

# **Fire Safety and Fire Protection Solution**



### 1.FIRE PROTECTION SYSTEMS



# 1.1. FOAM BASED EXTINGUISHING SYSTEM

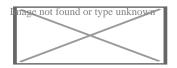
#### 1.1.1. FOAM-WATER SPRINKLER SYSTEM

A special system that consists of a pipe connected to a source of foam concentrate and a source of water. The system is equipped with suitable discharge devices for discharging the extinguishing agent and for dispensing to the area to be protected. The piping system is connected to the water supply via a control valve, usually operated by automatic detection equipment installed in the same areas as the sprinklers. When this valve opens, water enters the piping system, foam concentrate is injected into the water and the resulting foam solution that discharges through the discharge devices generates and dispenses foam. When the amount of foam concentrate is depleted, water flows and then continues until manual closure. The systems can be used first to evacuate the water, then to evacuate the foam for a specified period of time, then with water until manual closure. Existing deluge sprinkler systems that have been converted to the use of an aqueous film forming a foam or film-forming fluoro protein foam are classified as a water sprinkler and foam systems.

### 1.1.2. FOAM-WATER DELUGE SYSTEM

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Foam water sprinkler system using open discharge devices, connected to piping the system connected to a water supply through an open valve through a detection system installed in the same areas as the discharge devices. When this valve opens, water enters the piping system and discharges all discharge devices attached to it.

### 1.1.3. FOAM-WATER DRY PIPE SYSTEM

A sprinkler system using sprinklers or automatic nozzles attached to piping the system containing pressurized air or nitrogen, the release of which (from the opening of a sprinkler) allows the pressure to the water to open a valve called dry pipe valve. The water then flows into the piping system and exits through open sprinklers.

#### 1.1.4. FOAM-WATER PREACTION SYSTEM

Sprinkler the system using sprinklers or automatic nozzles attached to a piping system containing air under pressure or not, with an additional detection system installed in the same zone as the sprinklers. Activation of the detection the system opens a valve that allows water to flow into the sprinkler piping system and be evacuated from activated sprinklers.

### 1.2. CLEAN AGENT FIRE EXTINGUISHING SYSTEM

The benefits of a clean agent fire suppression system are the speed at which fires are suppressed, the damage is reduced, floor space is saved and visibility is available. It leaves no residue and does not require expensive cleaning, unlike sprinklers and other fire protection systems. Our systems are designed to put out a fire quickly and efficiently, allowing businesses to continue operating with minimal disruption. Clean agent fire suppression systems are ideal for applications ranging from telecommunications and data processing to switch rooms, military applications and cell sites to advanced medical applications.

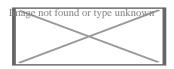
- 1. Master Cylinder
- 2. Slave Cylinder
- 3. Abort Button
- 4. Control Panel
- 5. Warning Sign
- 6. Warning Sign
- 7. Siren
- 8. Zone 1 Detector
- 9. Zone 2 Detector
- 10. Piping
- 11. Nozzle
- 12. Pressure Switch
- 13. Manifold
- 14. Discharge Hose

### 1.2.1. FM-200 GAS BASED FIRE EXTINGUISHING SYSTEM

- · Colorless, odorless and non-conductive
- No Ozone layer depletion

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- Extinguishes fires mainly by physically
- No residue to clean up after discharge
- Suitable for occupied areas
- Widely accepted as a substitute to Halon 1301
- Economic
- Discharge time: 10 seconds

Applications: Computer rooms, electrical equipment rooms/centers, industrial areas, valued material storages, archives, museums, telecommunication equipment rooms, oil and gas industry, turbine cabinets.

### 1.2.2. NAF 125 (HFC 125) GAS BASED FIRE EXTINGUISHING SYSTEM

- Colorless, odorless and non-conductive
- No Ozone layer depletion
- Extinguishes fires mainly by physically
- No residue to clean up after discharge
- Suitable for occupied areas
- Widely accepted as a substitute to Halon 1301
- Discharge time: 10 seconds

Application: Computer rooms, electrical equipment rooms/centers, values material warehouses, archives, etc.

#### 1.2.3. INERT GAS (ARGON IG01) FIRE SUPPRESSION SYSTEM

- Natural gas present in the atmosphere
- Design in compliance with ISO 14520, NFPA 2001 and CEA 4008
- Suitable for occupied areas
- Electrically non-conductive
- No residue to clean up after discharge
- More economical and less storage space
- Zero Ozone Depletion Potential
- No greenhouse effect
- No decomposition products

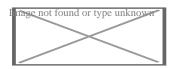
Application: Ideal for the protection of archives, computer rooms, any other electrical installation likely to present a risk of fire.

### 1.3. CO GASEOUS SUPPRESSION SYSTEM

- No Ozone layer depletion
- · Extinguishes fires mainly by physically

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- Local application or total flooding application
- Not suitable for occupied areas
- Low refilling cost, locally available and easily refilled
- Discharge time: 60 seconds

Applications: Transformer rooms, electrical equipment rooms/centers, valued material storages, archives, cable and installation galleries, flammable equipment warehouse, etc.

#### 1.4. WATER MIST SYSTEM

- Ecological. Does not harm the environment
- Safe for the protection of equipment and occupied areas
- Minimal water damage
- Efficient for flammable liquid fires
- Electrically non-conductive (use of dematerialized water)
- Rapid temperature reduction
- Economical. The minimum cost of extinguishing agent
- Independent system or pumping equipment

Applications: Flammable liquid fires, wet chemical and industrial fries, turbine and generator cabins, transformer rooms, walking ladders, and escalators, valued material warehouse, cable and installation galleries, road tunnels.

#### 1.5. FIRE SPRINKLER SYSTEM

For fire protection purposes, integrated underground and overhead piping systems designed in accordance with fire protection technical standards. The installation comprises at least one automatic water supply supplying one or more systems. The portion of the sprinkler system above the ground is a system of special size or hydraulically designed piping installed in a building, structure or area, generally in height, to which sprinklers are routinely attached. The Eanc system has a control valve located in the riser of the system or its supply piping. The system is usually activated by the heat of a fire and discharges water into the fire zone.

