

# Power Quality Solutions for Food & Beverage



# Food and Beverage

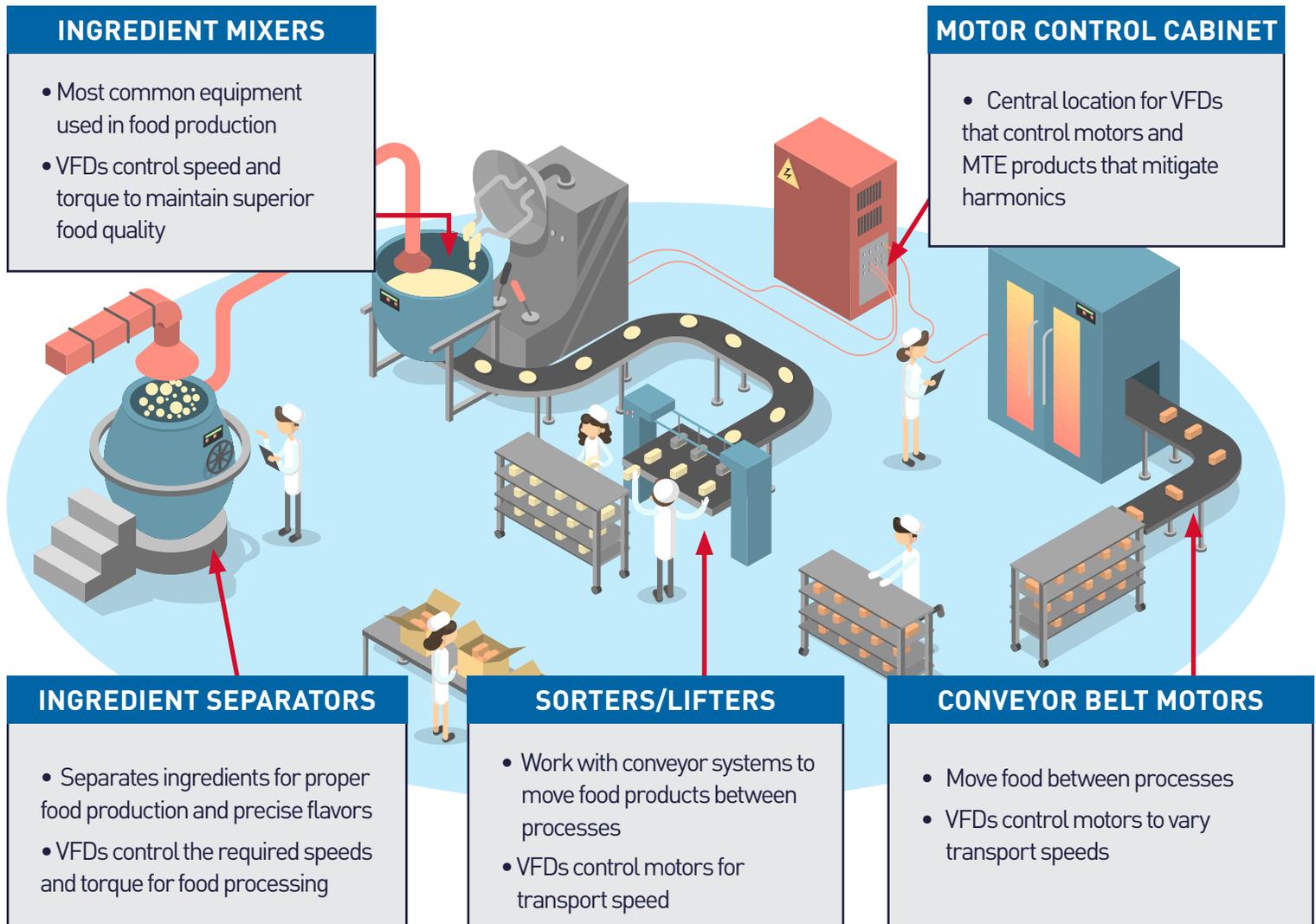
**High quality, safe production, and speed** are paramount in the food and beverage industry. Strict regulations govern the manufacture of these products to ensure consumer safety. Consumer demand is also at an all-time high. These factors require manufacturers to rely on variable frequency drives (VFDs) to control the speed of conveyor belts, compressors, mixers, pumps, and other critical components within the process.

