Seoul Metro uses Emerson SCADA software to monitor and reduce electricity consumption across rail network

RESULTS

- Efficient monitoring and analysis of energy consumption
- Ability to compare energy usage across different stations
- 4% reduction in total energy consumption

APPLICATION
Supervisory monitoring and control system for operational, utility, and energy management of the Seoul Metro network.

CUSTOMER
Seoul Metro – Seoul, South Korea

Seoul Metro manages the metro rail network in the South Korean capital city and its surrounding areas.

CHALLENGE
The Seoul metropolitan rail system is one of the busiest urban transport networks in the world, with more than eight million journeys made every day. Seoul Metro manages eight rail lines, including 277 stations, 80 substations and 16 depots.

Seoul Metro wanted to modernize the network's supervisory control system to reduce energy usage by continuously monitoring operations and energy consumption. This required an easy-to-use and reliable system for the collection and analysis of energy data from all its stations, substations and depots. The system had to support various communication protocols, including Modbus and BACnet in order to connect with multiple disparate devices and instruments.
In addition, a web interface was required to access external data. This would enable Seoul Metro staff to collect third-party data from external systems such as demand response, weather and enterprise resource plannings.

SOLUTION
Inter Electric – a South Korean system integrator– worked through the problem with Seoul Metro and determined that Movicon.NExT™ would meet all of their criteria and solve their visibility, monitoring and control challenges.

> *"Thanks to Movicon Pro.Energy, Seoul Metro can compare the energy consumption of different stations and intervene where necessary to reduce consumption. Total energy consumption in August 2019 decreased by approximately 4% compared to August 2018, allowing Seoul Metro to be perfectly in line with its estimated ROI for the project."*
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> **Sang Hyun Jeon**
> Executive Director
> Inter Electric

A main server collects data from two monitoring servers, one for the security network and the other for the administrative network. Energy consumption calculations are carried out on the main server using the Movicon Pro.Energy module of Movicon.NExT, with data from 500 measurement points across the metro network. Movicon. NExT also enables data that has been aggregated and calculated using Pro.Energy to be cross-referenced with historical data, The results can be displayed on user friendly 'energy dashboards', developed in Movicon.NExT, to help operators make better operational decisions.

Seoul Metro now has continuous real-time energy monitoring of its various stations, substations and depots. Furthermore, the company is provided with energy consumption analysis reports enabling them to identify issues and rectify them quickly. Better visibility and correcting issues more quickly has helped Seoul Metro reduce their total energy consumption by 4%.

RESOURCES

Emerson industrial Automation and Controls
https://www.emerson.com/en-us/automation/control-and-safety-systems/industrial-automation-controls-iac

Programmable Automation Controllers
https://www.emerson.com/en-us/automation/control-and-safety-systems/programmable-automation-control-systems/programmable-automation-controllers

Control Software
https://www.emerson.com/en-us/automation/control-and-safety-systems/programmable-automation-control-systems/control-software
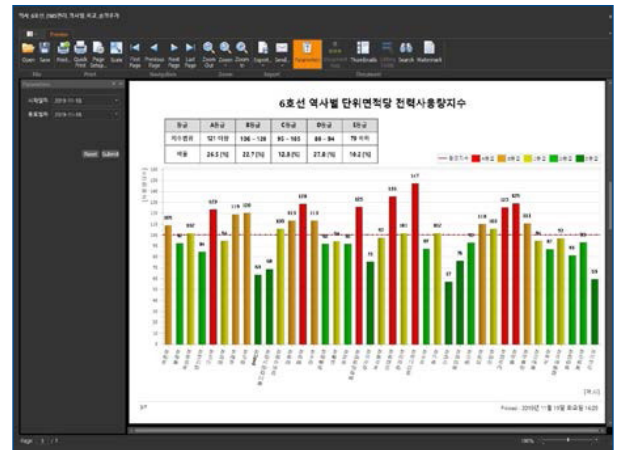
Movicon
https://www.progea.com/

> *"The whole project was made possible thanks to the application flexibility of Movicon.NExT and the constant availability of Emerson technical staff, who actively supported us both in the pre-sale phase during the formulation of the project specifications and in the after-sale phase. This has allowed us a rapid implementation of the project."*
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> **Sang Hyun Jeon**
> Executive Director
> Inter Electric

Data from across the metro network is used to calculate energy consumption.

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