Body-in-white production line for the Citroën C3 platform controlled and visualized with Simatic

Perfectly Integrated

The PSA Peugeot Citroën Group uses Totally Integrated Automation for the automation and the Simatic WinCC control system in its new body shop for the Citroën C3 model. The total integration of the HMI systems in the Simatic control environment and the use of PDiag diagnostic software open up new perspectives for efficient plant monitoring.

Central diagnosis decisive

The most important feature in the automation concept of the new body shop for the Citroën C3, however, is the use of the S7-Pdiag diagnostic software for the diagnostic management of all production stations in the central control under WinCC. In addition, ProAgent is used on the OP27 Operator panels for local fault diagnosis on the individual cells.

Simatic WinCC in connection with ProAgent was chosen as an ideal HMI system for management and collection of all alarms from the production cells because it could be easily integrated in the plant’s automation structure.

In addition the graphic editor offers numerous possibilities for visual design of the production processes. Up to 20,000 tags can be processed.

Finally all the alarms and the appropriate data can easily be updated automatically thanks to the integrated software in WinCC ProAgent. The operator can have the respective program segment of the PLC that triggered the alarm displayed or the appropriate S7 graph step sequence visualized in WinCC.

The Head of Maintenance on the new production line Francisco Javier Tejedor explains: “We decided to use the WinCC software because the diagnostic functions of the plants were to be centrally grouped and
the system had already been successfully tested in other factories of the PSA Peugeot Citroën Group. The ProAgent solution is used because it is the best link between the PLC diagnostics controlled by PDiag and the WinCC control system.”

Total communication
The biggest advantage of the integrated automation concept in the new body-in-white production is the communication between the programming software of the PLC (Step 7 and PDiag) and the process visualization system (WinCC and ProAgent). This considerably simplifies the handling and programming becomes almost totally obsolete.

The operator of the WinCC process visualization system has the whole area monitored on one screen and can concentrate on the diagnosis when a fault occurs. With a few mouseclicks he can switch from the view of the complete line to a single cell and even check the state of a sensor.

In addition to the process views, the WinCC systems also has masks for the data management on which the communication with the production software, the status of robots or welding sequences can be checked.

All 40 Simatic S7-400 controllers in the plant are connected to the HMI systems via Industrial Ethernet. Because of the harsh conditions to which this network is exposed, Simatic Industrial Ethernet components have been used. To ensure the demanded high availability and reliability of the equipment in the rugged production environment, Simatic Panels PC 670 have been installed on the machines themselves in all areas to be monitored. A server collects all the data from the different areas. These PCs contain the programming software of the Simatic PLCs and the HMI devices. Changes to the devices can be entered directly online.

Exact error localization
Thanks to the alarm management by ProAgent and the display functions of WinCC which can be extended by “Graphic Designer” the system pinpoints the exact location of the error in the event of a fault regardless of whether it is process or hardware related and offers help texts for localization and elimination.

Using the integrated WinCC alarm system in connection with ProAgent, the system informs the operator about the different process errors and creates an alarm archive which can be printed or exported to a file. Then the response time of the operating personnel in the event of fault will be shortened and downtimes on the production line minimized as a result. The large capacity of the message acquisition of the WinCC is extremely important for this task.

This function also makes preventive maintenance work on the production line easier. Diagnostic data can be exported simply and therefore enable easy monitoring of the downtimes and error times.

The Spanish version of WinCC 5.1 was installed under the Windows 2000 operating system. In this way both the visualization system and the programming software are embedded in the Spanish language environment. This makes possible extensions easier for the owner to handle and minimizes training expenses.

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