



STC-Metro Subway Metering Case Study Mexico City, Mexico

Description

STC-Metro, located in Mexico City, has 176.77 km of tracks and services approximately 4.7 million riders a day. To power its subway system, STC-Metro uses approximately 933,512.354 MW of electricity per year. To support its energy needs, STC-Metro uses more than 300 electrical substations, including rectification and lighting substations.



Two of STC-Metro's subway lines are powered with 15kV, which is transformed from 85 kV used by the Central Operations building, and two lines are powered with 23 kV which is transformed from 230 kV. The other 104 subway lines are powered with 23 kV supplied by the electrical Utility, Luz y Fuerza del Centro. There are a total of over 300 electrical substations, rectification substations, and lighting substations distributing electricity to the system.



The STC-Metro is a very large consumer of electrical energy with energy consumption estimated at 933,000 MWH average load per year.

The Problem

STC-Metro's estimated costs for the 104 23 kV subway lines was much lower than their actual billing from Fuerza del Centro. STC-Metro suspected they were being billed incorrectly for their energy use, but had no way of proving this.

STC has issues arising from inaccurate billing readings coming from the utility provider. The STC personnel using manual estimation believed that the utility company was over-billing and that the utility's metering was not accurate.

The Solution

In order to verify their energy use and its actual cost, STC embarked on a new project to install system-wide billing at every needed location in its network. When the project is fully completed there will be over 800 instruments installed system-wide.



STC-Metro started at critical locations where they had large energy usage points. They decided to install their own meter at each site where there was a Utility meter. To communicate energy readings, STC-Metro planned to use the existing telephone line system. The meter they selected needed to have superior accuracy and reliability, in order to address their problem.

After careful consideration of many of the high-end meters available in the marketplace, STC-Metro decided on EIG's Nexus® 1250 meter. This meter was chosen because of its high accuracy (0.04%) and auto-calibration technology that assures the meter stays accurate in use over a long period of time.

In addition, the Nexus® meter offers an internal modem for communication and an external display for easy operator reads.



The meter also included extensive load profiling capability that lets STC-Metro perform detailed analysis of their energy use, Watt/VAR distribution, PF, Frequency and other important power parameters.

Since the Nexus® 1250 meter also functions as a power quality analyzer; it gave STC-Metro the ability to record voltage surges and sags, harmonics and transients. Even though they initially purchased the Nexus® 1250 meters just for energy measurements, the power quality capability opened new doorways into product reliability and safety. Now they knew exactly the quality of their electrical power distribution. This proved to be essential for system reliability studies, breaker maintenance and many other power quality functions.

A Highly Successful Result

Since STC-Metro installed the 104 Nexus® 1250 meters, they have been saving between \$450 to \$600 per metered point per month. About \$42,000 were saved in total in just the first month of the project. At this rate, the project will pay for itself in less than a year, and as the project continues STC-Metro will realize about half a million dollars in savings per year.

With a zero cost of ownership after the first year and recurring cost savings, STC is very satisfied with the choice to use power monitoring and the Nexus® solution to solve their energy and power quality dilemmas.



Contact Information:

STC METRO –

<http://www.metro.df.gob.mx/>

Ing. Alejandro Cedeño,

Email: alcesa69@yahoo.com.mx

Tel. +52 55 56 27 48 62

Ing. Agustín Galvan.
Tel. +52 55 5709 0893

Ing. José Luis Castro Arellano,
Email: casarellano@hotmail.com
Tel. +52 55 56 27 4510

Ing. Jesús Bello.
Email: jbellos@hotmail.com
Tel. +52 55 5709 1133 Ext. 5376