

Custom-designed Control Panels at BMW facility

→ The Regensburg, Germany location of the BMW Group produces the BMW 3 series Sedan, Coupé, Convertible and Touring versions. In future, the new BMW 1 series will also be assembled there. A complete new paint shop with two production lines that meet the latest global standards was built during a two-year planning and construction phase. A total of 55 Beckhoff Control Panels deal with the visualization of the application systems.



Customer-specific Beckhoff Control Panel at BMW in Regensburg, Germany

BMW had been looking for new operation and visualization terminals for the application robots and the vision system. In the past, individual components from various manufacturers such as touch displays, keyboards with a standard mouse as well as button and switch elements, were installed in a case. The disadvantages of this solution were the space requirements and the old-fashioned appearance. The Control Panels from Beckhoff solve this problem in an elegant way, at the same time underlining the overall impression of the new plant through their elegant and modern industrial design.

Control and visualization via Control Panel

In the robot systems, Beckhoff Control Panels are used in the seam sealing and undersealing applications. The panels visualize the complete cell control, which is handled by Kuka robots. The systems were designed and installed by the company Eisenmann, a system supplier for surface technology and material flow automation.

The final paintwork is applied in the filler and top coat lines. Dürr Systems AG, the system provider for mass production paintwork applications in the automotive sector, was responsible for this part of the plant. The company also developed the paint robot. The Beckhoff Control Panels are mainly used for system visualization. Furthermore, they are also used for visualizing the vision system, which is responsible for 2D and 3D car body position detection during the application processes.

Customer requirements implemented precisely

"The Control Panels were produced according to our requirements and with ergonomics in mind," said Norbert Schottenheim and Harald Sandner, who are responsible for surface technology control at BMW in Regensburg. "The simple handling, the compact design, and in particular, the option of operating the panels remotely via CP-Link from a PC at a distance of up to 100 m were the crucial arguments for the Beckhoff system. Even the combination of the CP-Link technology with special graphics cards for 3D visualization was not a problem." With the CP-Link solution, the PC is safely located in the central control cabinet, while comparable concepts require local installation of the PC in a case or a Panel PC. Furthermore, all third-party components such as the electronic key system or



Specification of the customized Control Panels

- | Control Panel with 15 inch TFT display and touch-screen
- | Left and right keyboard extension, each with 32 fully backlit push buttons in three possible colors, which are controlled from the higher-level controller via Profibus
- | Lower keyboard extension with emergency stop button, different key-operated switches and a mode selector switch, connected via a plug connector at the rear
- | Swiveling keyboard extension with integrated trackball and electronic key system reader
- | The display with touchscreen, the keyboard and trackball signals and the EKS system are connected with the PCs in the control cabinets via CP-Link. The cable length between PC and Control Panel varies between 10 and 45 meters
- | The Control Panel is installed at the support arm/lift system via an adapter plate

mode selector switches could be integrated in the Control Panel case without problems.

Installation at a support arm/lift system provides a high degree of flexibility - the Control Panel can be swivelled in all directions. A swivelling keyboard extension enables an optimum ergonomic feel for the operator. And last but not least, the exterior of the Control Panels from Beckhoff is also very impressive, representing robust, yet elegant industrial design. "The primary aim of the modernization was to increase our capacity," Harald Sandner explained. "But visual and aesthetic issues - the overall impression of the plant - were also an important decision factor for us."

Norbert Schottenheim is satisfied with the result, "A comparison between the free-hand sketches we used to formulate our requirements during the initial project meeting and the finished Control Panels shows that our specifications were realized exactly." "The high degree of flexibility for considering modifications and implementing associated changes during the project, the optimum price/performance ratio and the short realization phase made the co-operation very successful," said Harald Sandner.

A total of 55 Beckhoff Control Panels are used at the Regensburg plant. A similar concept is used for the new BMW Group plant in Leipzig, which is currently being built. Here, about 30 Control Panels will be used for visualization and operation of the paint shop.