FIA Guide for Watermist Fire Protection for High Rise occupancies

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Apartment fire
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• Child in kitchen playing with fire
• Kitchen catches light
• Mother grabs child and runs out of apartment
• Mother leaves apartment door open
• Apartment building burns to the ground.
What constitutes High Rise?
Why is it important?

What constitutes high rise: Buildings rising above 45m

Why is it important:
Upper floors above the reach of fire brigade ladders.
Fire fighters need extra time to reach fires on upper floors.
Evacuation become problematic
How does Watermist Work?

Water mist
Efficient Cooling

Water mist
steam smothering at flame front
## High Rise Water Mist

### Features and Benefits

<table>
<thead>
<tr>
<th>Features</th>
<th>Benefits</th>
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<tbody>
<tr>
<td>• Full scale fire tests</td>
<td>• Validated designs</td>
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<tr>
<td>• Automatic nozzles</td>
<td>• Only nozzles over fire open</td>
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<tr>
<td>• Low water flows</td>
<td>• Limited water damage</td>
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<tr>
<td>• Small pipes</td>
<td>• Easy installation</td>
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<td>• Small water tank</td>
<td>• Small plant room footprint</td>
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<tr>
<td>• Fire suppression at source</td>
<td>• Supports defend in place</td>
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<tr>
<td>• Suppression + cooling</td>
<td>• Improved tenability</td>
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Fires in high rise

Fires do not change when they occur in the upper floors of high rise occupancies
Fire growth - uncontrolled

How long before the fire alert and Fire fighter arrival at the scene?
Fire growth
Quick Response
Water mist

Temperature

Time
High Rise Water mist FIA Guide - Zoning

- 200 mist heads per zone or
- 2400 m²
- 1 floor per zone
- Whole occupancy protected
High Rise Water Mist System

Pump System – Closed Nozzles - Wet Pipe

Closed head nozzles

Test valve
Pressure gauge
Flow sensor
Isolating valve

Water pressure from jockey pump
• Fully hydraulically calculated
• Most favourable and most unfavourable AMAOs.
• Assumes Maximum Area of Operation – 216 m²
• Flux density per OH1 fire loads
• AMAO per OH3 risks – contingency for delayed firefighter response / problematic evacuation.
High Rise water Mist
FIA Guide - water supplies

- N+1 pumps – redundancy
- Dual feed to tank
- Full capacity tank
- 60 minute supply
Why are small droplets beneficial?

**Greater surface area**
- Greater heat absorption creates rapid cooling and oxygen displacement at the flame front.
- More effective smoke scrubbing
- Blocks radiant heat transfer

**Lighter droplets**
- Airborne longer
- More time to be effective
- Two dimensional – Swirls around obstructions.
High Rise Water Mist Standards

- BS8489-1 Fixed Fire Protection Systems for Industrial and Commercial Watermist Systems – Code of Practice for Design and Installation
- VdS 3188.
Thankyou !!