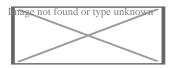
#### 1.5.1. WET SPRINKLER SYSTEM

Sprinkler the system using automatic sprinklers attached to a piping system containing water and connected to a water supply so that water is immediately discharged from open sprinklers to the heat of a fire.

- 1. Control Valve
- 2. Wet Alarm
- 3. Check Valve
- 4. Water Supply
- 5. Water Motor Gong
- 6. Automatic Sprinkler
- 7. Test & Drain Valve
- 1.5.2. DRY SPRINKLER SYSTEM

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A sprinkler system using automatic sprinklers attached to a piping system containing pressurized air or nitrogen, the triggering of which (from the opening of a sprinkler) allows the pressure of the water To open a valve called a dry pipe valve, the water then flows into the piping system and exits through the open sprinklers.

- 1. Control Valve
- 2. Alarm Check Valve
- 3. Dry Pipe Valve
- 4. Check Valve
- 5. Water Supply
- 6. Water Motor Gong
- 7. Automatic Sprinkler 8. Test & Drain Valve

### 1.5.3. PRE-ACTION SPRINKLER SYSTEM

Sprinkler the system using automatic sprinklers connected to a piping system containing air under pressure or not, with an additional detection system installed in the same zones as the sprinklers.

- 1. Check Valve
- 2. Control Valve
- 3. Precaution Valve
- 4. Check Valve
- 5. Water Supply
- 6. Water Motor Gong
- 7. Sprinkler (closed)
- 8. Detector

9. Siren

- 10. Manual Release Station
- 11. Control Panel

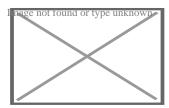
12. Test & Drain Valve

#### 1.5.4. DELUGE SPRINKLER SYSTEM

Sprinkler the system using open sprinklers connected to a piping system connected to a water supply via an open valve via a detection system installed in the same zones as the sprinklers when this valve opens, water enters the piping system and discharges all sprinklers attached to it.

- 1. Check Valve
- 2. Control Valve
- 3. Deluge Valve
- 4. Check Valve

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- 5. Water Supply
- 6. Water Motor Gong
- 7. Sprinkler (open)
- 8. Detector
- 9. Siren
- 10. Manual Release Station

11. Control Panel

### 1.6. KITCHEN WET CHEMICAL SYSTEM

The wet chemical is most commonly used to extinguish cooking oil fires. This is the main source of fire extinguishing in the kitchen. Most potassium chemical compounds are highly corrosive and have limited uses for fire protection. A wet chemical removes fires through a process called saponification. Saponification is the process of chemical conversion of the fatty acid contained in the cooking medium into soap or foam. It achieves extinction by forming a surface coating.

#### 1.7. DRY CHEMICAL FIRE SUPPRESSION SYSTEM

Dry Chemical System provides 24-hour fire protection for a wide variety of industrial processes, equipment, and machinery and spray booths. The system has the choice between two effective dry chemical agents on class A, B and C fires. Total flood or local application design options. The system includes detectors, a control unit, agent storage cylinders, hoses, and discharge nozzles.

Application: Paints storage areas, spray paint booths, gas stations

#### 1.8. FIRE PUMPS

Fire pumps are required when the local municipal water system cannot provide sufficient pressure to meet the hydraulic design requirements of the sprinkler system. This usually occurs when the building is very high, for example in high-rise buildings or in systems requiring relatively high terminal pressure at the sprinkler to provide a large volume of water, for example in storage warehouses. Fire pumps are also required if the fire protection water supply is provided by a ground level water storage tank.

The fire pump starts when the pressure in the sprinkler system falls below a threshold. The pressure of the sprinkler system drops significantly when one or more fire sprinklers are exposed to heat above their design temperature and open, releasing water. All pumps are designed and manufactured in accordance with NFPA 20.

Electric:

Capacity Range: 100 - 5000 GPM

Pressure Range: 40 - 470 PSI

HP: 20 - 1000 HP

Diesel:

Capacity Range: 100 - 5000 GPM

Pressure Range: 40 - 475 PSI

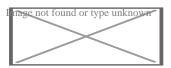
BHP: 20 - 1000 HP

RPM: 1470- 3000 RPM

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### 2. FIRE FIGHTING EQUIPMENT



#### 2.1. FIRE CABINETS

2.1.1. SURFACE MOUNTED CABINET

#### 2.1.1.1. MODEL S2

Model S2 is a built-in cabinet with a separate compartment for housing a portable fire extinguisher or similar equipment. The spool was attached to a bracket hanging 180  $^{\circ}$  and installed on the right side of the cabinet. This model complies with DIN 14461. Designed and manufactured according to EN 671-1

#### 2.1.1.2. MODEL SYR

The SYR model is a cabinet suitable for surface mounting. A rail unit with valve has been installed on the right side of the cabinet. Designed and manufactured according to EN 671-2

#### 2.1.1.3. MODEL HMD Swing Hose Reel

HMD mobile reels are mounted on a hanging arm. The coil is hanged with a 180  $^{\circ}$  slope. This hose can be extended in any direction easily without the need for a hose rail. Designed and manufactured according to EN 671-1

#### 2.1.1.4. MODEL STD Fire Extinguisher Cabinet

The STD model is surface mount type housing for housing a fire extinguisher.

#### 2.1.1.5. MODEL KYD with Foam Mixer

The KYD is a single compartment surface mount cabinet with an additional 2 "firefighter valve, the retractor has been attached to a 180  $^{\circ}$  hanging bracket and installed to the right of the cabinet. Of this model complies with the DIN 14461 standard.

