

Flexible Components

Cost-Effective and Flexible Automation with PIAflex and PIApal

Preh's Industrial Equipment division, located in Bad Neustadt an der Saale in Germany, provides their customers with manufacturing and production assemblies that are complete, perfect, and flexible – so flexible that products can be brought into line with the latest trends and current needs of their customers as quickly as possible. Highly qualified personnel and comprehensive process know-how guarantee optimized implementations.



PIApal palletizing system.

Assembly and testing systems from Preh are used in the electronics, automotive supply, and pharmaceutical industries. In addition to others, Preh supplies manufacturing equipment to the Hirschmann company, who in turn produces GPS receivers GSM and antennas for trucks which have to adhere to the new toll system in Germany.

Assembly Lines with the Flexible Building Block Principle

Typical Preh assembly systems are based upon the building block principle which results from using the PIApal palletizing and PIAflex transport systems. Both of these standard components form the complete assembly line once they have been combined with customer-specific expansions. The PIApal palletizing system, available in many different designs, is distinguished by its short cycle times and small space requirements. The PIAflex transport system is flexible and built modularly, allowing it to be expanded at any time. This means that the customer can begin with a compact module and expand on it until it becomes a complete assembly system. Using both of these standard systems together results in cost-effective assembly lines for series produc-

tion. Design complexity (not to mention the accompanying time and expense) is minimized since Preh assembly systems can be delivered on short notice – with solutions tailored exactly to customer needs – thanks to their flexible standard components.

A comprehensive policy regarding quality has always had the highest priority at Preh. For this reason, Preh Industrial Equipment places a high value on finding efficient, quality-oriented, and innovative partners when automating their production lines. However, these production systems should always be



Remote I/O system using the X67.



PIAflex XL transport system.

cost-effective and have a high degree of flexibility.

In 1999, Preh Industrial Equipment took a good look at a variety of different controller suppliers before deciding on B&R. "It wasn't just the flexibility and low product costs offered by B&R," explains Christian Albert, Project Manager at Preh Industrial Equipment. "It was also the numerous fieldbus possibilities, the scalability of their controllers, and the broad product spectrum they provide." The 2003 controller system and custom visualization terminals are used as standard components of the assembly lines developed by Preh. Since the beginning of 2003, Preh machines have also been equipped with the Power Panel 200, a controller and visualization system based on an industrial PC, and the X67 terminal system. Automation Studio provides customers with a powerful software tool for control, motion, operator interface,

and communication tasks. This programming tool covers every application area at Preh and eliminates the need for different tools for different tasks. The result is a substantial advantage: a solution to all interface problems.

Control via the Palletizing System

For the PIApal palletizing system, a CP474 with I/O expansion completely controls the palletizer. The custom Preh Panel, based on the P126, is used as a mobile visualization device to manually control the three integrated servo-pneumatic axes. In Automatic mode, status and diagnostic messages are also transferred from the controller via the RS232 interface and displayed. Closed-loop position control of the servo-pneumatic axes was extremely easily implemented using the library function blocks already available in Automation Studio. Furthermore the standard CAN



Switching cabinet view: Using the PP200 Power Panel for the complete control and visualization of the production line.



Production line for hydraulic valves.

interface present on B&R controllers was used here to transfer set speed values and actual position values. In addition, servo controller status and diagnostic data is transferred via the CANopen protocol – yet another process which was simply implemented using pre-designed function blocks. Altogether, there are 48 digital inputs and 32 digital outputs available on the System 2003.


Minimum Wiring for the Transport System

At the beginning of 2003, Preh equipped PIAflex modules for the transport system with the X67 remote terminal system with IP67 protection. The X67 system can be situated directly on the machine, making the switching cabinet obsolete. Using the X67 I/O system has allowed Preh to save around 20,000 on one assembly line. These savings result from the elimination of switching cabinet components, the ease of cabling, and the faster wiring of the series ma-

chines. In other words, they achieved an extremely optimal reduction in their Total Cost of Ownership. A Power Panel PP200 is used as the higher-level controller. Although it is extremely compact, the PP200 handles control, visualization, and communication tasks. Remote X67 inputs and outputs are read cyclically and processed via the CAN bus. The panel also includes a multitasking real-time operating system for processing I/O at the highest speed, within the millisecond range. The Ethernet interface integrated in the Power Panel is used to transfer production data over the TCP/IP protocol to the higher-level PC.

To ensure their ability to remain internationally competitive, the Industrial Equipment Division is relying on long-term cooperative relationships with their suppliers.

B&R meets our requirements completely,” states Project Manager Christian Albert. “We have even been in direct contact with the product developers at

B&R. Selecting B&R as our system supplier was definitely the right decision.” Future cooperation between B&R and Preh may include the use of the ACOPOS system together with linear devices. Preh is currently still examining cost-effective and technically suitable systems. 



Production line for antenna amplifiers.

The Preh Group was founded in 1919 in Bad Neustadt an der Saale, Germany. In addition to their headquarters there, they have opened operations in Willich and Trofa in Portugal, as well as sales offices in France and the USA. The Preh Group offers a widely diversified product spectrum in the areas of automotive electronics, industrial electronics, and other industrial equipment. With a current work force of around 1,700 employees, the Preh Group has achieved a turnover of approximately 220 million. With 130 employees, the Industrial Equipment division produces assembly lines, special machines, and other assembly devices for series production. They also manufacture measurement and testing equipment which is then integrated into the production systems.

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