

When you have Movicon aboard your machine....

Advanced technology in the Windows™ environment in managing computerized paint sprayer machines

Automatic paint spraying is an extremely delicate process and therefore the technology of these machines must be superior to that of manual painters when dealing with different types of industrial and home furnishing products.

This type of process is based on mechanical quality of spraying, electronic control precision and regulation systems. It is part of an international sector where few companies have the know-how to manage processes of this type. CEFLA srl is one of those 'gems' located in Imola, Northern Italy, with 1,400 employees and a yearly turnover of about 300 million Euros. This company exports their technology all over the globe as world leaders in producing and manufacturing paint sprayer machines, assembly and varnishing lines complete with "key in hand".

CEFLA applies high technology and automation solutions aimed at energy saving and being ecosystem friendly by producing cogeneration systems controlled and supervised by Movicon, communicating through a network of PLCs and turbine management devices.

To consolidate its world supremacy in the standard machine production, as well as systems, CEFLA presented its new model of the ROC line, third generation varnishing machines at the LIGMNA 97 fair in Hanover for the first time. This extremely innovated machine technology provides solutions with cutting-edge techniques in terms of automation, performances and eco-compatibility.

Machine's Configuration

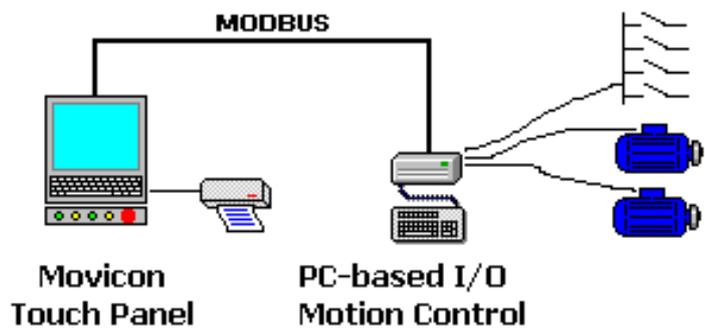
The machine has two hardware configuration possibilities:

- 1) Control from PLC and man-machine interfacing from PC.
- 2) System entirely managed from PCs, where one is designated with control and the other with the man-machine interface.

The solution presented at Hannover was enriched with lots of innovation, not found in other conventional PLC systems. This solution has an internally embedded PC control panel for managing axes and I/Os and operates from a kernel purposely developed by CEFLA. The system uses Modbus protocol to communicate with industrial operator PC panels mounted on the machine, with the task to carry out supervision, diagnostics, manage and analyse production, parameter and production data. This is all being done with Movicon based on the Windows operating systems. The two parts are distinct and autonomous from each other to guarantee performances and reliability.

The advantages of this type of solution are quite obvious: high performances, standard hardware and software mean improved maintainability with modern and future-orientated architecture aimed at cost effectiveness.

The great flexibility of deployment and use of this type of system are enormously beneficial to those builders who deal with machine-integrated systems. Not only does the builder have the advantage of being able to work in an all-in-one management environment but, above all, the end user can integrate, at any given time, their machine into future production lines, saving time, money and production downtime, to guarantee data integrity and safeguard investments: the management system aboard one machine can therefore be extended to other machines involved in the production line. The supervision system's ease-of-use allows quick and



Hardware configuration of paint sprayer machines with the MOVICON supervisor in Windows environments and a CEFLA PC-Based control system as an alternative to the traditional PLC.

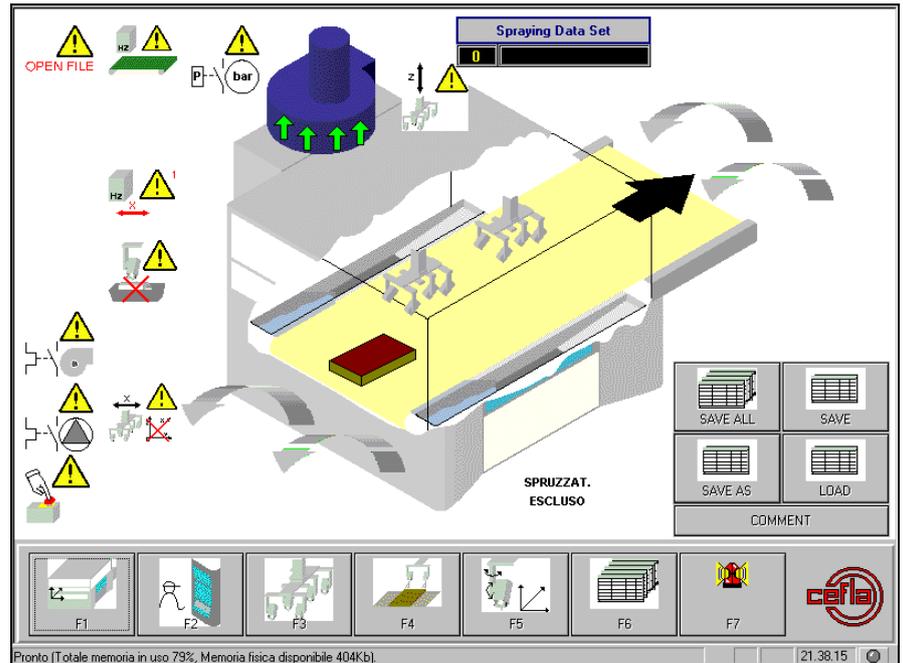
intuitive work parameter setups using dialog windows activated with a simple click or the predisposed buttons on screen. This has been intentionally designed to allow the operator to set commands in the most natural and intuitive way possible, with the additional support of pop-up guide windows, customized and adapted accordingly to the context.

