

# CC-Link In Action

OPEN NETWORKS

## ECO Building has technology heart

**A CC-Link control network is at the heart of one of the most innovative ecological buildings in the country. Designed, built and is occupied by an industrial automation systems integrator, it is proving a great shop window for GB Innomech.**

GB Innomech, based near Ely in Cambridgeshire, is an automation solutions company specialising in solving difficult manufacturing problems. The company prides itself on its ability to cross-fertilise technologies and techniques between the different sectors of industry it serves, a procedure which has often resulted in significant innovation and success. So when building a new corporate headquarters it felt natural not simply to install a standard environmental control system and assume that this would be the best solution. Keith Reeds of the company takes up the story:

*"In our every day work we are constantly assessing and specifying industrial control equipment, so we had some idea of how much the environmental controls should cost and what sort of performance we could expect. When the proposed system fell short of our expectations we did some calculations of our own and decided that industrial grade automation equipment would give far better control and performance at much lower cost."*

The system that GB Innomech designed is based on a PLC (programmable logic controller), an HMI (human machine interface or interactive graphic panel) and distributed networked local control nodes.

One of the decisions was to integrate as many functions as possible into one central control system that could constantly optimise the entire building for energy performance. A total of 150 digital and 50 analogue inputs monitor the building, environmental conditions. Actuators control heat, light and ventilation to 15 offices and meeting rooms, 10 communal rooms and 300sqm of workshops.

Central control is provided by a single PLC connected on a distributed control network to reduce wiring. CC-Link was chosen as the operating protocol as it is an open system which can communicate with a wide variety of field hardware.

Touch-screen HMI's allowing users to set preferences for each room and display the current status and historical trends of monitored and controlled devices. The control system also anticipates building heat demand using real time clock triggers sent from the HMI to the PLC.



The HMI is linked to GB Innomech's IT network for archiving of trend data and generating alarm and status reports. Additionally both the control system and the building have been designed to allow for growth, so the company can treble in size without too much difficulty.

It is not only in the control system that the building, now named the Innovation Centre, is striving for environmental excellence. There are a whole host of other eco-friendly features, including:

- Extra insulation all-round, including under the floor and the use of refrigeration grade insulated panels for the factory walls.
  - All-round extra depth double-glazing, with special coating on south facing units.
  - Special triple glazed and coated front feature windows (south facing) with integral automatically controlled blinds, which 'track' the position of the sun.
  - Under floor heating system fed by a ground source heat pump taking heat energy from the surrounding earth.
  - Solar vacuum tube water heater for the hot tap water.
  - Rain harvester to collect all rainfall on the building and use it to feed the toilets.
  - Bio digester and reed bedded pond to process all the waste and add an attractive feature for both staff and visitors, not to mention the local wildlife.
  - Heat recovered fresh-air ventilation system.
  - Low energy lighting system with level sensors and auto switch-off when no persons, present.
- In-house designed, building management and control system, with individually controlled temperature and ventilation zones, persons present, detection and intruder alert.
  - Low energy DC fans and inverter drives
  - Grounds landscaped to encourage natural flora and fauna, with high hedges for screening and meadow grass mown for hay twice a year.

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