#### 2.1.2. RECESSED CABINET

#### 2.1.2.1. MODEL G22-R2T with Equipment Compartment

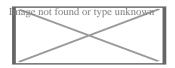
Model G22-R2T is a three-compartment built-in cabinet with vertical divisions for two portable fire extinguishers. The spool was attached to a bracket hanging 180  $^{\circ}$  and installed on the right side of the cabinet. The valve-hose connection of this model complies with DIN 14461. This model has been designed with special regard to the SIP standard. Designed and manufactured according to EN 671-1

#### 2.1.3. OUTDOOR CABINET

2.1.3.1. MODEL DSH

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Cabinet for Fire Fighting Equipment the GYM model is a suitable cabinet for recessed installation. The spool was attached to a bracket hanging 180 ° and installed on the right side of the cabinet. Designed and manufactured according to EN671-2

#### 2.2. FIRE EXTINGUISHERS

#### 2.2.1. WATER FIRE EXTINGUISHERS

Water is always one of the most useful fire extinguishers. It operates by its cooling effect on fire and under the pressure of a controllable discharge extinguisher, can penetrate and extinguish the Class A fires at depth. The fire resistance ratings measure the effectiveness of a fire extinguisher in terms of the maximum size of the fire that can be extinguished. BS-EN3 certified

#### 2.2.2. FOAM FIRE EXTINGUISHERS

Foam extinguishers are a fast and powerful way to fight class "A" and "B" fires. Very effective against gasoline and volatile liquids, forming a flame-smothering seal on the surface and preventing resignation. Ideal for multi-risk use. The fire resistance ratings measure the effectiveness of a fire extinguisher in terms of the maximum size of the fire that can be extinguished. Certified to BS-EN3

#### 2.2.3. POWDER FIRE EXTINGUISHER

Dry powder fire extinguishers are a very versatile class A, B & C firefighting device for most hazards. In addition to fighting against electrical hazards, flammable liquids and gases, the powder is also effective against vehicle fires. BS-EN3 certified

### 2.2.4. CARBON DIOXIDE EXTINGUISHER

The fire resistance ratings measure the effectiveness of a fire extinguisher in terms of the maximum size of the fire that can be extinguished. Class B is linked to the surface of the fire and the nominal value to the quantity of flammable liquid in a ratio 1/3 of water, 2/3 of fuel can be extinguished in a circular tank. Gas is safe for delicate equipment and materials. Ideal for modern office environments, all electronic hazards, and where oils, essences, solvents, and waxes are used. BS-EN3 certified

#### 2.2.5. MOBILE TROLLEY UNITS

Designed to protect large industrial and marine hazards, mobile wheeled units can be provided in a choice of sizes and extinguishers to meet specific risks.

- Foam
- Powder
- CO2

Certified to BS-EN1866

### 2.2.6. STAINLESS STEEL FIRE EXTINGUISHERS

- Corrosion resistant construction.
- Simple seizes and squeezes operation.
- Controllable discharge assures efficient use of contents and minimizes clean-up.
- Unique tamper evident safety pin with the OK indicator.

Certified to BS-EN3

2.3. FIRE HOSES

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#### Applications

- Municipal fire brigades
- Shipboard
- Industrial fire brigades
- Refineries
- Irrigation Construction
- 100 % high tenacity polyester yarn
- Circular-woven twill weave, warp threads multiple twisted
- High-quality, very light synthetic rubber on Special Options the basis of EPDM

Other diameters Features

- Maximum lengths up to 500 m
- Seawater-resistant, weather-resistant
- Individual stenciling (e. g. -Company-logo Ageing and ozone resistant or name)
- Temperature range from -40 °C up to +100
- All international couplings standards °C Approvals
- Minimum friction loss because of very
- DIN 14811: 2008 class 1/class 2 smooth inner lining
- Germanischer Lloyd
- Light and flexible
- M.E.D. 96/98/EC
- Minimum maintenance
- BS 6391 Type 1 (white)
- PU-coating on request
- BS 6391 Type 2 (red coated)

### 2.3.2. SYNTEX UNIDUR

Applications

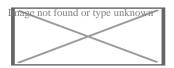
- Municipal fire brigades
- Shipboard, marine and offshore
- Chemical industry
- Refineries, irrigation, agriculture

Construction

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• 100 % high tenacity ¬polyester yarn, circular-woven (reinforcement)

- Embedded in a high-quality, special synthetic rubber on the basis of Nitrile/PVC
- Extruded through the polyester weave

**Special Options Features** 

- Maximum lengths up to 120 m
- Absolute tough, durable and very abrasion
- Individual stenciling (e. g. Company-logo or resistant-name)
- Resistance to oil, petrol, and a wide range
- All international couplings of chemicals
- Standard color: red (others on request)
- Temperature range from -40 °C up to Approvals+100°C
- DIN 14811:2008 classes 3
- Resistance to UV and ozone
- BS 6391 Type 3
- Low elongation and very low friction loss
- prEN 1924 class 4
- Excellent adhesion between rubber and
- M.E.D. 96/98/EC textile
- Lloyd's Register of Shipping
- No cleaning or drying required
- Germanischer Lloyd
- 2.3.3. SYNTEX SIGNAL

Applications

- Municipal fire brigades
- Shipboard
- Industry
- Military

Construction

- 100 % high tenacity polyester yarn yellow dyed
- Circular-woven twill weave, warp threads multiple twisted
- High-quality, very light synthetic rubber on the basis of EPDM

Features

# **Innovative Electro Magnetic Solution**





• By fluorescent signal color highly visible in darkness and smoke

Special Options

- Reduces the risk of accidents during operation
- Maximum lengths up to 120 m
- $\bullet$  Temperature range from –40  $^{\circ}\mathrm{C}$  up to
- Individual stenciling (e. g. Company-logo or +100°C-name)
- Minimum friction loss because of very
- All international couplings standards smooth inner lining
- Standard color: yellow (others on request)
- Suitable for seawater, hot water, and steam Approvals
- · Aging and ozone resistant
- DIN 14811: 2008 classes 1
- Minimum maintenance
- Germanischer Lloyd

2.4. NOZZLES

2.4.1. SPRAY NOZZLE

Infinitely variable jet, spray, water curtain, and shut-off.

Size: 1/2" - 2 1/2"

#### 2.4.2. CELLAR NOZZLE ROTATING

Universal use for firefighting in premises, preferably for hard to reach places. The nozzle moves forward and starts rotating automatically when in use. The extinguishing water circulates the case body.

Size: 2"

#### 2.4.3. JET-SPRAY NOZZLES

Flow equal to jet and spray with an additional rinse position without cut-off. Spray nozzle: 1 "- 2 1/2"

2.4.4. AUTOMATIC NOZZLES

Nozzle diameter automatically pressures regulated, no shut-off.

