



Achieve Superior Product Performance and Reliability!

For an oil producer, Matrix® AP Harmonic Filters with 6-pulse drives proved to be a higher performance, lower cost harmonic mitigation solution when compared to multi-pulse drives.

Progressive Cavity Pumps (PCPs) on artificial lift systems are often driven by Variable Frequency Drives (VFDs). These drives help the motors run more efficiently but also introduce harmonic distortion. Unmitigated harmonics can lead to power quality problems on the system as well as the power grid. A global drive manufacturer working with MTE achieved a winning solution with improved quality, increased productivity, and greater operational efficiencies.

The challenge:

A large global drive manufacturer was looking for a competitive edge. They wanted to win by lowering the total cost of ownership for the oil producer.

Specifications called for multi-pulse drives that are not as effective under light loads and are sensitive to voltage imbalance. This can lead to poor harmonic performance, overheating, mechanical stresses, and shortened equipment life.

Furthermore, a multi-pulse solution has lower overall power system efficiency.

The solution:

MTE worked closely with a drive manufacturer to deploy a solution to optimize the entire system.

Test data provided by MTE demonstrated that the Matrix AP Harmonic Filter, with a 6-pulse drive produced superior performance and improved efficiency when compared to 18-pulse and Active Front End (AFE) drives.

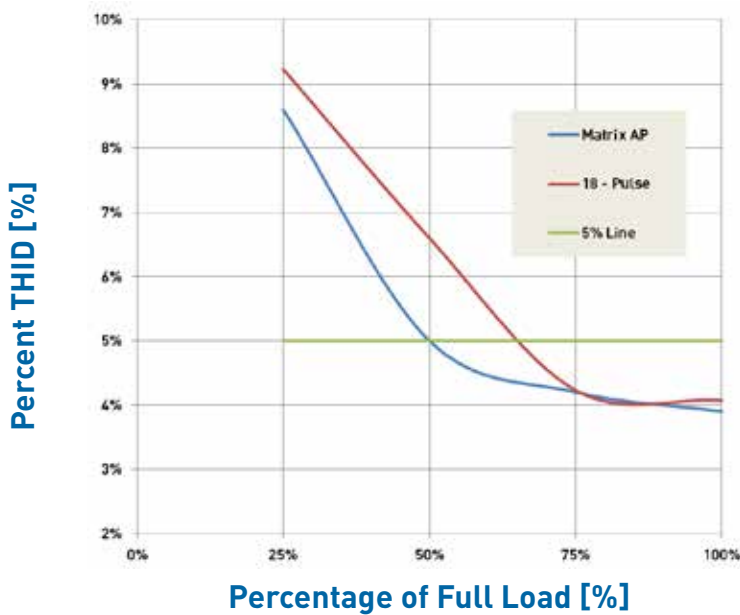
The 6-pulse drive, combined with MTE's Matrix AP Harmonic Filter with its patented adaptive passive technology, provides strong harmonic filtering performance across a wide range of loads with less heat rejection.

The result:

Teaming with the global drive manufacturer, MTE's technical experts delivered an optimized, low-cost winning solution that outperformed the multi-pulse drive. Benefits included:

- Reduced power loss and improved efficiency
- Higher performance under unbalanced line conditions
- Better overall power factor due to reduced distortion
- Improved reliability
- Lower initial capital expenditure and overall operating costs

Matrix AP Harmonic Filter vs. 18-pulse THID [%]



The generator compatible Matrix AP Harmonic Filter has best-in-class performance.

The 6-Pulse drive with Matrix AP harmonic filter outperformed the 18-pulse drive in the following important areas:

- Power loss: Approximately 665 less watts consumed.
- Overall efficiency of 99%.
- Harmonic performance under balanced line conditions: 1%-2% better THID performance for loads 25%-75% and equal performance for loads greater than 75%.
- Significantly better harmonic mitigation performance under line imbalance conditions.
- Power Factor: Better to equal performance for loads 50%-100%.

The Matrix AP Harmonic Filter, with MTE’s innovative adaptive passive technology, is the most advanced harmonic filter that provides improved power factor and energy efficiency. Using the patented adaptive passive technology, the filter adapts to various loads while providing optimized THID performance. It guarantees a THID performance of 8% MAX at 30% load and 5% MAX at full load and helps meet IEEE-519 requirements.



Matrix AP Benefits

- Adaptive passive technology offers best-in-class harmonic reduction in virtually all applications
- Efficient performance delivers lower heat generation and helps keep the entire electrical system running smoother and longer
- Simplified wiring for quick, easy installation and serviceability
- Modular design allows flexibility in system integration
- Robust product design is backed by a three-year warranty



MTE Corporation
 N83 W13330 Leon Road
 Menomonee Falls WI 53051
 (800) 455-4MTE • (262) 253-8200