

The system

A powerful and efficient network is essential if a bus-bar system is to operate correctly. Since the system had to allow for future expansion, it was important for it to be sized in order to be easily expandable and adaptable to future developments in the company.

The scope of the project was to obtain comfortable office surroundings, energy saving, management of the automatic mechanisms required by the various technological devices, supervision of the protection switches in the electric boards and the faults sustained by the technological systems, lighting and fan-coil management. The Gewiss technicians configured the nodes in the network so that each user was independent from the supervising PC: in actual fact, each node transmits notification telegrams to the addressee node in the broadcasting mode. Thanks to the "intelligent" nodes, all the automations required to operate the technological functions and lighting were created without the need to develop specific applications or to use a central supervisor plant. The variables of one module were merely connected to the other while the software objects in the nodes were configured in the appropriate way. The applications used proved to be extremely versatile.

Absence of a central supervisor plant to coordinate the activities of the various I/O modules makes the system highly reliable since there is no one component that determines the operation of another. The intelligence is truly distributed. Faults in one node will not momentarily interrupt the service provided by the node itself, while leaving the functions of the rest of the system unchanged.

All the applications used conform to the EIBUS standard and this ensures that the system is fully expandable for future developments.

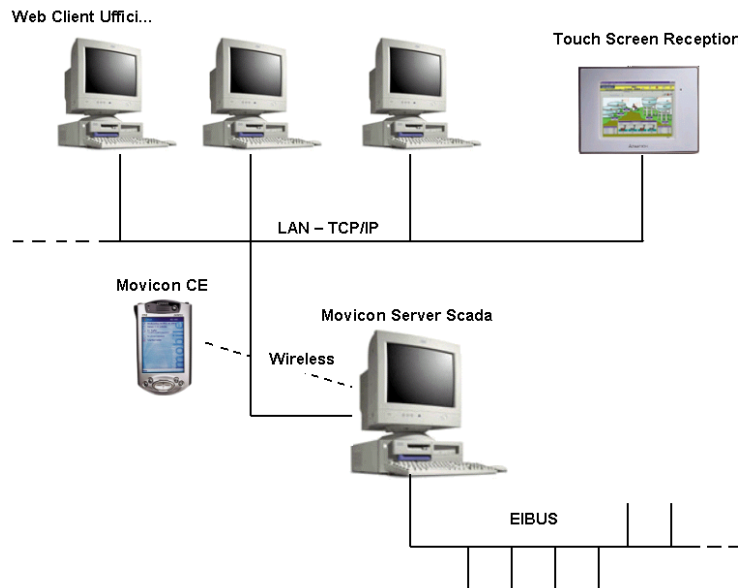
The I/O on the bus-bar are basically detected by two different mechanisms: some of the data are linked straight to the PC in the broadcasting mode so that when a node in the field records a status variation the information is directly transmitted to the supervisor PC without this latter having to make a request for it. For example, the alarms concerning the protection switches are connected straight to the PC. When a switch goes OFF (or ON), the variation is transmitted to the PC. This technique does away with traffic in the network due to continuous requests from the PC for these values, with the added advantage of instantaneous signalling. Since signals are only transmitted to the PC the moment in which a variation occurs, the signal loss that would occur if the PC were off or disconnected at that moment can also be avoided by using the polling mode. This technique allows the signal to be transmitted in a spontaneous way at regular intervals, every minute or half-minute for example. The communication driver allows one mode or the other, or both to be selected.



A view of Progea's new offices where the EIB system has been applied, i.e. the bus-bar system for building automation.

Supervision

The Movicon supervisor is installed in one of the company's servers, in redundant configuration. Supervision is interfaced with the bus-bar through the serial converter handled by the dedicated EIB driver with which Movicon is equipped. A client station based on touch screen PCs in the Reception area, thus easily accessible to all, is connected to the server via the company TCP-IP network. This is the operating station that can be consulted by the staff members, that handles the accesses and general operations. The TCP-IP network allows the PC in each office to link to the server through Movicon Web Client technology, thanks to which each Progea employee can access the control synoptic of his office using the browser, thus governing the users of his station by remaining comfortably seated at his computer. The architecture of the system is illustrated in the figure.



Use of the supervisor

Although it is independent, the system can be governed entirely through the PCs. On access, the staff members register and the supervisor enables the office users (Lights and Ventilator) of the person in question. The operating controls can be enabled by the switches on the bus-bar (according to the conventional method), the centralized supervisor and from the employees station via Movicon Web Client. Each command requires a password. The lights in the corridors and stairways can also be controlled by presence detector sensors, also nodes of the bus-bar. Sensors are also used to handle the security functions thanks to the potential and functional logic of Movicon. Thanks to access management, personnel attendance can be monitored to verify the presence of staff members in the office and register their accesses by means of the supervisor system. Dusk sensors establish the effective need to use the lights in common areas. Temperature sensors optimize the temperature degree in the offices and rationalize consumptions, also plotting the historic temperature trends. Other types of automation have been added to handle the user "scenarios". For example, before beginning presentations in the Conference Hall with the use of a film projector, the operator can recall the preset scenario via the PC with a key after which the supervisor will enable the bus-bar to activate the driven screen and will set the most suitable degree of luminosity for the subdued lights.

Security

Progea chose to have the security system controlled by the Movicon supervisor. An automatic logic arms the system when there are no longer any staff members in the offices. However, the system can also be activated in the manual mode or to suit a

time-table.

Presence detecting sensors activate the alarm both locally and via the SMS and Voice functions handled directly by Movicon. The Voice function handles the TTS (Text-to-speech) and dials the numbers of the people to warn, vocally synthesizing the alarm text until the user presses the “#” key to silence it.

Use of Progea’s Scada Wap product allows the users to be activated and the functional parameters to be modified by remote control, using a Wap cell phone.

Alarm management

Boiler, Chiller unit and UTA (Air Treatment Unit) are all monitored by the supervisor. Faults are promptly signalled, allowing them to be quickly identified and reducing inefficiency to the minimum. Activation of the electrical protections is also kept under control. This achieves efficient plant diagnosis and improves maintenance, also thanks to historic recording of the events and statistical analysis.

The future

Progea is planning to expand the system by applying web-cams to the TCP-IP, that Movicon can directly control in order to monitor the external areas and the main entrance. The access monitoring system will be simplified thanks to use of a biometric device (digital fingerprints), thus reducing the LogOn time without anything having to be digitized. Moreover, Progea also forecasts wireless access to the users using hand-held PocketPCs, again thanks to use of Movicon CE.



Thanks to Web Client technology, each staff member can control his users from his own office with the browser when sitting comfortably in front of his PC.

Conclusion:

The management’s declared intention is to illustrate the potential and simplicity of the software products it produces to customers in the office. Movicon, Web Client and Wap Scada are connected to the EIB bus-bar so as to apply the best technologies to the building, improving comfort, rationalizing consumptions and creating a big dynamic workshop to demonstrate how an avant-garde company like Progea intends to place its wealth of know-how at the customers’ disposal.

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