NAFFCO (National Fire Fighting Manufacturing FZCO) an ISO 9001:2008 certified company with its World Headquarters at UAE, is the largest fire fighting equipment manufacturing company in the Middle East and rated amongst the top 5 Manufacturers in the world with over 7,000 team members.

Our robust engineering team ensures that every design meets or exceeds the standards of the National Fire Protection Association (NFPA). Together with our reliable maintenance team, they provide 24/7 service to ensure the efficiency and continued service of our fire protection systems.

We service what we sell, including providing after-sales service, spare parts and training as well as, offering annual maintenance contracts to keep your fire protection performing high.
Certificates & International Approvals

- Occupational Health & Safety Standard OHSAS 18001
- Environmental Management System ISO 14001
NAFFCO Range of Products

- FIRE TRUCKS & VEHICLES
- FIRE EXTINGUISHERS
- FIRE HOSE REELS AND CABINETS
- FIRE HYDRANT
- GAS SUPPRESSION SYSTEMS
- FIRE PUMPS
- FIRE DOORS
- FIRE HOSES AND ACCESSORIES
- FIRE VALVES
- ELV SYSTEMS
- SAFETY AND RESCUE
State of Art- **Burj Khalifa** -skyscraper is the tallest man-made structure in the world.

**Project Name:** Burj Khalifa

**Location:** Dubai, UAE

**Systems:** Fire Fighting systems, FM 200, Pre-action, Multi-stage Pumps and sprinkler systems.

**Scope:** Design & supply, installation site supervision, testing and commissioning.
NAFFCO Major Projects

Aspiring of the most sustainable cities in the world, approximately 6,000 m² Masdar City is an emerging global clean-technology cluster that places its resident companies in the heart of the global renewable energy and cleantech industry.

**Project Name:** Masdar Institute of science & Technology.

**Location:** Masdar City- Abu Dhabi

**Systems:** Fire Fighting, Sprinkler, Pumps, FM200, Pre-action, Fire Alarm system, Voice evacuation systems.

**Scope:** Design & supply, installation site supervision, testing and commissioning.
NAFFCO Major Projects

Tourist Development and Investment Company of Abu Dhabi announced that a new Louvre Museum would be completed in the city of Abu Dhabi. The new museum’s dramatic domed roof is undoubtedly the strongest feature of this extraordinary 60,000m² exhibition complex that will bridge the gap between Eastern and Western art.

**Project Name:** Louvre Museum Abu Dhabi

**Location:** Saadiyat Island - Abu Dhabi

**Systems:** *Under execution of* Fire Fighting, Sprinkler, Pumps, Clean Agent, Pre-action, Fire Hydrants

**Scope:** Design & supply, installation site supervision, testing and commissioning.
NAFFCO Major Projects

Abu Dhabi International Airport- Midfield one of the fastest growing airports in the world in terms of passengers, Midfield terminal boosted the airport's 7-12 million passenger per year capacity, and also added 10 new gates.

**Project Name:** Midfield terminal Expansion- Abu Dhabi Int’l Airport.

**Location:** Abu Dhabi

**Systems:** Under execution of Fire Fighting, Sprinkler, Pumps, FM200 Clean agent, Pre-action, Foam Hydrants,... etc

**Scope:** Design, supply, installation site supervision, testing and commissioning.
NAFFCO Major Projects

The Dubai Metro is a driverless, fully automated metro rail network in the United Arab Emirates city of Dubai.

**Project Name:** Dubai Metro.

**Location:** Dubai

**Systems:** FM200 Clean agent, Fire Fighting, Pre-action.

**Scope:** Design & supply, installation site supervision, testing and commissioning.
Burj Khalifa

Spired 828-metre skyscraper with viewing deck, restaurant, hotel and offices and 11-hectare park..

Location
– Dubai, United Arab Emirates

Height
– 160+ Floors
– 828.8 m (2,063 ft)

Square Footage
– Over 4.7 Million square ft.

