

# Engineered Solutions for Water and Wastewater Treatment Facilities



**Appleton™, SolaHD™ and Nelson™**

Keep your facilities operating safely and efficiently with a full suite of electrical products.



## Ensure Maximum Power Reliability for Water and Wastewater Treatment Plants



Emerson understands that water filtration is a complicated process. While electrical equipment runs largely behind the scenes in these plants, it is needed to perform every stage in processing without fail.

Due to corrosion and harsh chemicals, water and wastewater treatment plants present an extremely hostile atmosphere for electrical equipment, causing non-hardened devices to malfunction or prematurely breakdown. Compounding this problem, many communities require treatment plants to work around the clock, meaning that even a minor electrical issue can lead to a water shortage or to the release of sewage into local rivers and lakes.

Our Appleton™, SolaHD™ and Nelson™ brands offer a portfolio of industrial grade electrical products specifically engineered to optimize water and wastewater treatment plant operations. From electrical infrastructures to power quality to freeze protection, Emerson's end-to-end solutions improve plant reliability, safeguard treatment processes, lower operating costs, and stop problems before they can affect water availability.



# End-to-End Solutions to Improve Plant Performance

Durability is a key performance hallmark of Appleton, SolaHD, and Nelson products. Our solutions are engineered in world-class manufacturing facilities where only the highest-grade industrial metals and materials are used for superior results. Understanding that decomposition of waste generates explosive levels of methane and hydrogen, many of the products are certified to internationally-recognized hazardous location standards including NEC, CEC, IECEx and ATEX.



## Electrical Solutions

Appleton LED lighting, fittings, enclosures, and controls are built to withstand the unique challenges posed by harsh chemicals, moisture, and sewage

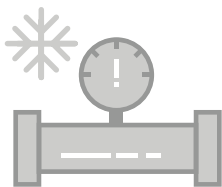
- Designed and certified to continuously withstand relentless vibrations, corrosive environments, and flammable atmospheres
- Improve plant infrastructure, reduce maintenance, and create a safer work environment for plant personnel



## Power Quality Solutions

SolaHD transformers, power conditioners, surge protectors, and power supplies protect operations from the threat of interruptions and downtime while providing the highest level of power quality

- Mitigate disturbances including power outages, harmful surges, harmonics, sags, noise, and lightning strikes
- Achieve clean electrical waveforms that prevent damage to sensitive electronics, and instrumentation



## Freeze Protection Solutions

Nelson Heat Trace offers a broad range of heat trace cables, controls, monitors, and accessories to keep your facility flowing during cold months

- Prevent pipes from freezing with modern freeze protection technologies
- Safeguard your plant from potential flooding, the expense of replacement parts and repairs, environmental damage, and plant downtime

# Solutions In Action

## ① Pump Lift Station

A B G I J K Q R S U V W

## ② Headworks / Bar Screening / Mechanical Treatment Building

A B F G H J K L M Q S U

## ③ Grit Chamber / Oil & Sand Trap

A B L U

## ④ Primary Clarifier - Control Stations

A B F K L N

## ⑤ Moving Bed Biofilm Reactor (MBBR)

A B E I K

## ⑥ Aeration Tank / Aeration Basin

A B E I

## ⑦ Final or Secondary Clarifier

A B I

## ⑧ Gravity Thickener

A B N

## ⑨ Digester

A B I N

## ⑩ Disinfection and Chlorination Building

A B G J Q S U V W

## ⑪ Warehouse - Sludge Disposal

A B G H U V W



### Appleton Solutions

- A Task and Area Lighting
- B Connected Lighting
- C Linear Lighting
- D High Bay Lighting
- E Flood Lighting
- F Explosionproof Lighting
- G Emergency Lighting
- H Egress Lighting

- I Cable Glands, Connectors and Fittings
- J Plugs and Receptacles
- K Disconnect Switches
- L Conduit Bodies and Conduit Boxes
- M Contactors and Motor Starters
- N Controls
- O Panelboards
- P Enclosures and Junction Boxes



① Central Control Room

- A B C Q R S T X

② Power Distribution Center

- A B D G H J K M O P Q R S T

③ Compressor / Generator Room

- A B D G H K M O

④ Water Analysis & Testing Building

- A B H L Q T U V W

⑤ Chemical Handling Tank

- A B J N U V W

⑥ Storage Tank

- J N U V W

⑦ Sludge Drying Bed

- D L

⑧ Underground Pipe Galleries

- C F G H I J K P U V W

⑨ Driveways, Loading Docks and Parking Lots

- E I U V W

SolaHD Solutions

- Q Transformers
- R Power Conditioners
- S Uninterruptable Power Supplies
- T Tracking Filters and Surge Protective Devices

Nelson Heat Trace Solutions

- U Heater Cable
- V Connection Systems
- W Thermostats
- X Circuit Management and Cable Monitoring

# Appleton LED Lighting Solutions

## Connected



Connected LED lighting assists facilities, reduce energy consumption and maintenance needs, enhance safety, and strengthen a wireless network.

