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MTE
POWER QUALITY. SOLVED.
A STEEL PARTNERS COMPANY

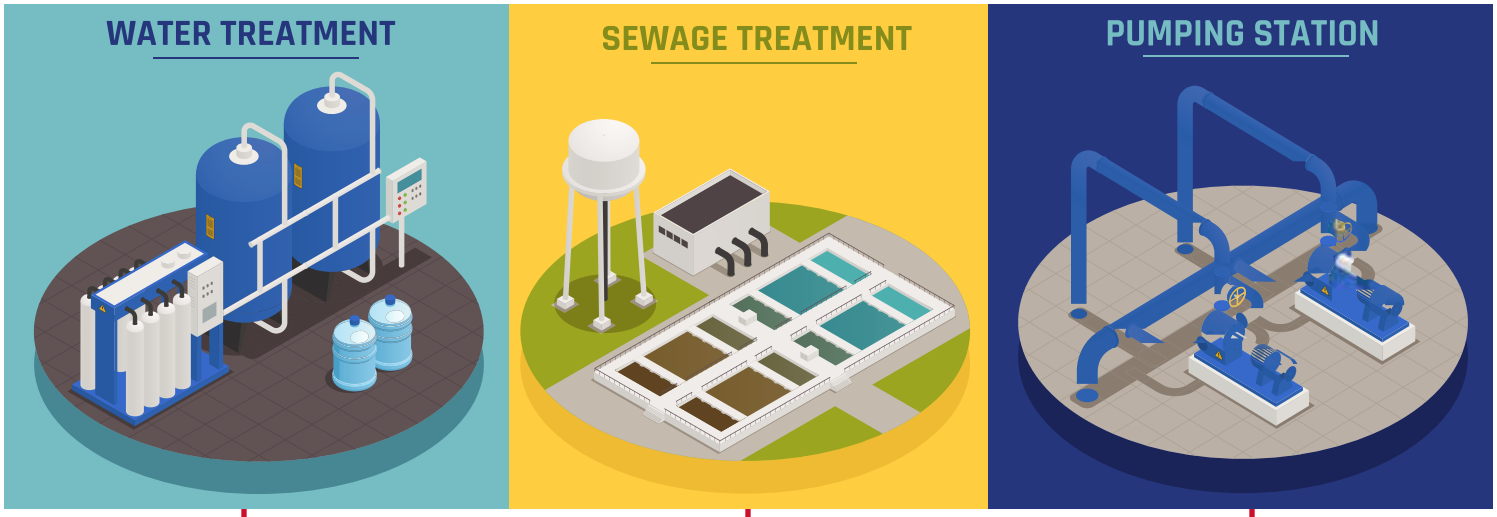
Power Quality Solutions for Water/Wastewater

Water/Wastewater Solutions

MTE Corporation helps many water/wastewater treatment facilities by delivering a wide array of optimized, power quality solutions. These facilities require carefully controlled flow rates and chemical dosing to ensure safe processing of fresh and grey water, respectively. Water/wastewater facilities and pumping stations use a variety of pumps in their operations, that are driven by variable frequency drives (VFDs), to propel the water through the many stages of purification along the way.

Unfortunately, VFDs can generate harmful harmonic distortion that, when left unchecked result in equipment damage, costly downtime, nuisance tripping, and reduced efficiency. Power quality issues in water/wastewater applications can lead to hazardous operating conditions resulting in critical disruptions to business and municipalities.

Water Treatment and Wastewater Treatment Processes



Water treatment plants use pumps to pass fresh water through a filtration process that reduces sediment and purifies the water to ensure safe public consumption.

Wastewater, or sewage treatment plants, use pumps to transfer water between clarifying treatment tanks to accurately apply additives, bacteria, and chemicals. Once completed, the water is reintroduced into the environment.

Pumping stations play a critical role in managing flow across the water ecosystem - from the source to treatment plants, for fresh water distribution, and to deliver grey water to wastewater treatment sites.

MTE solutions are applicable throughout the water treatment process

Power Quality Challenges for Water/Wastewater Operations

Cost of Downtime	Unplanned downtime leads to significant monetary losses.
Assurance of Supply	Safe and continuous water supply is critical to municipalities, hospitals, and businesses.
Safety and Welfare	Over 75,000 sanitary sewer overflow events occur in the US each year creating financial and human risk.
Sensor Interference	Unmitigated harmonics and noise can corrupt sensitive signals required for proper operation.
Multiple Non-Linear Loads	Non-linear loads include variable frequency drives (VFDs), uninterrupted power supplies (UPS), ozone generators, and UV lights.
Motor Protection	Differential and common mode voltages and currents lead to cable damage, premature motor failure, and pitting, frosting, and fluting of the bearings.

LINE SIDE POWER QUALITY

CHALLENGE

Aging infrastructure in many water/wastewater facilities lead to unscheduled downtime and equipment failures which result in extensive losses in revenue and productivity.

MTE LINE SIDE SOLUTIONS

FEATURES	BENEFITS
• Harmonic Mitigation	• IEEE-519 utility compliance
• Cost and Space Saving Solution	• Smaller footprints over standard solutions equal cost savings
• Integrated Reactor Design	• VFD protected from damage/failure due to transient utility voltage.

LOAD SIDE POWER QUALITY

CHALLENGE

VFD usage causes harmful, unwanted harmonics resulting in premature motor and transformer damage, and sensor signal interference.

MTE LOAD SIDE SOLUTIONS

FEATURES	BENEFITS
• Voltage Distortion Mitigation	• Step-up transformers protected from damage/ failure due to VFD PWM signal
• Common Mode Attenuation	• Motor bearings protected from premature failure • Critical sensors and safety detection systems protected from malfunction and failure

Featured Water/Wastewater Solutions

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LINE SIDE SOLUTIONS

Matrix® AP

- Meets IEEE-519 requirements
  - » Adaptable to 50% load
- Superior performance, value, and space utilization when combined with 6-pulse drives vs. multi-pulse drives
- Reduces noise on RF and SCADA radios when VFD's are in close proximity to radios
- Improves overall system efficiency and reliability while reducing total cost of ownership

RL/RLW Reactors

- Protects against surges and transients
- Reduces
  - » Nuisance over-voltage tripping
  - » Harmonic distortion (30-35%)

Matrix® E-Series

- Helps support IEEE-519 compliance
- 8% THID at full load, 12% THID at 40% load
  - » w/ ≥ 6% impedance (DC choke/reactor)
- 12% THID at full load, 17% THID at 40% load
  - » w/out DC choke/reactor
- Modular design for easy panel integration

LOAD SIDE SOLUTIONS

SineWave Nexus™

- Only comprehensive motor protection solution on the market
  - » 5-year motor bearing warranty
- Eliminates common mode and differential mode noise
- Pricey "VFD" cable and insulated bearings not required
- Extends the life of non-inverter and inverter duty motors
- Combines the protection of an isolation transformer and sinewave filter in one compact solution

dV Sentry®

- Reduces dangerous peak voltages and eliminates reflective waves
- Reduces peak common mode voltages by over 50%
- Combines a dV/dt filter and common mode choke into one compact solution

SineWave Guardian®

- Better than 5% Total Harmonic Voltage Distortion (THVD)
- Low voltage drop
  - » Only a 6% insertion loss
- Better efficiency than traditional LC filters
  - » Greater than 98% efficiency

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