

Power Factor Correction's Carbon Footprint Reduction



Power Metric International's Model SP2000-208v

By the numbers:

16.9%

The percentage of electricity generated by renewable energy in the U.S. in 2016. This includes hydro-electric, biomass, geothermal, wind, and solar (including distributed solar). Source U.S. Dept of Energy Information Agency (EIA).

83.1%

The percentage of electricity generated by fossil fuels including oil, coal, and natural gas. Source U.S.EIA

12 cents

The average cost for electricity per kilowatt hour in the U.S. in 2016.

1.004 Lbs

The amount of CO₂ emitted for each kilowatt hour generated by fossil fuels.

Introduction

The SP2000 is an energy optimization, management and monitoring system. PMI's SP2000 units are affordable, innovative electrical power correction and measurement systems that optimize and balance electricity consumption.

The unique system monitors multiple electrical parameters in real time and generates continual automatic power corrective measures (per phase) that optimize voltage imbalance, current imbalance, harmonic distortion, neutral line current, and power factor. These automated corrective actions result in reduced electrical energy costs and improve equipment performance.

The system also provides a complete internet accessible power monitoring system that records and displays years of critical electrical information such as voltage, current, power factor, voltage and current imbalance, neutral line current, harmonic distortion, and energy savings.

Question

What is the approximate carbon footprint reduction realized by the utilization of PMI's SP2000?

Assumptions

- 1) The SP2000 addresses three phase loads.
- 2) Most systems should run about 2.5 cycles per hour. Most HVAC systems (typically the largest motor on a 3-phase load) run 10-15 minutes per hour in mild weather.
- 3) The SP2000 delivers a 2% reduction in kWh and a 10% increase in Power Factor performance.
- 4) Demand Charges (also known as Power Factor) typically represent 25% of a monthly electricity bill.
- 5) SP2000's are recommended for companies whose electricity bill is \$10,000 USD or greater per month. For this \$7,500.00 per month is Usage and \$2,500 is Demand Charges

About Us

A division of NAME Energy Group, Power Metrics International (PMI) specializes in power management optimization systems for buildings, facilities, commercial properties and prides itself on its innovative SP2000 product line. The advanced systems can also be utilized to control a building's energy usage to maximize efficiency either remotely or on site.

SP2000 Advantages

By incorporating a patented switch, our SP2000 models are substantially more efficient than most traditional switchable KVAR or capacitor boxes. PMI offers a 5 year warranty and delivers an average lifespan of over 10 years.

SP2000 Applications

Educational institutions, federal agencies, military facilities and municipalities throughout the United States are enjoying energy savings with PMI products.

Several notable PMI projects include: Hilton Hotels, Panza Ice Creams, Key Foods, Shoprite, Anvil International, Die-Tech, Voith Turbo, and Monroe Cables.

Realized Carbon Footprint Reduction and realized cost savings.



Equations

Given the HVAC system runs 24-hours a day:

$$2.5 \text{ cycles} \times 12.5 \text{ mins/hour} = 31.25 \text{ mins}$$

$$31.25 \text{ mins} \times 24 \text{ hrs} = 750 \text{ mins/day.}$$

$$750 / 60 = 12.5 \text{ hours per day.}$$

$$\$7,500/\text{mo in usage} / 12 \text{ cents per kWh} = 65,000 \text{ kWh}$$

$$65,000 \text{ kWh/mo} \times 2 \% \text{ reduction} = \$150.00/\text{mo}$$

$$\$2,500/\text{mo in demand} \times 10\% \text{ reduction} = \$250.00/\text{mo}$$

$$\text{Savings} = \$400.00 \text{ per month } \$400.00 \times 12 = \$4,800.00/\text{yr}$$

$$\$400.00 / .12 \text{ cents per kWh} = 3,333 \text{ kWh per month}$$

$$3,333 \text{ kWh} \times 12 \text{ months} = 39,996 \text{ kWh per year}$$

$$39,996 \text{ kWh} \times 83.1\% = 33,236 \text{ kWh/year}$$

Conclusions

While the realized kWh savings is almost 40,000 per year, the fact is 83.1% of electricity generated in the United States is from fossil fuels. This brings the realized carbon based kWh reduction to 33,240 annually

Given 1.004 pounds of carbon are emitted for each kWh, the approximate annual carbon footprint reduction realized by one Power Metric International SP2000 can reduce

(33,273 pounds) or 16.63 tons less carbon each year!!!

SERVICES AVAILABLE

Technical Support
Installation and Setup
Application Support
Hardware Support
Maintenance
Guaranteed Warranty

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