

Award winning Energy Efficiency

Advance technological solutions for high standard, operational and efficient energy comfort receive award at KNX Day 2013



On the 22nd November 2013 during the KNX Day 2013 yearly event the best energy efficiency project was selected and presented with the KNX Italia 2013 award. A great number of projects were put forward all of which were powerful solutions representing the state-of-art in Building Automation technology and energy efficiency.

Out of all the projects that entered the competition the one presented by the Atla Spa company from Chieri in Turin, won the KNX Italia 2013 award. The Atla Spa Company is a joint venture (major part being Italian with Mitsubishi participation) that operates at an international level in the Turbine and Gas sectors. In October 2012 Atla Spa inaugurated their new facilities designed with advanced technology innovation oriented at energy efficiency without

neglecting the high standard of comfort within the working environment for personnel and guests. The company employs approximately 70 employees, with a turnover of over 17 million euro. As top professionals it operates in manufacturing high-technology gas turbines, primarily in EMEA (Europe, Middle East, Africa).

The new Atla Spa production site covers an area totaling 15,000 square meters. The actual production area occupies 11,000 square meters of land while another 2,500 square meters are occupied by the services and offices occupy the remaining 1,500 square meters.

In addition to the Konnex bus the installed building automation is equipped with a Modbus network for the various energy measuring instruments and a CEI-ABI bus for security systems. All the networks are

integrated into a supervision system based on Movicon 11.

Building Automation

The KNX standard based building automation system has been able to obtain high level automation compliant to the directives on energy efficiency referring to all the significant plant system categories according to the guidelines stipulated in the EN 15232 standard.

The entire establishment now operates according to functional frameworks which are consistent to the actual working requirements of the entire technological infrastructure at all levels. It is

completely programmable to adapt at any time to additional and varying requirement type without needing any significant system engineering intervention.

Due to the integrated programming type it has been possible to adopt innovative functional solutions such as constant illumination control within the production areas by using sensors placed at a height of nine meters to detect natural light consistency and the presence of manual workers in order to regulate light flow for efficient energy use without making it noticeable to staff. The results of an analysis performed after a year in operation, have shown that the energy efficiency level (LENI according to the UNI EN 15193 standard) is lower than originally planned and recommended by the standard.

The Building Automation system controls the following energy systems:

- Internal light system with On/Off solutions which can be regulated with DALI protocol
- External lighting
- Air conditioners and air purifiers in the production areas (heaters, chillers, ventilator



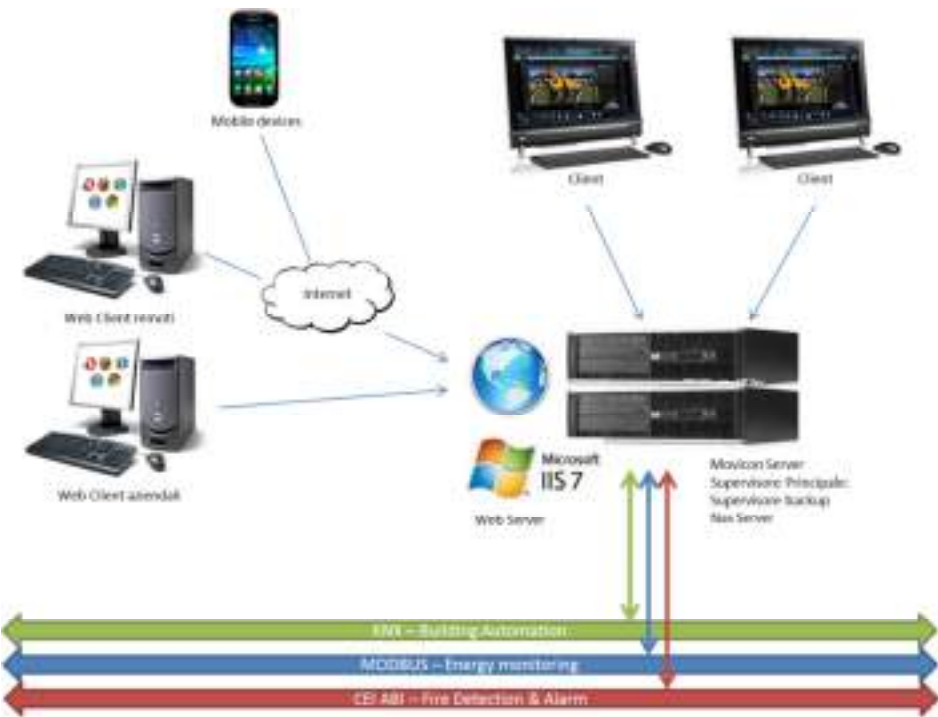
units, cooling towers) and chilled beams, fan coil units, floor heating in the office block

- Ventilated wall control
- Shutter automation and motorized windows
- External gate, internal door and corridor control
- Energy consumption monitoring
- Technical alarm monitoring

The spacious structural glazing office block has various integrated automation systems:

- Constant light control in function with the presence of personnel;
- Automatic shutter control which responds to external light with automatic or manual control management and in function with the presence of personnel;
- Automatic and manual control of motorized windows.

The entire building automation system also enables device configurations to be modified as well as providing support services and remote controlled diagnostics.



The meters are connected in a Modbus network as an integral part of the Movicon supervision system which monitors energy consumption with partial and total values confronting them with theoretically ideal consumption parameters in function with local environment parameters. All the data is stored on database to ensure that accurate analysis can be performed by also evaluating the personnel in charge to enable the company to detect and take immediate action to prevent or remedy any unnecessary energy waste.