Automatic Nozzle: 2" – 2 1/2"

2.4.5. BRANCH PIPES

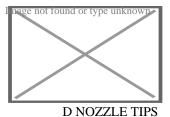
1" - 2 1⁄2" 2" - 2 1⁄2"

2.4.6. NOZZLE TIPS

2" - 2 ½"

2.4.7. TERRACE

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D NOZZLE I

2 ¼"

2.4.8. FOAM NOZZLES

Self-priming foam nozzles (SW / S) have a built-in foam inducer with a control valve for a transfer rate of 0% to 6%. Foam pressure concentrate inlet automatically Storz regulated, no stopping. 25 = D, at SW 30 / S Storz automatic nozzle:  $2 "- 2 \frac{1}{2}" 52 = C$ .

2.5. SPRINKLER

Standard Spray Sprinkler

**Residential Sprinkler** 

Extended Coverage Light Hazard Sprinkler

Nozzle & Window Sprinkler

Sprinkler Types:

•Upright Sprinkler

•Conventional

•Pendant

•Vertical Sidewall

•Horizontal Sidewall

Temperature Ratings: 57°C, 68°C, 79°C, 93°C, 141°C, 182°C Water Working Pressure Rate: 175 Psi (12 Bars) UL Listed, FM Approved

2.6. VALVES

### 2.6.1. ALARM CHECK VALVE

Alarm check valves used in wet pipe sprinkler systems. They mainly have a dual purpose in that they prevent the reverse flow of water into their bodies (no return) and also provide for the use of a hydraulic fire alarm that does not depend on a power supply for its operation. Water Use Pressure - 175 psi (12 bars) Sizes: 3 "- 4" - 6 "- 8" UL listed, FM approved

2.6.2. GATE VALVE

Working Pressure:

1/2" - 2" Cold Water, Non-Shock 175 lbs

UL Listed, FM Approved

2.6.3. GLOBE VALVE

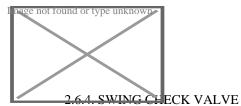
Working Pressure:

11/2" - 1" W.O.G., Non-Shock 175 lbs

1¼" - 2" W.O.G., Non-Shock 200 lbs

UL Listed, FM Approved

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Working Pressure:

W.O.G., Non-Shock 200 lbs,

Cold Water, Non-Shock 175 lbs

Saturated Steam 125 lbs

Sizes <sup>1</sup>/<sub>2</sub>" through 12"

2.6.5. WAFER CHECK VALVE

Sizes 4, 6 & 8 inch

Working Pressure: 300 Psi, Non-Shock

UL Listed, FM Approved, ULC Listed

2.6.6. OS&Y VALVE

Working Pressure:

200 Psi through 400 Psi

Working Temperature: 0.6°C to 52°C

UL Listed, FM Approved

2.6.7. BUTTERFLY VALVE

Working Pressure:

175 PSI to 300 PSI

Max. Working Temp.: 120°C

Sizes 2 1/2" through 8"

UL Listed, FM Approved

2.6.8. BALL VALVE

Threaded or Grooved Body Style

Sizes 1" through 2 1/2"

UL Listed, FM Approved

2.6.9. PRESSURE RELIEF VALVE

Factory Mutual Approved UL Listed Sizes 3" thru 8" FM Approved Sizes 3" thru 8" ULC Listed Sizes 2" thru 10"

2.6.10. PRESSURE REDUCING VALVE

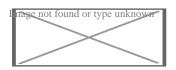
Globe or Angle Pattern Grooved Ends (1 <sup>1</sup>/<sub>2</sub>" - 8") UL Listed, ULC Listed, MEA Approved

2.7. MONITORS

2.7.1. MANUAL MONITORS

# **Innovative Electro Magnetic Solution**





### 2.7.1.1. DECK/PORTABLE MONITOR

- •The compact folding base can be stored in any truck compartment or pre-connected in the hose bed
- •Legs lock in folded and deployed positions
- •Safety stops at 30 degrees above horizontal
- •Stainless steel ball bearings at all rotation joints
- •Liquid filled pressure gauge •Grease fittings for lubrication
- •Red paint finish
- •Dual application-use as portable monitors or adds the top flange for deck mount use

### 2.7.1.2. SINGLE WATERWAY MONITORS

- •Durable, Lightweight Aluminum Construction
- •Corrosion resistant brass construction
- •Grease fittings at each swivel joint
- •Stainless steel ball bearings at each swivel joint
- 360-degree rotation w/positive lock
- •Vanes at each elbow to reduce friction loss, improving the range of stream

### 2.7.1.3. HANDWHEEL MONITOR

- •Corrosion Resistant Brass Construction
- •Single waterway low friction loss
- •Full 360-degree rotation with positive twist lock
- •Stainless steel ball bearings •Red epoxy paint finish
- •Vertical travel from 90° above to 60° below horizontal

### 2.7.2. WATER-POWERED OSCILLATING MONITORS

•The monitor and body of the oscillating unit are manufactured of brass. The water drive wheel is bronze with a bronze supply gate valve.

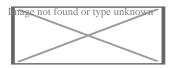
- •UL Listed
- •Capable of flowing foam or water
- •Unique water drive wheel design
- •Arc of oscillation adjustable via 6 set points
- •Manual overrides capabilities in both horizontal and vertical degree field

•Double reduction of oil bath gearbox •Grease fittings and two rows of stainless steel ball bearings at all rotation joints on the monitor

•All brass and stainless steel construction

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•The monitor has one tiller bar control for manual control

•The unit equipped with a garden hose test connection. This allows a functional check of the oscillation mechanism without system flow.

2.8. MISCELLANEOUS

2.8.1. COUPLINGS

German Couplings

Type Storz

German Couplings

Light Alloy Type Storz,

**British Couplings** 

Brass BS 336

Couplings for

Compressed Air

Russian GOST

Couplings

2.8.2. WATER MOTOR ALARM

Water Engine Alarms are hydraulically operated internal and external alarms intended for use with fire protection systems.

UL Listed, FM Approved

2.8.3. PRESSURE SWITCH

It is designed for the detection of water flow conditions in automatic fire sprinkler systems of particular designs, such as wet piping systems with alarm check valves, dry pipes, gate valves anticipated or deluge. The device has a pressure range of 4-15 psi and a nominal system pressure of 300 psi. It is UL, ULC, CSFM, FM, LPC, NYMEA, and CE approved.