- Mercmaster™ Connect LED
- Appleton Wireless Motion Sensor
- Emerson Plantweb Insight Connected Lighting Application
- Emerson 1410S WirelessHART™ Gateway

## Task and Area



Task lighting provides vertical and horizontal illumination in areas with mounting heights up to 3 meters (10 feet). Area lighting is designed to provide overall illumination for large open areas with mounting heights from 3.65 to 10.67 meters (12 to 35 feet).

- Mercmaster LED Generation 3
- Mercmaster LED Low Profile
- Contender™ LED

## High Bay



In areas with high ceilings or in areas above tanks, our high bay luminaires are ideal for applications with mounting heights up to 30 meters (100 feet).

- Baymaster™ LED
- IHC LED

## Flood



For applications including tank farms, loading docks and perimeter fence line lighting, our floodlights are ideal for mounting heights over 6 meters (20 feet).

- Areamaster™ Generation 2 LED

## Linear



Linear lighting is typically used to illuminate narrow spaces, such as walkways, and areas where low clearance demands a compact design.

- Rigmaster™ LED

## Explosionproof



Class I, Division 1 explosionproof luminaires have engineered flamepaths that vent the pressure of an explosion and release cooled gases at temperatures that will not ignite the surrounding flammable atmospheres.

- Code • Master™ LED Factory Sealed
- Code • Master Jr. LED Factory Sealed
- Rigmaster™ LED
- A-51™ LED Factory Sealed
- EHLED Handlamp

## Egress and Emergency



Egress lighting is used as visual signal lighting to provide a pathway for exiting a building.

- HEX Series LED

Emergency lighting is essential in the event of a power failure and should be installed in critical areas of the facility to ensure the safety of personal.

- N2LED
- Mercmaster LED Generation 3
- Mercmaster LED Low Profile
- Rigmaster LED



## Cable Glands | Connectors | Fittings



Cable glands, connectors, and sealing fittings are used to connect and change the direction of wire, conduit, or cable runs as well as to provide a secure connection from the run to an enclosure. Cable glands provide a barrier and environmental seal around cable conductors. Conduit fittings connect wire, conduit, or cable. Sealing fittings minimize the passage of gases and vapors.

- 4QSS Straight, 45° and 90° Stainless Steel Liquidtight™ Connectors
- EY 25% Fill Vertical and Horizontal Conduit Sealing Fittings
- EYD 25% Fill Vertical Conduit Drain Sealing Fittings
- Liquidtight STN Connectors for Liquidtight Flexible Metal Conduit

## Conduit Bodies | Conduit Boxes



Conduit bodies and boxes provide access for maintenance, allow the connection of different lengths of conduit, and for changing the direction of conduit. These corrosion-resistant bodies and boxes are ideal for indoor and outdoor, classified, and unclassified locations.

- ER Conduit Outlet Boxes
- FM9™ Aluminum Conduit Outlet Bodies Covers Gaskets
- GR, GRF, and GRTS Conduit Outlet Boxes

## Plugs | Receptacles



Portable equipment can be used to build, repair, operate, and maintain facilities. Achieving this safely requires connectivity solutions you can install quickly and rely on to provide quick access to power across a site.

- Powertite™ Series Pin and Sleeve Plugs, Connectors, Receptacles
- U-Line™ Contender Factory Sealed 20 Amp Plugs and Receptacles
- U-Line ECS Factory Sealed 15 and 20 Amp Plugs and Receptacles
- UPR Series Plugs and Sockets

## Enclosures | Junction Boxes



To protect your equipment and employees, controls, and junction boxes are designed to fully contain an explosive force within the enclosure and be strong enough to withstand the effects of corrosion, weather extremes, and time.

- AJBEW Cast Junction Boxes
- EXB Cast Iron Junction Boxes
- PJB Series Polyester Nonmetallic Enclosures
- GUBB, GUBBD and GUBBM Series



## Controls



Electrical control products are engineered to increase production efficiencies. A wide range of control options meet the needs of almost any water and wastewater treatment application, while their superior design options ensure safe operation in your environment.

- Contender Factory Sealed Control Stations and Tumbler Switches
- Contender 4/4X Control Stations and Tumbler Switches
- EDS Factory Sealed Tumbler Switches
- EFD/EFDB and EDS Control Stations and Pilot Lights

## Disconnect Switches



Disconnect switches are essential for personnel safety to ensure power is disconnected from equipment. They should be installed within 15.24 meters (50 feet) from the controlled equipment, or at the service entrance to disconnect power from the entire building at once.