The same concept is used for setting manual commands. The long changeover production times needed at startups and the non-profitting machine downtimes due to long complicated maintenance interventions or lack of regular servicing has become a fading memory from a bygone age.

By using a PC architecture, the machine is preset and ready to be integrated into local networks or any existing or future internal field production lines and internal company managerial systems. This great advantage practically costs next to nothing and allows any modern manufacturing company to achieve optimal management, satisfying any company's business strategy and philosophy to integrate and development with positive returns.

Visualization and Control

The various sections of the system are controlled and supervised with appropriately adapted screens. By using these pleasant-looking screens the operator is guided in managing the plant in the most simplest and easiest way possible. The machine's realtime behaviour illuminates or changes colour in the parts involved when the status of motors or valves (ON, OFF, Alarms) change. Great care has been taken to get optimal graphics especially where animation of sprays, movements of items on conveyor belt and through machine parts are concerned. This gives the operator a clear picture on the real-life product situation throughout the different production line phases. The operator can set or interact with the production by executing commands directly on screen. All the commands are extremely fast to activate, without using touch screens. This is done by directly using function keys associated to the various buttons and which change function type when the screen page is changed. The mouse is always available for use and is integrated in the industrial touch pad panel. The touch panel replaces all those obstructive manual buttons, levers and



A screen from the Movicon application on board the spraying machines ROC3 by CEFLA Group srl

selectors on pushbutton panels which were found all over the plant, making things much more simpler-to-use and cheaper to run.

The supervision system must allow easy machine diagnosing and maintenance carried out by using a complete alarm and message management in accordance to the most modern devices around in today's world.

Purposely designed pages have been provided for displaying and viewing the alarms and important data on their occurrences, acknowledgements and resets. Comments in "pop-ups" can be associated to each one of the alarms with the possible to enter reminder notes to help and instruct operator or maintenance personnel. The operator messages are separate from the alarm management and provide the operator with information relating to realtime situations only. All significant alarms and events (messages or self-diagnosis) are recorded in the relative database file that can be displayed in predisposed windows (Historical Log)

and where SQL queries or printouts can be executed on-line or upon operator request. These files can be recorded in the preferred DB format using the ODBC (Open DataBase Connectivity) technology allowing historicals to be analyzed by personnel externally. CEFLA has also designed screen pages to be used by technicians or maintenance personnel to display and view all the working statuses of system variables.

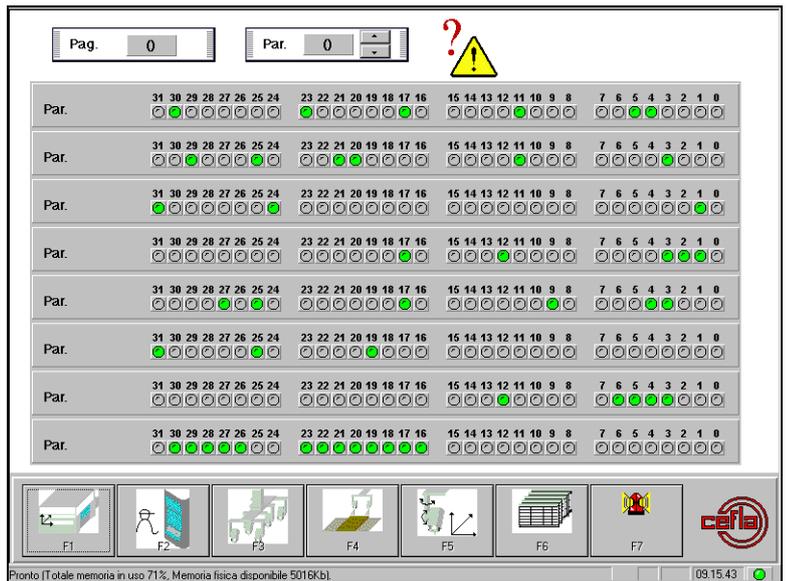
Conclusion

The experience and technology of the CEFLA process, a world leading company not only in the Paint spraying sector, has allowed them to create an automation system in the third generation ROC machine that no other can match. The use of a P.C. with a kernel to manage axles and I/O tightly connected and integrated with a PC panel has great advantages when it comes to performance, expandability, integration while being reliable and simple to use at the same time.

Not to mention the economical benefits: hardware standards, easy availability, flexibility and the possibility to have Movicon Scada/HMI system solutions with no royalties attached. All the main ingredients for increased quality, system cost effectiveness, flexibility of use and deployment offered to the end user in automation solutions with state-of-the-art technology.

The Movicon Scada/HMI was chosen for its high performances, simplicity of use and easy to program – one of the package’s strong points -, business solutions and system reliability being native to Windows. Being an international product also helped for getting technical support straight from Progea, the Movicon producers.

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Machine variable status screen