2.8.4. VANE TYPE WATERFLOW ALARM

SWITCH WITH REGARD

UL, CUL, CSFM Listed, FM Approved, LPCBA Approved, CE Marked Service Pressure: 450 Psi (31 Bar)

### 2.8.5. FLOWMETER

Working Pressure:

34 bar (500 psi) for Butt Welded and Grooved Ends. 19 bar (275 psi) for ANSI 125 Flanged Ends. FM Approved

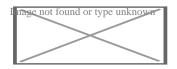
2.9. SMOKE & HEAT DETECTORS & SIRENS

### 2.9.1. SMOKE DETECTOR

The smoke detectors sample the atmosphere every four seconds and the measurements are processed by a microprocessor. Processing power is used as part of the design to eliminate unwanted alarms.

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The heat detector monitors the temperature using a unique thermostat network that provides a voltage output proportional to the outside air temperature.

2.9.3. SIRENS

A compact combination of a high-efficiency siren and beacon for areas requiring an audible and visual indication of alarms, ideal for noisy work areas.

2.10. FIRE TRUCK

Construction

The superstructure is made of steel. All components of the superstructure are assembled to an auxiliary frame. This frame is attached to the main frame by means of a suitable attachment to avoid any adverse influence on the bodywork.

Design

In such a way to allow maximum accessibility to all areas

Working Deck

Covered by anti-slip material with light alloy handrails.

Roof Access

The climbing ladder is attached to the rear of the vehicle to access the roof of the vehicle. Handles are provided if necessary.

#### Storage Lockers

There are four storage bins on each side of the vehicle. The lockers are closed by aluminum shutters. The base of the lockers is covered with aluminum plates. Drainage holes are provided on the floor of the compartment to allow drainage of water.

#### 3. SAFETY PRODUCTS



#### 3.1. EYE & FACE

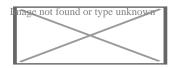
### 3.1.1. EYEWEAR

Practical and durable eye screen offering a high level of protection and comfort. Perfect for eyeglasses. Side panels and frosted face guards reduce glare and reflections

EC Category PPE: Category II, Standards EN 166 169, European

# **Innovative Electro Magnetic Solution**





Directives 89/686/EEC, Optical Class 1, F-Low energy impact

### 3.1.2. FACE SHIELD

Advanced ergonomic design with 2,784 possible positions, extended chin, and head protection and ratchet mechanism for a secure and comfortable fit

- AS/NZS 1337 AS/NZS 1337,
- EC Category PPE EC Category PPE
- EN 169 / EN 170 / EN166 Standards EN 169/EN 170/EN166

3.1.3. GOOGLE

Impact-resistant polycarbonate lens for excellent protection against flying particles, coarse dust, droplets, mists and aerosols EN166 - EPI category CE, EN166 standards, optical class I, impact degrees B & F droplets liquid), 4 (resistance to large dust particles)

#### 3.2. HEARING 3.2.1. EARMUFF

Noise-canceling helmets provide workers with a total solution for hearing protection and visibility at night and during the day.

- 29 CFR 1910.95 OSHA Occupational Noise Exposure (US)
- ANSI S3.19-1974 Attenuation Test Protocol (US)
- EN-352-1:2002 EU Standards
- 3.2.2. EARPLUG

Dual-material design for all-day comfort, easy handling

- 29 CFR 1910.95 OSHA Occupational Noise Exposure (US)
- ANSI S3.19-1974 Attenuation Test Protocol (US)
- EN-352-1:2002 EU Standards
- **3.3. RESPIRATORY**

#### 3.3.1. SELF CONTAINED BREATHING APPARATUS

Specially developed for long-term maintenance operations in industrial environments, where the atmosphere is toxic or deficient in oxygen.

- EN 139
- EN 142
- EN 137
- EN 136
- CE0194/0060

### 3.3.1.1 SCBA FOR LONG DURATION OPERATION

It can be used with a cylinder or connected to an external breathing air source. Very comfortable and perfectly versatile, it offers the wearer complete protection of the airways. Complies with EN137: 2006, type 2.

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- ISO 9001
- Bureau VERITAS for Marine use (SOLAS, MSC, and MED)
- 3.3.1.2. SCBA FOR FIRE FIGHTING AND OIL&GAS INDUSTRY

Self-contained breathing apparatus designed for firefighting and the oil and gas industries. It meets the requirements of the latest standard EN 137, type 2 classifications.

- EN 137:2006 Type 2
- CE0194/0060
- ISO 9001
- Bureau VERITAS for Marine use (SOLAS, MSC, and MED)

#### 3.3.1.3. SCBA DESIGNED FOR SHIPPING

Self-contained breathing apparatus designed for shipping where such devices are mandatory. It is a user-friendly device that allows safe and comfortable breathing. Complies with the latest MED, SOLAS and EN 137, Type 2 standards.

- EN 137:2006 Type 2
- Bureau VERITAS for Marine use (SOLAS, MSC and new MED)
- CE0194/0060

#### 3.3.1.4. SCBA FOR FIRE FIGHTING

Self-contained breathing apparatus specially designed for fire fighting. It is very comfortable thanks to its thermocompressed harness. It meets the requirements of EN 137: 2006, type 2.

- EN137:2006 Type 2
- CE0194/0060
- ISO 9001
- Bureau VERITAS for Marine use (SOLAS, MSC, and MED)

#### 3.3.1.5. SCBA FOR SHORT INSPECTIONS

Self-contained breathing apparatus designed with a jacket. User-friendly and versatile, it is ideal for short inspections in confined spaces or for maintenance operations. Can be used to escape thanks to its autonomy of 10 to 35 mm.

- EN 137:2006 Type 1
- CEO194 /0060
- ISO 9001
- 3.3.1.6. MINI SCBA

Self-contained breathing apparatus developed for short-term operations. Can be connected to an external air source for longer interventions. Lightweight, comfortable and designed for fast donning, it provides the end user with excellent comfort and respiratory safety. Can also be used to escape.

• EN 402

# **Innovative Electro Magnetic Solution**





• ISO 9001

#### 3.3.2. ESCAPE SOLUTIONS 3.3.2.1. ESCAPE HOOD

Compact and easy-to-use exhaust hood in case of a chemical emergency. Lightweight bag for optimal comfort in longlasting work. Aluminum bag for safe storage. Widescreen and highly visible color for protection and safety during evacuation.