While highly efficient, VFDs produce damaging harmonics on the line and load sides of the drive, resulting in nuisance tripping, inaccurate system measurements, electric motor failure, and more. Production and food quality then suffer, creating substantial **risk of spoilage and monetary loss**.

As food and beverage consumers drive record online sales, estimated 15% - 20% by 2025, manufacturers will need to produce and deliver products faster. To address this demand, facilities will use more VFDs, thus creating **greater necessity for harmonic mitigation**.

MTE's industry-leading power quality solutions filter out harmful harmonics generated by VFDs, and increase profitability for manufacturers by **reducing** motor breakdowns, **avoiding** downtime, **preventing** spoilage and waste, **improving** delivery times to the marketplace, and **remaining compliant** with utilities.

## Increased Automation Complexity Creates Greater Harmonics Issues



## Power Quality Challenges for Food and Beverage Industries



### Food Quality and Safety

Precision control ensures accurate measurements of ingredients; any glitches in the process can lead to poor food quality and potentially unsafe consumption.



### Unplanned Downtime

With demand at all time highs, critical component failures may result in hours of maintenance, idled workers, and potential food safety concerns.



### E-commerce Growth

Increasing food demand is placing more focus on ownership costs, and additional burden on equipment uptime and expected overall lifetimes.



### Automation Issues

Complex automation relies on VFDs to provide precise control of production equipment, but the harmful byproduct is harmonics which can damage motors.



### Utility Compliance

IEEE-519 compliance is critical for industries to remain in accordance with local regulations.



### Maintenance Staffing

Availability of specialized personnel during peak hours can be challenging, further extending downtime costs.

## LINE SIDE POWER QUALITY

### CHALLENGE

VFD generated harmonic distortion causes poor system performance, resulting in lower quality food and beverage products. If left unmitigated, these harmonics can also violate utility regulations and possibly result in fines.

## LOAD SIDE POWER QUALITY

### CHALLENGE

VFDs are often hundreds of feet from the motors that drive conveyors. These distances can cause harmful harmonics to run through the cables, resulting in motor failures, unplanned downtime, and significant production losses.

### MTE LINE SIDE SOLUTIONS

#### FEATURES

- Harmonic Mitigation
- Cost and Space Saving Solution
- Integrated Reactor Design

#### BENEFITS

- IEEE-519 utility compliance
- Smaller footprints over standard solutions equal cost savings
- VFD protected from damage/failure due to transient utility voltage

### MTE LOAD SIDE SOLUTIONS

#### FEATURES

- Voltage Distortion Mitigation
- Stray Voltage/ Current Attenuation
- Compact Design

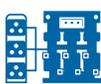
#### BENEFITS

- Motors and cable protected from damage/failure due to VFD PWM signal
- Motor bearings protected from premature failure
- Eliminates the need for expensive VFD cables and eliminates cross-talk
- Optimized form factor compatible with standard motor control cabinets

# Food and Beverage Solutions

## LINE SIDE SOLUTIONS

HF

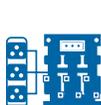


### Matrix® AP

- Meets IEEE-519 requirements
- Adapts to load changes
  - » IEEE-519 compliant down to 50% load
- Improves system efficiency and reliability
- Extends service life of electrical equipment

HF

NEW!



### Matrix® E-Series

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

RZ



### RLW/RL Reactors

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

## LOAD SIDE SOLUTIONS

MP

NEW!



### SineWave Nexus®

- Only comprehensive motor protection solution on the market
  - » 5-year motor bearing warranty
- Eliminates common mode and differential mode noise
- Pricy "VFD" cable and insulated bearings not required
- Extends the life of non-inverter and inverter duty motors
- **Microdrive Nexus also available**
  - » Sized optimized to easily integrate into motor control cabinet

MP



### dV Sentry®

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

MP

NEW!



### dV E-Series™

- Peak voltage protection and rise time reduction extends the life of motor and cables
- Small footprint and easy terminations make for smooth installation
- Lighter, more efficient, and run cooler than other dV/dt filters
- Optimal dV/dt solution for leads less than 1,000 ft

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