The supervision system

The facility’s supervision and control system is based on the Movicon 11

Fire Alarm

The automatic and manual fire alarm system is comprised of an AM6000 Notifier interfaced with the supervisor using the CEI-ABI serial protocol to exchange real-time data based on the status of 97 zones and relating points (sensors, linear barriers and output modules) by selectively signaling operative statuses: normal, alarm, malfunctioning. In cases of a fire alarm occurrence the client workstation relating to the manned points displays automatic graphical maps relating to the zone where fire alarm has been detected. Detected fire alarms are contextually notified to fire station managers. The Supervisor also has remote control of the main notifier system’s commands for acknowledging and resetting alarms.

Energy efficiency

Ultimately, in order to ensure effective Energy Efficiency of the entire facility, the project has provided the collocation of energy consumption meter tools together with power protection systems.

Scada/HMI technology. In addition to the main server, it also provides several client stations equipped with Touch Monitor workstations for technical and surveillance personnel use. The different devices communicate in LAN composed of interconnected fiber optic nodes. The Movicon supervisor is configured for managing more than 2000 variables exchangeable with the field and provides:

- a) Timetable profile management to schedule when, where and for how long each technological system goes into operation together with work activity calendars and holiday plans;
- b) Visualization of the main functions using purposely designed graphical screen pages;
- c) Control of all the centralized lighting and air conditioning systems;
- d) Monitoring and recording of all technical alarms with relating notification modes;
- e) Recording and tracing of each main variable variation in-use;

The supervision system operates by integrating three different plant system engineering contexts using communication drivers towards the Konnex building automation, the CEI-ABI Notifier fire alarm system and the electric power distribution network, with the Modbus – Schneider Electric protocol, used for monitoring consumptions and electrical protection system diagnostics.

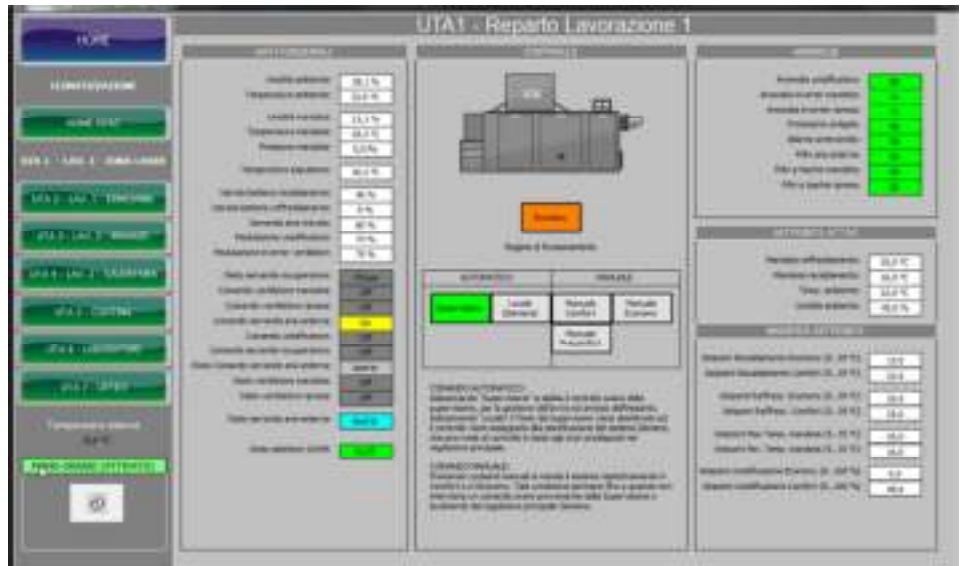
The integration of data and variables from these systems constitute the platform on which the building control and supervision general logic of the building control and supervision, database storage of historical data used for processing periodical trends and reports have been implemented.

Technical Alarm Monitoring

Movicon supervises and handles more than 350 technical alarms deriving from various subsystems by displaying them on screen, recording all their data on historical log and notifying internal technicians and external maintenance partners. All alarm occurrences are organized by engineering type and severity level. Alarm occurrences are notified using email and/or SMS to on-call duty personnel according to the configurable mail list specifications to ensure quick evaluation and intervention. This reduces the risk of system downtimes which would otherwise cause significant damage and inconvenience to the company.

Web-based Supervision Platform

The supervision system comes with an essential feature that enables system accessibility through the web by using web Browsers with smartphone or tablet devices that have become common place in the modern world of system management.



The Supervisor provides graphical screen pages especially designed for mobile systems where data is organized using an intuitive and efficient user interface that can be accessed from iPhone/iPad systems and Android mobile systems.

Company personnel can access system information from wherever they happen to be and logon to the Movicon Server in order to connect to the company server using either local wireless LAN or remote control made possible with the company's intranet infrastructure. This enables technical personnel and the maintenance service workers to establish constant contact with the system to reduce downtimes to a minimum.

The automation project was engineered by Euro-S Engineering from Settimo Torinese (Turin, Italy), a company specialized in Building Automation systems. Euro-s is an Engineering company operating in the electrical, electronics and telecommunications sectors, specialized in design engineering and configuring Building Automation systems, engineering smart building systems, system integration and supervision and control application development.

*Alberto Fabbro –
Euro-s Engineering Srl*