Factory and house both under control thanks to Samuel

Arking Consulting has used Movicon11 to automate the factory and the connected house.

Samuel Tailored Bonding is a company from the Italian Marche region specializing in the sartorial bonding of leather, faux leather and various types of fabrics for apparel, leatherwear, footwear, furniture and automotive. The company, leveraging the advanced machinery developed for the leading-edge manufacturing processes, produces technical fabrics and bonded fabrics, breathable, water-repellent, antistatic, thermo-adhesive, resin and much more.
Born in 1980 from the dream and craftsmanship of the founding family, the company has become increasingly consolidated over time, and now occupies a leading role in its field. There are, in fact, numerous prestigious brands that reach out to Samuel Tailored Bonding to develop their innovative ideas.
In 1991, the artisan company started the process of industrial transformation, a well-defined path that has developed following two guidelines. On the one hand, the quality and tailoring of a work always aimed at meeting the peculiar needs of each client. On the other, innovation and research to be more and more eco-sustainable and to create and test natural and innovative products.
Arking Consulting is an engineering company, born in 2001 in Fermo, Italy.
This company started working in different fields thanks to the diverse knowledge of its founding partners, from architecture to

interior design, from all engineering disciplines to plant building, from technological hospital sector and electronics, up to control systems and automation. In the technological hospital industry, the company developed some important Italian hospitals advanced supervision and control systems to manage the plants, with attention to the medical gases field. In this sector, Arking Consulting developed management and supervision system for cryobiology devices for some biological banks of new generation, i.e. the Italian Istituto Superiore di Sanità (ISS).

Focusing from the beginning to the needs of the market, Arking Consulting specializes in building and home automation to develop control systems to manage living environments and automated systems for disabled people.

Concentrating on studying and deepening all the aspects relevant to energy savings and certification, Arking Consulting offers professional consultancy in the construction of very low energy buildings and smart energy management. The project was implemented because the owner of the company wanted to have full and automated control of his own manufacturing factory.
This project accomplishes tasks from company productivity to plant management with ease. Moreover, this application increases the energy savings, security and workers well-being.

Tasks

Samuel Tailored Bonding entrusted Arking Consulting to develop an important project with the task of creating a system that has full control of every aspect of the house and of the factory. The supervision of both systems should increase the security of the house, the factory and the workers.
Moreover, the various machines used for manufacturing should be programmed for scheduled switch on, so that they are immediately working when required, reducing the switching on times.

The automation solution

The house is above the productive establishment and is equipped with a system to manage lights, irrigation, HVAC, the control of entrances, and the opening and closing of shutters.
Additionally, it manages and remotely controls all the alarms connected to the security sensors and the cord operated push-buttons for bedrooms and bathrooms.
In the factory, the system manages the lighting, irrigation, HVAC for each department, the control of entrances, and the opening and closing of windows and motorized doors. In addition, it manages the technological plants and the switching on/off of the machines.
The system also manages and remotely controls

the alarms of the machines and field sensors.

The automatization of the technological plants is a key factor for the industry productivity and energy saving management. It is essential to switch on/off the machines on a schedule to reduce the time of implementation during the operational phase and to save energy during the non-operational phase. The system mainly manages superchargers, dryers, furnaces, and circulators for diathermic oil.

At the same time, it is necessary to keep the storage facilities secure, such as the glue department through an automated management of air extraction systems, that prevent the accumulation of dangerous vapor for the operators and reduces the risk of fire in the building.
The vacuum cleaners, channelled and controlled by inverters, enable healthy work conditions in the productive department, creating a constant outgoing flow with internal air.
The lighting system is managed by Movicon and it activates and deactivates the internal lighting by occupancy sensors and the job schedule timetable. The external lighting system is equipped with dusk sensors and schedulers that distribute the night lighting appropriately, increasing the energy savings.

