



## Mitigating Harmonics for a Multi-national Internet-based Services Company

Matrix® AP Harmonic Filters proved to be the optimal solution for reducing harmonics and meeting THID performance requirements in data server centers.

Clean, quality power is critical to the operations of data server centers. This is especially challenging because the HVAC systems used to cool these centers can generate high harmonic distortions that disrupt and damage the sensitive equipment. The cause is the Variable Frequency Drives (VFDs) used to operate the motors within HVAC systems. While VFDs can significantly improve efficiency, they can also introduce harmonics to the power system that will lead to operational issues and extended downtime. Contractors need to mitigate harmonics in these data centers to maximize uptime for data users worldwide. This is where MTE Corporation comes in with their harmonic filters.

### The challenge:

A global Internet search services company was expanding their network of server centers in Taiwan. The contractors had to ensure that every aspect of the facility would support the needs of the computing and data processing equipment. In previous centers, passive harmonic filters purchased from an MTE competitor were used but were not effective in protecting against harmonic distortions.

### The solution:

The project contractor, along with the MTE Regional Sales Manager and Application Engineering Team, worked with a world leader in industrial automation to study and assess the HVAC system designs in the data center. Variable Frequency Drives (VFDs) were used throughout the facility to control the HVAC motors for both efficiency and precision. However, this created harmonic distortions because of the non-linear load generated from the VFDs. In order to provide smooth,

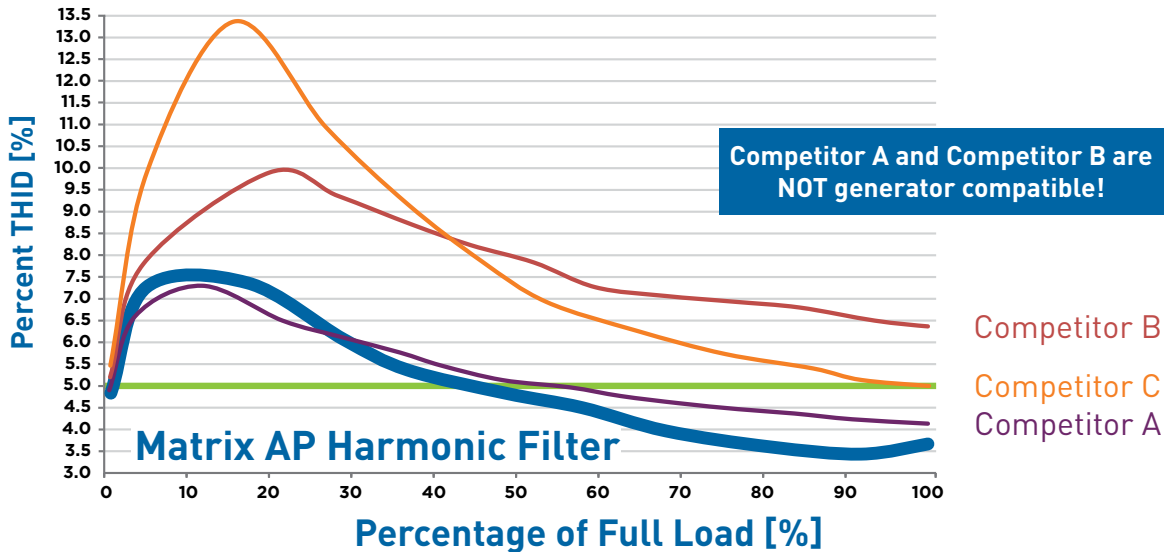
clean power, MTE recommended the Matrix® AP as the ideal solution. The Adaptive Passive filter was specially designed to reduce harmonic distortion and improve motor life, especially over a wide range of loads. There are no electronic components used in the filter; MTE engineers developed it with a special combination of materials that allow the Matrix® AP to work virtually maintenance-free for years.

### The result:

The Matrix® AP filter was able to provide the 5% THID performance required by the customer to protect their sensitive electronic equipment. It was competitively priced and was supported by a level of service and expertise other competitors could not offer. It not only helped to smooth and improve the power quality, its small size made it easy for the systems integrator to incorporate and install into their controls. The Matrix® AP filter also helped minimize downtime within the HVAC system – a result critical to the climate control needs of today's data server centers.



## Matrix AP Harmonic Filter vs. Competition THID [%]



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

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 patent pending 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



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