



Cleanroom controlled using Movicon

Automate has realized a cleanroom control system with operative parameters for Simav using Movicon supervision

When we talk about “Cleanrooms”, we are talking about an ambient consisting of laboratories and devices that need to be manipulated within a pure air contained environment. This is where air is maintained at its purest at a very low content of floating micro dust particles. To achieve this the environment needs to be controlled (atmospheric pressure and particle pollutants) using function parameters which are essential to ensuring the processes and materials contained within such cleanrooms. The technology that is used to regulate and control the environment within these rooms plays a crucial role and is constantly subject to quality certification and regulated by strict and severe norms such as those prevailing in the

pharmaceutical industry. It is within this context that the application for Simav Spa and subject of this article was realized. Simav Spa is part of Siram Group company and specializes in engineering, maintenance and integrated Global Service logistic solutions and provide their systems to Finmeccanica an international leader in developing electronic and information technology systems for national defence, aerospace, infrastructure and the protection and security sectors. They also develop smart sustainable solutions.

Automate have created an operating parameter control system for Simav cleanrooms within which microelectronic and optic measuring

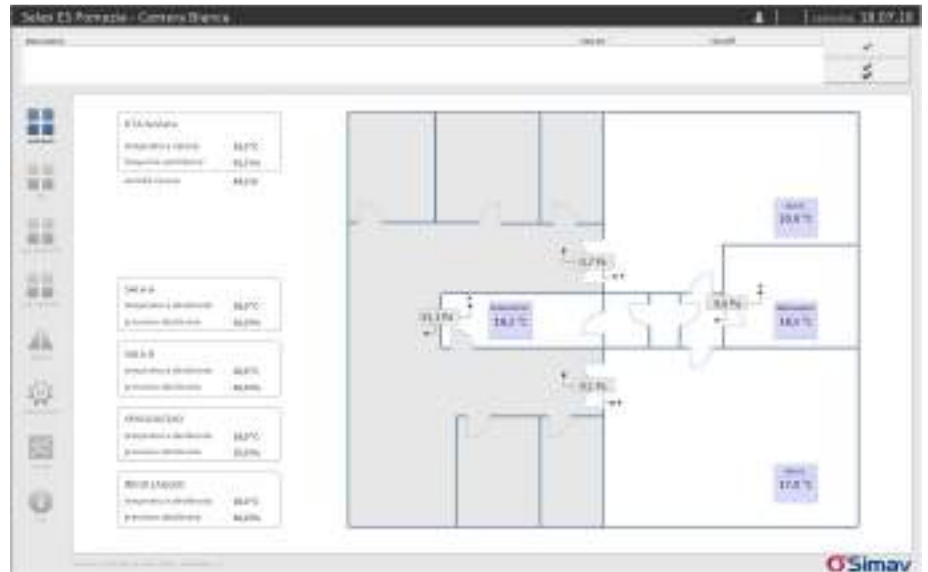
activities are performed. All the cleanroom's ambient parameters, such as room temperature, humidity and static pressure that influence the processes, are monitored and controlled to ensure that the set points remain within the specified parameter range limits.

In addition, the system also provides supervision and control of a group of machines that produce primary fluids simultaneously and independently from refrigerated water as well as the Air Treatment Units used in the four main cleanroom areas.

This group of machines and units are not so complex to manage and have been integrated in the supervision system simply to manage set point settings as well as to collect operational time and breakdown statuses. This is done by using a Modbus interface with the advantage of being operated from just the one workstation.

Conversely the air treatment system is more complex and critical due to the fact that military electronic equipment is realized in the cleanroom with great care. This equipment needs to be managed under the right ambient conditions where accurate temperature, humidity, pressure and air supply regulation need to be kept under constant control at all times. This can only be achieved by using a high performing and reliable control system.

The air treatment system is comprised of ten motorized shutters, five heating batteries and one cooling battery, ventilator with an inverter, one humidifier with modular vapour production. There are also digital sensors to control filter clogging, anti-freeze protection and detect fire. The air is emitted into environment in four



1. Screen page showing The Pomezia cleanroom layout

independent emissions. Analogic sensors and automatic valves regulate the temperature, humidity and air flow of each emission. The control system then extends operation to two blower systems that are used in the ISO5 classified areas of the room in order to establish a working area with controlled laminar air quality and flow.

The architecture installed for controlling the system is comprised of a PLC S7-1500 connected through the Ethernet interface to a Siemens KTP400 HMI panel and a PC with the Movicon SCADA on board. The PLC interfaces with the group of fridges using the RTU Modbus protocol in RS485 bus.