### 3.3.2.2. EMERGENCY ESCAPE BREATHING DEVICES

Lightweight, compact and easy to use, our emergency escape breathing devices (EEBD) are ideally suited for applications in confined spaces, marine, industrial and petroleum. They are available with a duration of 10 to 20 minutes.

- CE 0194
- EN 402
- EN 1146
- ISO 9001

#### 3.3.3. TALLY BOARD

The use of personal meters records the firefighter at the control panel allowing the transfer of data by radio. The data available to the firefighter is repeated on the display of the control panel.

<ul> <li>Telemetry</li> </ul>	JCDD40 • ADSU	JCDD38 • Intrinsic Safety	EN 50020, EN 50014 •
EMC	EN 61000-4-3	EN 6100-6-2 • Breathing Apparatus	PrEN 137

#### 3.3.4. COMPRESSED AIR CYLINDER

Steel and composite compressed air cylinders meet a wide range of applications, needs, and budgets. All valves comply with EN 144-1 and 144-2 standards

#### 3.3.5. FRESH AIR-SUPPLY SYSTEM

Fresh air supply systems are generally used for outdoor work, where air transport systems are not available and there is easy access to clean air.

• EN 138

#### 3.3.6. REUSABLE RESPIRATORS

#### 3.3.6.1. FILTERS

A wide range of filters for particles, gases/vapors, and combined protection. Lightweight filters and ergonomic shape for optimum comfort for long-term work. Durable plastic housing for long life. Specific threading for increased safety.

• EN 14387

#### 3.3.6.2. HALF MASKS FOR SHORT USE

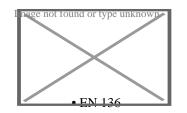
Easy to use, safe and hygienic. The large field of vision thanks to the positioning of the low filters.

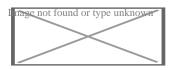
• EN 405

### 3.3.6.3. FULL FACE MASK

Comfortable wearing and wide field of vision for long-term work. Soft silicone skirt with ergonomic design for optimal fit.

# **Innovative Electro Magnetic Solution**





### 3.3.6.4. SINGLE AND BI-FILTER HALF MASK

Increased comfort and durable protection. Very soft and comfortable mask: silicone skirt. Harness very comfortable for long-term work.

• EN 140

3.4. INSTRUMENTATION

3.4.1. PORTABLE GAS DETECTOR

In order to assess the extent to which humans are threatened by hazardous substances in the ambient air or explosive mixtures of gases and vapors in the air, appropriate measuring instruments may be used to recognize and measure the concentrations dangerous.

•SGS USTC Class 1 Division 1 Groups, A, B, C, D Temp code T3C (Approved to UL-913)

•SGS/USTC Class II, Division 1, Groups E, F, G

•ATEX (DEMKO) Ex d in LLC 170C (T3)

•ATEX (DEMKO) Ex d in LLC 170C (T3)

3.5. FALL PROTECTION

3.5.1. HARNESSES

High quality and ergonomic work harnesses for many application areas

•EN 358, EN 361, ANSI Z359.1, CSA Z259.10, AS/NZS 1891.1, LA-MARK

3.5.2. FALL ARREST DEVICE

Fall arrest devices are used to position workers safe when working at height.

• i.V. m. EN 1496

3.5.3. LANDYARD & WORK POSITION ROPE

3.5.3.1. LANDYARD

The lanyards may be ropes or belts and serve to directly connect the harness catching the eye to the attachment point.

• EN 354, EN 355

#### 3.5.3.2. WORK POSITION ROPE

Holding the ropes help the user maintain a good position, which makes his work safer but also easier.

• EN 358, ANSI Z359.3

3.5.4. ROPE

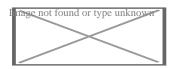
It is extremely resistant to abrasion, naturally suitable for sharp edges and has a very low slip of the sheath. This means that it can be used for many recall operations and is very durable.

• EN 892

3.5.5. DESCENDER & RESCUE DEVICE

# **Innovative Electro Magnetic Solution**





The decanters are extremely durable and offer high performance, making them ideal for rescue operations.

• EN 341 Kl. A, EN 1496, ANSI Z359.4

#### 3.5.6. AUTOMATIC FALL ARREST BLOCKS

Automatic fall arrest blocks are lightweight and compact while providing maximum functional reliability and resiliency. They are a safety companion for working at height day after day.

• EN 360

3.6. HYDRAULIC RESCUE DEVICE

3.6.1. CUTTERS

Heavy-duty blades offer a non-slip cutting action. Two mobile blades with spreading capacity makes this mill the ideal solution for the heaviest cuts and excellent performance in simultaneous use

•Opening widths up to 10"

•Cutting force up to 248,000 lbs

•Operating pressure 9,135 to 10,440 PSI

•High-pressure pigtails, 20" long, equipped with kink protection

•Automatic locking, flat face quick connect couplings

3.6.2. SPREADER

Made from a high strength but lightweight metal alloy. With high forces for spreading, traction and compression applications.

•Spreading widths up to 32 1/4"

•Spreading force up to 156,195 lbs

•Operating pressure 9,135 to 10,440 PSI

•High-pressure pigtails, 20" long, equipped with kink protection

•Automatic locking, flat face quick connect couplings

3.6.3. COMBINATION TOOL

A combination of tools with exceptional performance: Extreme width and dispersion forces, cuts with "bite" The cutting blades are replaceable.

- Spreading width up to 18"
- Unique: design is based on the construction principle of a spreader
- Operating pressure 9,135 to 10,440 PSI
- High-pressure pigtails, 20" long, equipped with kink protection

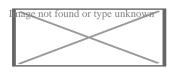
3.6.4. RESCUE RAMS

Emergency rams are the ideal complement to spreading tools.

• Opening widths up to 63" / Spreading force up to 50,400 lbs

# **Innovative Electro Magnetic Solution**





- Operating pressure 9,135 to 10,440 PSI
- High-pressure pigtails, 20" long, equipped with kink protection
- Automatic locking, flat face quick connect couplings

### 3.6.5. PULLING CHAIN

Traction chains can be attached directly to the tips of the spreaders without spike exchange. The required length is easily adjusted by inserting the links of the chain into the attached collection.

