

SCADA synchronises production on opposite sides of the Atlantic

A high-volume automotive engine component production line in Italy is being integrated with a near-identical sister line in Brazil to synchronise production capacity. Key to the success of this ambitious project was the use of Movicon SCADA (supervisory control and data acquisition) software, which as well as being easy to connect securely with other remote systems, is quick to install, configure and adapt.

Automotive manufacturing is already a globalised industry with companies consolidating the output from multiple production plants to maximise resource utilisation. This trend is being taken to the next level by the integration of two engine component production lines, one in Italy, the other thousands of miles away across the Atlantic Ocean in Brazil.

For this project, the customer approached two specialist suppliers, software developer Progea, which is represented in the UK by Products4Automation, and robot systems designers SIR. Together they designed an automated production line based on machine tools, robots and special purpose machines which could be duplicated anywhere in the world and managed on a common platform using secure remote access.

Movicon is a family of SCADA solutions developed by Progea and is used for supervision, data acquisition, productivity and energy efficiency in over 130,000 applications worldwide. The platform is used in an enormous variety of applications ranging from manufacturing to building automation and is particularly effective at helping deliver lean manufacturing.

Components on the state-of-the-art production line are delivered to each workstation to be drilled, milled, reamed, tapped, deburred etc by a laser guided vehicle. They are then washed and undergo a series of rigorous quality tests. A robot places passed parts onto a second laser guided vehicle for transfer to the engine assembly line. Any parts that fail the quality inspection are sent back for reworking.

Working at a rate of 40 components per minute, all the workstations must be carefully synchronised. Each stage is controlled a PLC or CNC, and these are integrated into a Profibus DP fieldbus network, also on the network is a PC running Movicon SCADA which oversees the synchronisation and data handling.

At the Italian engine plant Movicon SCADA provides the operators and managers with real-time data from the various workstations. Password protection is integrated into the system so that information is kept secure and is only available to appropriate personnel. The plant operators can clearly follow the plant's working status via several Movicon HMI touchscreens located at suitable points on the shopfloor.

The screen pages neatly depict the working status of the production line and all its workstations with animated graphics to give an overall picture of production. Simply by touching the screen operators can zoom in for more detailed information, analysis and diagnostics. Information is made available in the most user-friendly and appropriate formats, which leads to reduced downtime, consistent quality and enhanced productivity.

Various Movicon modules integrated into the SCADA system produce more detailed analysis and higher-level information for managers. Significantly, the Movicon SCADA communicates with wider business and enterprise management systems, so that senior managers can drill right down to shop floor data levels at both sites.

This centralised supervision architecture makes it simple to connect the Italian system with its sister facility in Brasil. In fact, the Brazilian plant does not have the same background level of automation infrastructure as the Italian one, but both are able to share live information in real-time, and thus be truly integrated.

A vital part of this project was making the production line simple to run, while automatically gathering all the necessary production data and instantly analysing it to produce management reports. Movicon has proved ideal for creating innovative control solutions quickly and at low cost. Its integration into the business information network enables decentralised factory floor level control and holistic planning using the most up-to-date production information.

Future developments will rely on Movicon system features such as cloud computing, enabling edge data capture and processing, plus, advanced statistical analysis algorithms and the convenience of OPC UA connectivity. All of which contribute to advanced Industrial Internet of Things (IIoT) functionality and realising steps toward Industry 4.0.

Photo Caption: At the Italian engine plant Movicon SCADA provides the operators and managers with real-time data from the various workstations.

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About Products4Automation

Products4Automation (P4A) is a specialist supplier of new and innovative software and hardware solutions to the UK market. Product ranges available from P4A include the latest touch-screen HMI's and flat panel PCs, SCADA software and plug-ins, a wide range of SCADA enabled hardware, Alarm plug-in software for large automation systems, and a full range of Production Intelligence software solutions.

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