Occupant Load:
– 35,000+
Occupancies:

- Lobbies, Public Assembly (Floors 1 – 3)
- Hotel Guest Rooms & Suites (Floors 1-39)
- Residential Units (Floors 43-72)
- Luxury Residential Units (Floors 76-109)
- Office (Floors 112-160+)
- Observatory (Floors 122-123)
- Sky Lobbies (Floors 43, 76, 122)
- Pool Annex (Adjacent 3 Story Annex)
- Office Annex (Adjacent 6-Story Annex)

Mechanical Floors/Areas of Refuge:

- 41/42
- 74/75
- 110/111
- 137/138
<table>
<thead>
<tr>
<th>BUILDING FEATURE</th>
<th>BURJ CUBAI</th>
<th>JIN MAO BUILDING</th>
<th>PETRONAS TOWERS</th>
<th>JOHN HANCOCK CENTER</th>
<th>SEARS TOWER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Fire Water Supply</td>
<td>Basement Tank with secondary Tanks distributed vertically throughout Tower with Pumps</td>
<td>Basement Tank connected to Domestic Water Tank two secondary water tanks on level 51 and Penthouse with Pumps.</td>
<td>Basement Tanks connected to Domestic Water Mains with Fire Pumps</td>
<td>Dual Domestic Water Mains</td>
<td>Dual Domestic Water Mains with Water Tanks and Fire Pumps distributed vertically in building.</td>
</tr>
<tr>
<td>Fire Water Supply Duration</td>
<td>2 hours Internal, 4 hours total</td>
<td>Unknown</td>
<td>1 hour for Sprinklers</td>
<td>1/2 Hour</td>
<td>Unknown</td>
</tr>
<tr>
<td>Fireman's Elvator</td>
<td>2 up to level 111 1 for level 112 through 160</td>
<td>2 provided</td>
<td>2 provided</td>
<td>1 Provided</td>
<td>1 provided</td>
</tr>
<tr>
<td>Smoke Protected Exit Stairs</td>
<td>Pressurized</td>
<td>Pressurized Stairs and Vestibules</td>
<td>Pressurized</td>
<td>Vestibule with naturally ventilated smoke shaft</td>
<td>Vestibule with naturally ventilated smoke shaft</td>
</tr>
<tr>
<td>Floor Smoke Control</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
<tr>
<td>Fire Command Center</td>
<td>Primary and Secondary Provided</td>
<td>Primary and Secondary Provided</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
</tbody>
</table>
## Burj Khalifa

<table>
<thead>
<tr>
<th>BUILDING FEATURE</th>
<th>BURJ CUBAI</th>
<th>JIN MAO BUILDING</th>
<th>PETRONAS TOWERS</th>
<th>JOHN HANCOCK CENTER</th>
<th>SEARS TOWER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergency P.A System</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
<tr>
<td>Refuge Areas</td>
<td>Levels 42, 75, 111, and 138</td>
<td>Levels 15, 30, 58 to 85 (hotel levels) and Penthouse Level 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fire Resistance</td>
<td>Columns: 3hr Floors: 2 hr</td>
<td>Columns: 3hr Floors: 2 hr</td>
<td>Columns: 3hr Floors: 2 hr</td>
<td>Columns: 3hr Floors: 1 1/2hr</td>
<td>Columns: 3hr Floors: 3hr</td>
</tr>
<tr>
<td>Fire Compartment Size</td>
<td>1 per floor</td>
<td>2,000 m² in office and parking areas</td>
<td>2,000 m² in office areas</td>
<td>1 per floor</td>
<td>1 per hour</td>
</tr>
<tr>
<td>Smoke Compartment Size</td>
<td>1 per floor</td>
<td>1 per floor</td>
<td>2,000 m² in office areas</td>
<td>1 per floor</td>
<td>1 per hour</td>
</tr>
<tr>
<td>Quick Response Sprinklers</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

### Fire Protection at Burj Khalifa
NAFFCO scope of work

• Design Review
• Drawings Approvals
• Material Approval
• Installation Approval
• Testing & Commissioning in line with NFPA & Dubai Civil Defense
• Maintenance, 24/7 Support & after sales services

TYPES OF WATER BASED SYSTEM

• Combined Sprinkler & Standpipe System
• External Hydrant system
• Pre-action System
• Foam System
AUTOMATIC SPRINKLER SYSTEM

Sprinkler

Auto Zone Check Assembly

Sprinkler Alarm

Check Valve Assembly

Butterfly Valve

OS&Y Gate Valve

BURI KHALIFA
THE WORLD TALLEST BUILDING AND A
DESIGN AND CONSTRUCTION MARVEL
SPRINKLER SYSTEM

• Sprinkler system is provided for the entire Tower, Podium, D1 & F1 areas.