- AE Series Disconnect Switches
- AE Bolted Molded Case Switches
- EDS Heavy Duty Disconnect Switches
- PlexPower™ Factory Sealed Enclosed Disconnect Switches
- WST and WDS Cast Aluminum Enclosed Disconnect Switches

## Contactors | Motor Starters



Contactors and motor starters provide safe and efficient control and protection of systems such as pumps, motors, and lighting. NEC and CEC certified solutions ensure systems keep working, especially in wet and corrosive environments.

- PlexPower Contactor and Motor Starters
- PlexPower Lighting Contactor
- AEB Series Bolted Motor Starters and Contactors
- AELB Series 65 kAIC Bolted Motor Starters and Contactors
- ES Bolt-On Series Line Starter Enclosures

## Panelboards



Panelboards provide protection and control in harsh industrial, hazardous, damp, wet, or corrosive environments, either indoors or outdoors. Available in a complete range of designs and materials ensures you the offer flexibility to make the perfect panelboard choice.

- PlexPower Series Factory Sealed Panelboards
- PlexPower Fiber Panelboards
- ALPN, APPN and AGPN Series Distribution Panelboards
- ALPF Factory Sealed Lighting Panelboards
- APPF Power Distribution Panelboards
- D2P Factory Sealed Circuit Breaker Panelboards



## Transformers



Transformers address variable speed motor drive applications to magnetically isolate the motor drive from the main plant power. Drive isolation and K-factor transformers can be used with DC drives or variable-frequency AC drive applications to change voltage, reduce drive-induced ground currents, and reduce common-mode noise.

- K-Factor Ventilated Transformers
- Automation Transformers Non Ventilated
- HZ Series Industrial Control Transformers
- Drive Isolation Transformers

## Power Conditioners



Power conditioners maintain a constant voltage against spikes and sags, while providing electrical isolation when the application requires it, thereby correcting these events by recreating a smooth, pure sinewave.

- CVS Hardwired Series Constant Voltage Transformers
- MCR Hardwired Series Power Line Conditioning with Voltage Regulation
- Solatron™ Plus Series Three Phase Power Conditioners

## Surge Protection Devices | Tracking Filters



Surge protection and filtering devices allow for multi-staged protection against high-energy surges, electric noise, and residual low-voltage transient in your facility.

- STV25K DIN Rail Series Surge Protective Devices
- SPD50K DIN Series Surge Protective Devices
- SPD200/300K Series Surge Protective Devices
- STFE Elite Series Tracking Filter with Surge Protection
- STFV Plus Series Tracking Filter with Surge Protection
- STC-SLAC Series Surge Protection Devices
- STC-SS Series Surge Protection Devices

## Uninterruptable Power Supplies



Short-lived, voltage sags are a result of large load start-up and utility switching, which reduce the efficiency and lifespan of electrical equipment. Uninterruptable power supplies (UPS) are designed to provide additional protection from power interruptions, protecting critical process systems.

- SDU AC - B Series DIN Rail UPS
- S4KC Series On-Line UPS
- SLN, SPS, and SSW Mini-Tower UPS

## Heater Cable



Heater cables keep pipes and fluids inside of them at a constant temperature to maintain desired and prevent freezing. Self-regulating heater cables automatically alter their output in response to temperature changes and feature multiple power output and voltage ratings. Mineral insulated heater cables feature excellent chemical resistance and are used in applications that require higher temperatures.

- Type LT Self-Regulating Heater Cable
- Type HLT Self-Regulating Heater Cable
- Type CLT Self-Regulating Heater Cable
- NC Constant Wattage Heater Cable
- Mineral Insulated Heater Cable

## Circuit Management | Cable Monitoring



Micro-processor based, digital, general purpose controllers are designed for use in ordinary locations to provide temperature control of an individual heater segment with sensor monitoring, remote alarm contacts, and ground fault leakage detection. Multi-point control systems provide an economical approach to process control where large concentrations of heater circuits are present.

- CM3 Circuit Management System
- CM-1 Microprocessor Based Heater Cable Monitoring System
- CM 2201 Single Point Circuit Management System
- CM 2202 Dual Point Circuit Management System

## Thermostats



When paired with field-fabricated heating cables, thermostats are approved for use in ordinary and Division 2 hazardous areas. Weatherproof options ensure accurate temperature measurement regardless of the location.

- TF4X40 Weatherproof Thermostats
- TE760-TC Hazardous Location Thermostats
- TA4X140 Weatherproof, Ambient Temperature Thermostat
- TA7140 Hazardous Location, Ambient Temperature Thermostat

## Connection Systems



Connection kits and accessories are available for splicing cables under pipe insulation or in a rugged NEMA 4X enclosure. Offering exceptional weather and corrosion resistance, they are designed to handle wide temperature ranges and harsh environments.

- HASK Series Connection Kits
- PLT-Series Connection Kits and Accessories
- Power Connection Kits
- Splice Connection Kits



Products engineered and certified to deliver unparalleled results for any electrical job throughout your water and wastewater facility



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