



DANKOTUWA PORCELAIN LIMITED

Installation of Electro Flow System to Improve Power Factor and Minimize Harmonics

SUMMARY OF THE OPTION

Dankotuwa Porcelain Limited (DPL) is one of the leading porcelain ware manufacturing companies in Sri Lanka and a large user of electricity.

An investigation of the power distribution system revealed a low power factor, high line harmonics and inefficient load balancing. To solve these problems it was decided to install an ElectroFlow™, which is a commercial energy saving and power conditioning system.

The total investment in the ElectroFlow™ system was US\$ 50,000. Annual savings were US\$ 245,463 and the payback period was less than three months. The power factor was raised from 0.88 to 0.96. Environmental benefits were annual savings of 2,435 MW, resulting in an annual greenhouse gas emission reduction of 499 tons CO₂.

KEYWORDS

Ceramics, Sri Lanka, Electricity, Power Factor, Harmonics

OBSERVATIONS

Electricity is one of the major energy sources used by DPL for motor drives, lighting and air conditioning. An investigation of the power distribution system revealed:

- A low power factor of 0.88 (the operations have a high induction load)
- Quite high line harmonics resulting in transformer losses due to a total harmonic distortion (THD)
- Inefficient load balancing in three-phase system

Further study of the power distribution system by another professional team confirmed the findings made by the GERIAP Team.

OPTIONS

The Team recommended to make power factor improvement and demand management a priority. As a solution to the above problems it was decided to install an ElectroFlow™ system. The ElectroFlow™ system is explained in the box below.



Box: The ElectroFlow™ System

ElectroFlow™ is an energy saving and power conditioning system. ElectroFlow™ is a integrated modular system in the world specifically custom-engineered to effectively and economically optimize power quality with guaranteed electric savings of up to 34%, and nominal payback of less than two years, without any disruption to equipment or machinery. ElectroFlow™ is versatile and is available in different sizes based on a facility's requirements.

ElectroFlow's™ multistage system is triple protected, with each stage independently monitored, protected, and activated, resulting in simultaneous addressing of multiple problems and functions. This eliminates the need to purchase a number of different devices to correct each anomaly.

ElectroFlow™ Applications:

ElectroFlow™ is designed to address power quality and electric savings for industrial, commercial, and institutional applications. **ElectroFlow™** can easily be installed for the entire facility and distribution, as well as at individual loads such as computers, electronic equipment, production machinery, and others, regardless of the plant's size, voltage, or frequency!

ElectroFlow™ Benefits:

ElectroFlow™ offers guaranteed saving of up to 34% through reductions in Kilowatt/KVA Demand and Kilowatt-hour consumption and related charges, with actual payback periods of less than two years, without any disruptions to equipment or machinery.

ElectroFlow™ improves power quality through voltage stability, reduction of harmonics and distortion, while protecting equipment and machinery; resulting in reduced maintenance and downtime.

RESULTS

As the result of the introduction of ElectroFlow™ system, the following benefits were recorded.

Financial benefits:

- Investment on ElectroFlow™ system: US\$ 50,000
- Annual operating costs: not determined but negligible
- Annual cost savings: US\$ 245,460, including
 - kWh savings: US\$ 20,291 per month
 - kVA saving: US\$ 164 per month
- Payback period: 3 months

Environmental benefits:

- Annual electricity savings: 2,434,975 kWh (26%)
- Power factor improvement: 0.96 (previously 0.88)
- kVA saving: 25% in 2004 (based on 2003 production and 1550 kVA/month baseline figures)
- Annual GHG emission reduction: 499 tons CO₂ (2,435 MW X 0.205 tCO₂/MW)



FOR MORE INFORMATION

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