The irrigation of the green areas, done with waters coming from wells and a detailed schedule of the several areas to be irrigated, allows to consistently share water without waste.
The irrigation system is also equipped with rain and wind sensors that make it more efficient and precise, adjusting the water quantity delivered.
Company access is managed by the control system that supervises 3 external entrances and 6 internal ones. The internal access to the production department is managed by a biometric scanner with the detection of finger printing.

All factory windows are motorized, and every window can be activated by Movicon. Rain and wind sensors allow quick closure of them if weather conditions get poor, preventing for example, flooding and discomfort caused by employee oversights.

From a security point of view, all technological machines are alarmed, and every single alarm is audibly spread throughout the factory, to get a quick response to restore the situation and to secure the operator.

The system also manages the air conditioning, allowing a precise and efficient adjustment of internal climate conditions with the benefit of energy savings and workers well-being and comfort.

As the system manages several weekly schedulers that control the machines and factory's functions, they invented a tool that automatically activates or deactivates these schedulers, such as during public holidays, when the production is stopped. This way the risk of forgetting to activate or deactivate the schedule switch-on of some machines is reduced and it prevents any forced downtime and energy waste.

Like the factory, the house is managed by Movicon. The SCADA controls the lighting, the opening/ closing of shutters, alarm sensors, irrigation,

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Movicon 11
Embedded solutions for any application

thermoregulation, and distress calls from cord operated push-buttons in the bathrooms and bedrooms. The system will turn the house lights on to simplify the possible rescue operations from paramedics.
In the house as in the factory, rain and wind sensors automatically close the shutters in case of bad weather conditions.

The security has been increased with the use of field controls with dedicated sensors, such as methane gas detectors, temperature detectors, valve control and dedicated alarm systems.

Another important feature of the system is the possibility to access from mobile devices, using a dedicated app to activate or deactivate desired commands. System events, such as machines switching on and alarms are reported in the factory through a centralized audio distribution system.

The implemented architecture

To achieve the goals, Arking Consulting has developed 2 independent and separate systems: one for the house and one for the factory.
They have been connected to the field through Intermod hardware.

The project used Movicon 11 to manage home and building automation and it runs on 2 dedicated machines with Windows 10 operating system and IP65 capacitive touch-screen.

The central unit of every site include a minimum logic, which is an instruction list that continuously executes if the PC loses communication with the PLC connected to the field, ensuring minimum functionalities of the systems, such as the switch on of lights in stepper mode, impulse commands, timers, etc. This way, if one of the systems stop working, this will not affect the other system that continues running its program and managing the connected plant.
The two systems, factory and house, are connected in LAN network to exchange information and share the resources, exploiting networking functionalities.

The project structure has been built following father-child technology. On both sites, factory and house, there are 2 father projects that contain 2 children projects: one can be executed locally and the other remotely. This way the project available in one site has all the resources of the other, i.e. variables and synoptics, and it can use them to read the status or give commands.
In addition to the networking functionality, they have used the Movicon Web Client option that allows remote access through the mobile app.

In this case they created specific and simplified synoptics that can give commands and visualize status and field alarms directly on the smartphone. Alarms and notifications are then sent to phones of the Directors through a GSM modem thanks to the Movicon Alarm Dispatcher functionality.

As the plant is constantly growing, the great advantage for the developer who uses father-child architecture is that the modifications to the project, that are constantly added, are executed once and only from one site. The system automatically updates the project on the connected machine, collecting the data from the network. Another important advantage is the availability of each object of the remote project also on the local project, without the use of additional variables to be used for the networking.

Eng. Mannocchi of Arking Consulting says: “The chosen software, Movicon 11, is the most complete and flexible platform available on the market. Its capabilities cover almost all situations that could occur in a project on industrial automation and beyond.”

A supervision and control system manage every kind of situation from the easiest to the most complicated, offering a valid tool to optimize the rational and conscious use of energy.
The reduction of waste and increase of security, comfort and well-being are key factors that allow the automation systems to be an integral part of the technological development of the future.

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