The supervisory PC is connected to the SINAUT MD720-3 Modem on a dedicated board, using a serial interface and Serial/USB convertor. In addition to the automation board and power supply board, Automate has also implemented, an autonomous power supply board in this system which contains a SPRS/GSM Modem for signalling alarms using SMS.

The PLC is equipped to receive data acquisitions of component statuses and analogic measurements; commands in output open

shutters and valves, control pump gears, ventilator speed and humidification.

The installed architecture enables a very effective and easy control of all equipment whose actions affect the quality of the thermohygrometrics and the air.

The high quality standards required in this kind of application have led clients to create reports, archive and process a great volume of collected data using Movicon. To satisfy another need, the Alarm Dispatcher module has been implemented to optimize time of intervention in the event of system failure so that there is no need for the permanent presence of an operator. This module notifies maintenance workers if any alarm events occur in the system by sending sms alerts. The Progea software was chosen for its all-in-one and userfriendly SCADA interface with high definition graphics. It had all the features the client needed for all their systems and subsystems



2. A Movicon screen dedicated to the Air Treatment Unit

which included Movicon tools such as the Variable Datalogger, the Report Designer to create reports and the Trend Data Analysis. In addition to having a simple and intuitive interface, Movicon has responded correctly to the need for one SCADA to reliably communicate with the PLC S7-1500 using easy-to-configure drivers and with the field using Modbus



At work in the Cleanroom

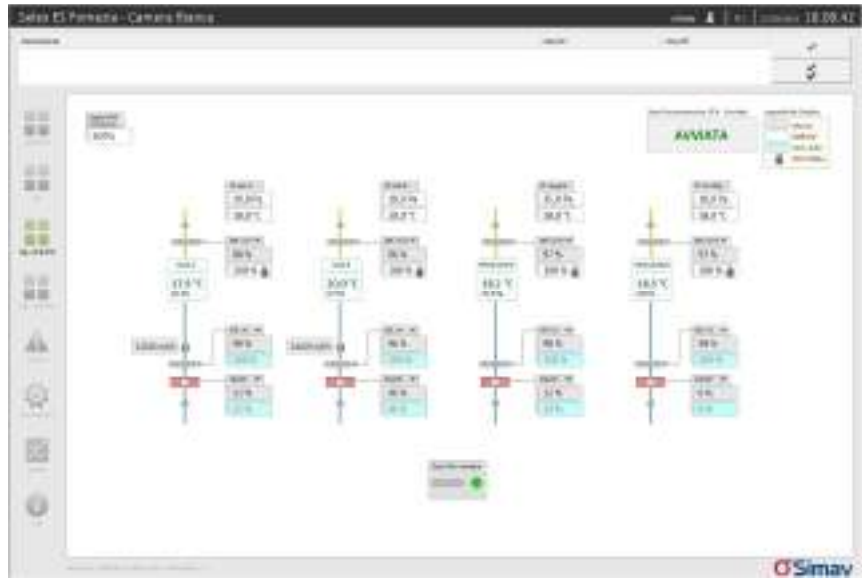
simultaneously. In addition and as a difference to other software products, the Progea software has a totally integrated management for notifying alarm events using sms and emails that can easily be configured to simplify application development.

The work performed for Simav was done in accordance to the high standard requirements respecting the 0.5 degrees centigrade temperature limits and 45% and 45% humidity range limits. Automate's many years of expertise has enabled them to create a complete high performance product to control environmental conditions and air quality efficiently at all levels.

Automate srl, Movicon Solution Providers, is a leading company in the field of automation. The company resides in Rome and operates in the airport, food, pharmaceutical, oil&gas and energy sectors. Automate srl is a young and competitive company constantly researching ways to improve simplicity and efficiency and quick to provide ad hoc solutions that include design engineering, project management, control panels, process control, supervision, installation, testing, maintenance and assistance 24/7.

The company's mission is to assist the client by understanding their needs in order to contribute towards creating value and facilitate ways of achieving common goals consenting clients complete autonomy and control through continuous communication.

The products and services offered are adapted to the needs of different industrial sectors by proposing solutions that ensure complete control and management of all advanced technological systems.



3. Movicon screen showing value regulation of the various areas.

Progea is a leading international automation software company from Italy. With more than twenty years of experience Progea has been actively at the forefront producing Movicon, the SCADA/HMI platform that ensures deployment flexibility, openness and independency. Movicon is a unique software solution that can be applied in the HMI environment (micro application in Windows CE) and as a SCADA for complex process applications. Today Progea is an international group employing more than forty personnel distributed throughout its head offices in Modena with branches in Milan and Padova in Italy with overseas offices in Germany, United States and Switzerland where its international distribution is coordinated.

Ing. Merco Roberto
Automate Srl