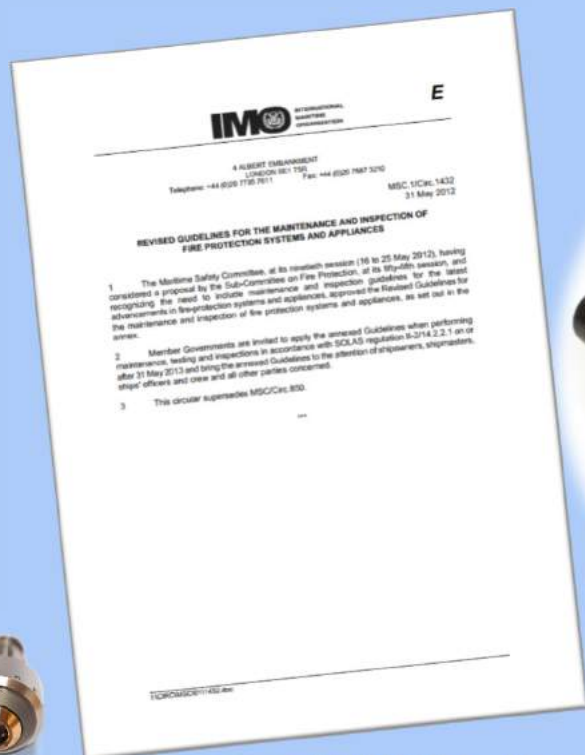
## Retrofit with ease



# The Benefits

## Maintenance of the system

- Tested in situ
- Can be dismantled
- Bleed air from the pipework
- Minimal weekly, monthly, yearly testing/ checks



## To Summarise

I have discussed;

- The principles of water mist
- Where we can use water mist in industry
- The various benefits of water mist





# Thank you!

[Sam.Dickens@Ultrafog.com](mailto:Sam.Dickens@Ultrafog.com)  
[www.Ultrafog.com](http://www.Ultrafog.com)

Visit us @ Hall 7, Stand B40