• Combined Sprinkler & Standpipe Risers are provided in WA & WC.

• Standpipe Riser is provided in WB

• Express risers are in Mechanical & Plumbing closets of Center core of the building which feeds water to Sprinkler & Standpipe risers in WA, WB & WC.

• Source of water through water tanks & fire pump set.

• Isolation valves are located at Different levels to isolate the system & FS are located at different levels to indicate the flow of the system.
SPRINKLER SYSTEM

• ZCA is located at WA & WC of each floor & in higher levels only in center core.

• ZCA is also located at different areas of Podium.

• Sprinklers in Garbage Chute are installed up to level – 108 at every alternative levels.

• Sprinklers in Linen Chute are installed up to Level – 39, at every alternative levels.

• Equipment's in sprinkler system i.e: Butterfly valve, Non return valve, ZCA and Test Drain Assembly.
## SPRINKLER SYSTEM

<table>
<thead>
<tr>
<th>TYPICAL AREAS</th>
<th>HAZARD CLASSIFICATION / TYPE OF SPRINKLERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Car park area, Lift pits,</td>
<td>Ordinary hazard occupancies (Group 1), Upright &amp; Side Wall Sprinklers, 79°C</td>
</tr>
<tr>
<td>Office, Residential &amp; Hotel</td>
<td>Light Hazard, Concealed Pendent Type Sprinklers, 68°C</td>
</tr>
<tr>
<td>Electrical Rooms, IT Closets</td>
<td>Ordinary hazard occupancies (Group 1), Upright Sprinklers, 68°C &amp; 93°C</td>
</tr>
<tr>
<td>Garbage / Linen Chutes</td>
<td>Ordinary hazard occupancies (Group 1), Pendent Sprinklers, 79°C</td>
</tr>
<tr>
<td>Mechanical Rooms</td>
<td>Ordinary hazard occupancies (Group 2), Upright Sprinklers, 79°C</td>
</tr>
</tbody>
</table>

Fire Protection at Burj Khalifa
STANDPIPE SYSTEM

- FHC’s are provided in every floor landing of each level. As well in Car park, Kitchen & Loading dock areas.
- Each FHC’s cover wings & center core.
- Source of water through water tanks & fire pump set.
- Equipments in standpipe system:

  ✓ 25 dia Hose Reel Drum with Hose, Lock shield valve, Pressure gauge, Pressure reducing valve etc.
  ✓ 65 dia Pressure regulating type landing valve, 30M Hose rack from L34 and above, 40M Hose roll from L7 to L33 & 60M Hose roll from B2 to L6, with 65 dia Nozzle.
  ✓ DCP 6 KG & Co2 5 KG Extinguishers
Key Plan:

- Ø150 LOCAL COMBINED FIRE STANDPIPE & SPRINKLER RISER
- Ø200 EXPRESS COMBINED FIRE STANDPIPE & SPRINKLER RISER
- Ø50 CHUTE RISER
- Ø200 EXPRESS COMBINED FIRE STANDPIPE & SPRINKLER RISER
- Ø150 LOCAL COMBINED FIRE STANDPIPE & SPRINKLER RISER
- Ø150 LOCAL COMBINED FIRE STANDPIPE & SPRINKLER RISER

