

ARTICLE

Beyond Energy Savings

How MPTS Technology Reduces Carbon Emissions While Improving Electrical System Performance

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As organizations pursue ambitious sustainability goals, most energy efficiency projects are evaluated primarily on their ability to reduce electricity consumption (kWh). While lowering energy usage remains essential, there is another equally important outcome that deserves greater attention: **reducing carbon emissions**.

Every kilowatt-hour of electricity that is not consumed represents a reduction in greenhouse gas emissions generated by electric utilities. Technologies that improve electrical system efficiency therefore provide benefits that extend well beyond lower utility bills—they also help organizations reduce their environmental footprint.

One such technology is the **Maximum Power Transfer System (MPTS)**.

Improving the Entire Electrical Distribution System

Unlike conventional energy conservation measures that focus on a single piece of equipment, MPTS optimizes the performance of the **entire electrical distribution network**.

The system continuously improves electrical operating conditions by reducing:

- Reactive power (kVAR)
- Excess current
- Harmonic distortion
- Electrical losses
- Transformer loading
- Voltage instability

The result is a cleaner, more efficient electrical system that requires less power from the utility while improving overall reliability and resiliency.

Environmental Impact of Electrical Efficiency

Reducing electrical demand and system losses directly reduces the amount of electricity that utilities must generate.

Using greenhouse gas conversion methodologies published by the U.S. Energy Information Administration (EIA) and the U.S. Environmental Protection Agency (EPA), the annual environmental benefits of MPTS installations can be quantified.

For a typical **MPTS H490/480V/3** installation:

- **Annual electrical capacity reduction:** 100 kW
- **Annual energy avoided:** 350,000 kWh
- **Annual CO₂ reduction:** 546,832 pounds (248 metric tons)
- **Equivalent to driving approximately 615,683 fewer passenger vehicle miles each year**

These savings are achieved while simultaneously improving electrical system performance.

Scaling the Environmental Benefits

The environmental impact grows significantly as electrical service size increases.

Facilities with 2,000-Amp Electrical Service

Using two MPTS units can provide approximately:

- 700,000 kWh avoided annually
- 1,093,664 pounds of CO₂ reduction
- 496 metric tons of avoided emissions
- Equivalent to over **1.23 million passenger vehicle miles**

Large Industrial Facilities (4,000-Amp Service)

Large manufacturing plants, hospitals, universities, and data centers may require four to six MPTS units.

Typical annual environmental benefits include:

- 1.4 million kWh avoided
- 2,187,328 pounds of CO₂ reduction
- 992 metric tons of avoided emissions
- Equivalent to approximately **2.46 million vehicle miles** not driven each year.

These reductions represent meaningful contributions toward corporate sustainability initiatives and ESG reporting.

Sustainability Meets Reliability

One of the unique advantages of MPTS technology is that environmental benefits are achieved while simultaneously improving electrical system performance.

Facilities commonly experience improvements such as:

- Reduced electrical current
- Lower transformer temperatures
- Reduced conductor losses
- Improved power factor
- Reduced harmonic distortion
- Lower voltage fluctuations
- Increased equipment life
- Improved electrical reliability
- Reduced maintenance requirements

Rather than viewing sustainability and reliability as separate objectives, MPTS demonstrates that they can be achieved together.

Supporting Corporate ESG Goals

Organizations worldwide are committing to aggressive carbon reduction targets. Whether the objective is:

- Net Zero initiatives
- ESG reporting
- Scope 2 emissions reduction
- Utility demand reduction
- Grid resilience
- Energy efficiency certification
- Sustainability reporting

Electrical distribution efficiency represents one of the most overlooked opportunities for measurable environmental improvement.

Because MPTS continuously reduces electrical losses within the distribution system, organizations benefit from both operational savings and documented carbon reductions.

Looking Beyond kWh Savings

Historically, energy efficiency has been measured by reductions in electricity consumption alone.

However, modern electrical systems contain increasing numbers of nonlinear electronic loads—including variable frequency drives, LED lighting, power supplies, data centers, and electric vehicle charging systems—which introduce harmonics, reactive power, and additional electrical losses.

These hidden losses increase the amount of electricity utilities must generate, often reducing the effectiveness of traditional energy conservation measures.

By addressing the electrical system “as a whole” rather than individual equipment, MPTS System helps organizations capture savings that conventional approaches often overlook.

A Smarter Path to Sustainability

As electric grids become more heavily loaded and organizations continue investing in electrification, improving the efficiency of electrical distribution systems will become increasingly important.

MPTS provides a practical solution that delivers multiple benefits simultaneously:

- Lower electrical demand
- Reduced energy consumption
- Improved power quality
- Increased equipment reliability
- Lower operating costs
- Reduced greenhouse gas emissions
- Enhanced sustainability performance

For organizations seeking to improve both financial performance and environmental stewardship, optimizing the electrical infrastructure offers a compelling opportunity.

Cleaner power is not just better for electrical equipment—it is better for the environment.

*The carbon reduction values presented are based on the TransPower Company MPTS Carbon-Di-Oxide Reduction Certificate using conversion methodologies referenced from the U.S. Energy Information Administration (EIA) and the U.S. Environmental Protection Agency (EPA).

Carbon-Di- Oxide Reduction using MPTS Devices

Model MPTS H490/480V/3	Quantity Number of MPTS units	UOM	CO2 Emission Reduction Lbs.	CO2 Emission Reduction Metric Tons	Equal to Miles driven by an average passenger vehicle
For up to 1000 Amp Service	1	Each	546,832	248	615,683
For 2000 Amp Service	2	Each	1,093,664	496	1,231,366
For 4000 Amp Service	4 to 6	Each	2,187,328	992	2,462,732

Each MPTS Unit reduces: rated capacity	100	Kilowatts			
Annual KWH avoided - based on 3500 hours	350,000.00	Kilowatt Hours	546,832	248	



<https://www.eia.gov/tools/faqs/faq.php?id=77&t=11>



<https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>