### 3.6.6. MISCELLANEOUS POWER UNITS

3.6.6.1. POWER UNITS

Power Units with Gasoline Engine Power Units with Electric Motor Atex Certified Power Units

- 3.6.6.2. MOBILE
- Gasoline Engine

Electric Engine

**Diesel Engine** 

3.6.6.3. HAND & AIR HYDRAULICS

Compressed Air Hydraulic Pump

- Low weight, easy to use, very mobile
- Low operating noise

#### Hand Pump

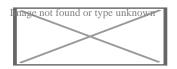
- Low weight, easy to use, very mobile
- Automatic switch-over from low to high pressure for quick work
- Flow rate low pressure: 10, 8 cm<sup>3</sup>

3.7. GLOVES

- 3.7.1. CHEMICAL
- Gloves for Chemical Industry
- Coated Seamless Knits
- Cut & Sewn
- Linemen
- Metal Mesh
- Seamless Knits
- Sleeve
- 3.8. PROTECTING CLOTHING
- 3.8.1. REUSABLE TECHNICAL WORKWEAR

# **Innovative Electro Magnetic Solution**





Reusable protection suit. Gastight available with SCBA outdoors or indoors.

• EN 943-1 A - Performance requirements for ventilated and non-ventilated "gas tight" chemical protective suits. Type A: with breathable air supply

• EN 943-1 B - Performance requirements for ventilated and non-ventilated "gas tight" chemical protective clothing. Type B: with breathable air supply

Protection from head to toe for the user against accidental contact with a flame, splashes of aluminum and molten metal, convection heat, and high radiant heat.

• EN ISO 11612: 2008 (A1-B1-C3-D3-E3-F1) - Protective clothing against heat and flame

Designed to protect the user against small splashes of molten metal, short-term contact with the flame and the radiant heat of the arc.

- EN ISO 11612: 2008 (A1-B1-C1-E2) Protective clothing against heat and flame.
- EN ISO 11611: 2007 (A1 Class 1) Protective clothing used for welding and related technical operations.

Light and effective, it protects against the risks of contact with fire, convective heat, radiant heat and the risks associated with the accumulation of electrostatic charges.

- Category 3 PPE European directive
- EN 340 Protective clothing General requirements
- EN 469: 2005 Protective clothing for firefighters and firefighting
- EN 1149-5: 2008 Electrostatic properties. Requirements for materials and design.

Fully held from head to toe, it protects them user from insect bites and prevents wasp and hornet bites.

• EN 340/2003 - General ergonomics and size requirements

#### 3.8.2. SINGLE USE CLOTHING

Breathable disposable protective coveralls designed to protect against particle contamination and chemical splashing.

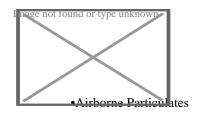
- Airborne Particulates
- Biohazard
- Chemical
- Contamination
- Splash

Disposable protective clothing designed to protect against contamination by particles and chemical contamination

- Airborne Particulates
- Biohazard
- Chemical
- Contamination
- Splash

A line of single-use waterproof protective clothing designed to protect against chemicals.

# **Innovative Electro Magnetic Solution**





•Chemical

•Contamination

•Splash

The range of disposable, liquid-proof protective clothing designed to protect against chemicals.

3.8.3. WORKWEAR

A full range of comfortable work parkas offering protection from all types of bad weather with waterproof seams, quilted liners, waterproof outer shells and breathable liners

For those who work indoors, a full range of functional, windproof and warm vests providing comfort and protection

•89/686/EEC - Comply with the European Directive 89/686/EEC and the EN standard 340-PPE category

Functional and elegant trousers suitable for all workwear styles, weathering products or high visibility products.

•89/686/EEC - Comply with the European Directive 89/686/EEC and the EN standard 340 - PPE category

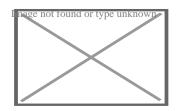
Ideal waterproof and windproof parkas that will protect you in an environment not very visible.

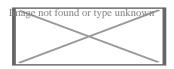
•European Directive 89/686/EEC standards 471 Class 3, EC Category PPE II and EN 340 Protective Clothing General Requirements

### 4. MARINE SAFETY



# **Innovative Electro Magnetic Solution**





### 4.1. LIFE-SAVING APPLIANCES

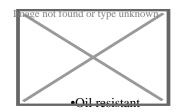
#### 4.1.1. SURVIVAL SUIT

- •6 hours of thermal protection
- Insulated 5 finger gloves
- •Ankle and wrist adjustments for a snug fit
- •Light pocket
- •Reflective panels, whistle
- •Non-slip soles
- •Approved according to MED
- •Complies with the latest requirement of SOLAS'74

### 4.1.2. THERMAL PROTECTIVE AID

- •Thermal protective aid with sleeves covering the whole body
- •With hood and a long zipper for easy donning
- •Reflective panels
- •Metallic inside layer to retain body heat
- •Waterproof
- •Approved according to MED
- •Complies with the latest requirement of SOLAS
- 4.1.3. LIFEBUOY
- •Color: orange
- •Reflective panels
- •Grab line
- •Approved according to MED
- •Complies with the latest requirement of SOLAS'74/96 and LSA Code
- 4.1.4. BUOYANT CUSHION
- •With reflective panels and grab line

# **Innovative Electro Magnetic Solution**



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•Flame resistant

- •Approved according to MED
- •Complies with the latest requirement of SOLAS
- 4.1.5. LIFE JACKET
- •The additional collar provides excellent floating position
- •Color: orange
- •Buoyancy: 190 Newton
- •Reflective panels
- •Whistle
- •Approved according to MED
- •Complies with the latest requirement of SOLAS
- 4.1.6. MOB LIGHT SMOKE SIGNALS
- •Position marking of a lifebuoy ring MOB system
- •Smoke duration: 15 min
- •Light duration: 2 hrs
- •with bracket
- 4.1.7. HELICOPTER RESCUE BASKET
- •MOB rescue devise for helicopter rescue operations
- •Stainless steel basket
- •Floatable basket with 2 ethafoam cylinders, orange with reflective panels
- •Bails can be folded for compact storage

