

# CC-Link In Action

OPEN NETWORKS

## CC-Link improves building management control in shopping mall

**A new 45M€ shopping mall in Istanbul, Turkey has installed Industrial PLCs connected by a CC-Link fieldbus network rather than a conventional building management system (BMS) to provide environmental (water, sewage, energy, lighting, HVAC), security and emergency control.**

This decision was based on the need for 'open' connection of equipment from different manufacturers, rapid installation, trouble-free commissioning, reliable performance over a large area and flexibility for future reconfigurations and developments.

The prestigious new shopping mall in the Bahçeşehir district is the Quinn Corporation's first major investment in Turkey. With the need for shops to open for business as quickly as possible, speed of installation and water/energy management were priorities in the minds of the engineering staff and management of the centre.



Covering 7373 m<sup>2</sup> the complex offers three floors of shops, restaurants and a cinema; a floor of commercial offices and an underground car park. The mall is open daily from 10 a.m. until 10 p.m. with operational availability being a critical requirement.

To connect the water and power systems together a highly reliable network was needed. After careful evaluation CC-Link was chosen due to its openness and high speed operation over long connection distances.

The intelligence behind the entire building management control system is the latest generation in PLCs. A high speed controller is connected to two CC-Link Master modules ensuring maximum speed of operation and giving precise diagnostics of the CC-Link network.

Together these control and monitor fifty four facility management CC-Link stations. Each shop/outlet unit within the complex has individual power and water monitoring and CC-Link is used to report the consumption of the units in preparation for billing.

The central lighting system uses 33,000 kWh of electricity per month costing around 4K€. Any savings made on this large electricity bill are well received by the businesses in the mall which share the unallocated costs between them.

A reduction in the lighting energy used is achieved using another controller and CC-Link network that intelligently manage all lighting usage via 10 CC-Link stations. These stations control lighting zones over the five floors and surrounding site, switching sections on and off dependant on real-time

needs. This fast automatic shutting down of unwanted equipment saves up to 25% of the mall's annual lighting costs, giving a system installation payback of less than a year.

To make it easy for shop owners to understand their energy usage, each unit in the Mall has a special "shop notification panel" display box which is based on CC-Link. This panel uses lamps to indicate in a simple manner the following energy activities such as: Electricity credit low, Electricity credit over, back-up generator in use, overload, low water credit, water use over credit, general warning and mains supply control OK.

The total network distance is over 1km, which reduced the choice of network considerably. Another feature that made CC-Link the choice was its ability to add or remove stations to the network without stopping or affecting communication. Conventional wiring on most energy monitoring systems rely on individual cables being fed back into the control room, using CC-Link reduced overall material costs of installation by over 20%.

So simple was the CC-Link installation and commissioning that to design, install, and commission both CC-Link networks took only four months, compared to six months if conventional technology had been implemented.