8 September 2015
<table>
<thead>
<tr>
<th>Location</th>
<th>Water Supply</th>
<th>Zone</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>L137 (125 Cu M)</td>
<td>Fire Pump</td>
<td>Zone 11 (160M2 to 149)</td>
<td>Mechanical, Electrical rooms, EMR, Communication &amp; Boutique Offices</td>
</tr>
<tr>
<td>L137 (125 Cu M)</td>
<td>Fire Pump w/ PRVS</td>
<td>Zone 10 (148 to 136)</td>
<td>Mechanical, Electrical rooms, Refuge &amp; Boutique Offices</td>
</tr>
<tr>
<td>L137 (125 Cu M)</td>
<td>Fire Pump w/ PRVS1</td>
<td>Zone 9 (135 to 124)</td>
<td>Mechanical, Electrical rooms, EMR, Observatory &amp; Boutique Offices</td>
</tr>
<tr>
<td>L137 (125 Cu M)</td>
<td>Gravity Feed</td>
<td>Zone 8 (123 to 111)</td>
<td>Residents, Hotel Club, Refuge, Mechanical, Electrical rooms, EMR &amp; Boutique Offices</td>
</tr>
<tr>
<td>L137 (125 Cu M)</td>
<td>Gravity Feed w/ PRVS</td>
<td>Zone 7 (110 to 96)</td>
<td>Luxury residential, Mechanical, Window washing,</td>
</tr>
<tr>
<td>L109 (150 Cu M)</td>
<td>Gravity Feed</td>
<td>Zone 6 (95 to 76)</td>
<td>Luxury residential</td>
</tr>
<tr>
<td>L109 (150 Cu M)</td>
<td>Gravity Feed w/ PRVS</td>
<td>Zone 5 (75 to 59)</td>
<td>Residential, Mechanical, Window washing, storage, Refuge, EMR</td>
</tr>
<tr>
<td>L74 (150 Cu M x 2)</td>
<td>Gravity Feed</td>
<td>Zone 4 (58 to 43)</td>
<td>Residential</td>
</tr>
<tr>
<td>L74 (150 Cu M x 2)</td>
<td>Gravity Feed w/ PRVS</td>
<td>Zone 3 (42 to 26)</td>
<td>Hotel Suits, Residences, Refuge, Mechanical, EMR &amp; Window washing</td>
</tr>
<tr>
<td>L40 (40 Cu M)</td>
<td>Gravity Feed</td>
<td>Zone 2 (25 to 6)</td>
<td>Hotel Residences, Mechanical, Storage, Hotel Guest rooms</td>
</tr>
<tr>
<td>L40 (40 Cu M)</td>
<td>Gravity Feed w/ PRVS</td>
<td>Zone 1 (5 to B2)</td>
<td>Hotel Guest rooms, Dinning, Pools, Restaurants, Ballrooms, Parking, Mechanical &amp; Loading</td>
</tr>
</tbody>
</table>
LOCATION OF WATER TANK, FIRE PUMP, PROTECTED ZONES, LEVELS & AREAS.

- Water is Pumped to Tank on Level 137 1 Hour Capacity
- Water by gravity fills Tank on Level 109 1 Hour Capacity
- Water is Pumped to Tank on Level 74 1 Hour Capacity
- Water by gravity fills Tank on Level 40 1 Hour Capacity
- Primary Storage Tank Level B2 2 Hour Capacity
YARD - HYDRANT SYSTEM

Wet Type Hydrant

Underground Hydrant

Fire Department Connection

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THE WORLD TALLEST BUILDING AND A DESIGN AND CONSTRUCTION MARVEL
External Fire Hydrants and Fire Breeching Inlet (Siamese Connection)

• 11 Nos. of External Fire Hydrants are provided around the Tower.
  ✓ Hydrant No.- 01,02,03, & 04 are located at Level - 1, Podium – C.
  ✓ Hydrant No.- 05,06, & 07 are located at ground. Level, Podium – B.
  ✓ Hydrant No.- 08,09,10 & 11 are located at Con. Level, Podium – A.

• 4 Nos. of Fire Breeching Inlet (Siamese Connection ) are provided around the Tower.
  ✓ Fire Breeching for Combined Sprinkler & Standpipe System is Located between WA-WC at Level Ground & between WA-WB at Level – 1.

• Source of water through water tank & fire pump set at B2, Area – F1

• Equipments in Hydrant System i.e: Hydrant valve, Hydrant Adapter, Hydrant key etc.
Hand held & Ceiling mounted Fire Extinguishers

- DCP 6 KG for Mechanical Rooms
- Co2 5 KG for Electrical Rooms
- Wet Chemical 6 KG for Main Kitchens
- ADCP 10 KG Ceiling Mounted for IT Closet
FM200 SYSTEM

Agent Release Module
Fm 200 Cylinder
Discharge Nozzle
Rupture Disk
Liquid Level Indicator

BURJ KHALIFA
THE WORLD TALLEST BUILDING AND A DESIGN AND CONSTRUCTION MARVEL
DELUCE FOAM - WATER SPRINKLER SYSTEM

Bladder Tank

Foam Nozzle

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Foam Water Sprinkler System Arrangement
PRE-ACTION SYSTEM

Deluge Valve

Pre-action Deluge System Assembly
Thank You