#### 4.2. HELICOPTER RESCUE EQUIPMENT

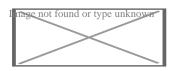
#### 4.2.1. RESCUE EQUIPMENT FOR HELICOPTER DECK

The following rescue equipment is required for any vessel with a helicopter deck in accordance with SOLAS II-2:

- •Adjustable wrench
- •Fire blanket
- •Bolt cutter 60 cm
- •Grab/salvage hook
- •Metal hacksaw, heavy duty, complete with 6 spare blades
- •Ladder
- •Wire cutting pliers

# **Innovative Electro Magnetic Solution**





### 4.3. LIFERAFTS

The life rafts are packed in sturdy fiberglass containers mountable on deck. A small profile container, the life raft container remains secure and resistant to harsh marine environments

4.4. OIL SPILL KIT

- •Different Sizes
- •Stored in GPR box
- •Color: yellow
- •Watertight
- Lockable
- 4.5. COMMUNICATION

#### 4.5.1 HANDHELD MARINE RADIO

- •Low battery indicator
- •Battery save function
- •Housing: die-cast aluminum
- •Resistant to: heat, pressure, water, vibrations

### 4.5.2. RADAR TRANSPORTER

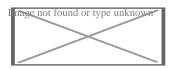
- 9 GHz x-band transceiver
- Remains in standby mode for 96 hrs
- Waterproof up to 10 m
- Incl. wall mounting
- 4.6. EMERGENCY & SAFETY LIGHTS, SIGNALS
- •Emergency Lights for Survival Suits & Life Jackets
- •Lifebuoy Light
- •Life raft and Lifeboat Lights
- •Marker Light
- •Solar Marine Light
- •Personnel Marker Light
- 4.7. RESCUE BOATS

The MOB boat is delivered in rigid orange flame retardant GRP materials with a capacity of 5 + 1 people. Approved according to SOLAS 1974/96, LSA code MSC 81 (70)

IMO, Res. MSC.218 (82) and IMO Res MSC.226 (82), Part 1, Section 7 and EU Directive 96/98 / EC. The lifeboat can be straightened after capsizing by two men

# **Innovative Electro Magnetic Solution**





4.8. DECK EQUIPMENT

#### 4.8.1. EMBARKATION LADDER

The ladder is made of a weather resistant material that guarantees greater endurance. The aluminum clamps guarantee firm hold of the steps. By using polyamide wedges, reinforced wooden steps can be dispensed with. Available in different lengths.

### 4.8.2. PILOT LADDER

•Manufactured according to LSA code precepts

•Produced in manila ropes

•DIN ISO 799-1986

•Available in different lengths

4.8.3. GANGWAY NET

•Material: Polypropylene

•Different Colors and Sizes

### 5. HIGH INTEGRITY HVAC PRODUCTS



#### 5.1. FIRE DAMPER

They are used in ventilation and acclimation systems to block the spread of fire through air ducts.

•Stainless Steel or Galvanized Mild Steel

•Frames in a range of thickness from 2-10mm

•Removable linkage

•Continuous blade shafts

•Bearings: Roller or ball race

•Earth Continuity Bosses

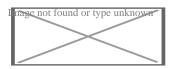
•Lifting Lugs

•Pre-insulated controls enclosure

•Client specific requirements

# **Innovative Electro Magnetic Solution**





### 5.2. FIRE AND GAS DAMPER

- •Stainless Steel or Galvanized Mild Steel
- •Frames in a range of thickness from 2-10mm
- •Removable linkage
- •Continuous blade shafts
- •Bearings: Roller or ball race
- •Earth Continuity Bosses
- •Lifting Lugs
- •Pre-insulated controls enclosure
- •Client specific requirements

#### 5.3. FIRE AND SMOKE DAMPER

•Frames in a range of thickness from 2-10mm

•Removable linkage

- •Continuous blade shafts
- •Bearings: Roller or ball race
- •Earth Continuity Bosses
- •Lifting Lugs
- •Pre-insulated controls enclosure
- •Client specific requirements

#### 5.4. ISOLATION DAMPER

- •Continuously welded construction
- •Opposed blade motion
- •Low casing leakage
- •Low blade leakage
- •Manual, pneumatic, or electric operation
- •Wide range of materials and controls

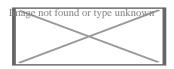
•Excellent corrosion resistance

5.5. VOLUME CONTROL AND

MODULATING DAMPER

# **Innovative Electro Magnetic Solution**





•Continuously welded construction

- •Opposed blade motion
- •Low casing leakage
- •Low blade leakage
- •Manual, pneumatic, or electric operation
- •Wide range of materials and controls
- •Excellent corrosion resistance
- 5.6. NON-RETURN/PRESSURE

#### **RELIEF DAMPER**

- •Continuously welded construction
- •Parallel blade motion
- •Excellent corrosion resistance
- 5.7. BLAST DAMPERS
- 1. Blast Resistant Damper

Designed for offshore and onshore oil and gas industries, the explosion-proof valve is a rugged, robust device used as an HVAC louver on a building blast module or wall.

#### 2. Blast Protection Damper

It is a unique device that, together with an explosion-proof damper, is designed to maintain integrity after an explosion event, but also to reduce the overpressure to a safe level, thus protecting personnel and equipment.

#### 5.8. WEATHER, RAIN & SAND LOUVERS

The baffles are well suited for air intake and exhaust applications for ventilation and power generation, as well as for baffle coating systems. The function of the weather protection grille is to prevent penetration of wind-thrust rain into the ventilation system. Three deflector configurations are available with a range of performance efficiencies for particular applications.

#### 5.9. CHEMICAL FILTER

BAITS provide a full range of air purification systems and offer a full range of services. The filter media provide continuous purification of contaminated air in industrial and commercial environments.

Odor and Corrosion Control Applications

•Pulp & Paper

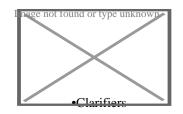
•Digesters

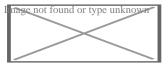
• Incineration Plants

•Oil & Gas Refineries

- •Exhaust Pressurization
- •Garbage Depots

# **Innovative Electro Magnetic Solution**





- •Wet Wells
- •Process Areas
- •Waste Transfer Stations
- •Emergency Safe Rooms

# **Innovative Electro Magnetic Solution**