

# teamtechnik SOLUTIONS

Robert Bosch GmbH, Waiblingen

PRECISION IN ONE-SECOND INTERVALS

To insure capacity and quality, teamtechnik Automation first developed a high-availability assembly system for the ongoing production of a high pin count plug. „We implemented it in less than six months,“ reports Sandra Lutzenberger, Project Director at teamtechnik Automation, reports. „Today, a second system for high pin count plugs is already in place at the BOSCH plant. A third one for low pin plug connectors will soon be placed in service.“

## We have to be able to rely on our partner

The net result of the project partners is positive. „Such a system expansion is always exciting. Everything is new and even with the best planning, we never know whether everything will actually be running at time X. For this reason, we have to be able to rely on our automation partner. That was always the case in our collaboration,“ Steffen Wihofszki states.

### Contact

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In the automotive industry, the manufacturing of frequently used standard parts, e.g. the ever-increasing number of plug connections, requires high-cycling production lines with high technical availability. As a subsidiary of team technik since 2011, the machine builder teamtechnik Automation utilizes a cam-controlled rotary transfer system as the perfect solution for this demand. This concept was well received by the BOSCH facility in Waiblingen, and a decision was made to use the teamtechnik Automation technology.

### teamtechnik Automation GmbH

Founded in 1960, the company develops and builds fast-cycling cam-driven rotary and linear transfer systems for automated production. It joined the international teamtechnik-group in summer 2011.

## COMPACT ASSEMBLY OF HIGH COUNT AUTOMOTIVE PLUGS

Ordered today, preferably delivered tomorrow: Those ordering plug connectors for motor-vehicle production expect short delivery times. For this reason, due to the short term planning of their customers in cable harness manufacturing, flexible order processing is mandatory for plug manufacturers. They need a partner who can quickly fill orders for large quantities. BOSCH manufactures high pin count plugs at its gasoline systems plant in the automotive technology division.

*»We are producing as much as possible as quickly as possible in the smallest space possible«*

*Holger Vollmer, Robert Bosch GmbH*

“ We established an infrastructure that allows us a very flexible and stable mass production” reports Steffen Wihofszki, who is in charge of production planning at the assembly facility. To be precise, this means that we are producing as much as possible as quickly as possible in the smallest space possible,” his colleague Holger Vollmer, production planner for high pin count connection technology, adds.



Inserting the radial seal into the contact carrier top



Plug output conveyor and image processing



Feeding and inserting the contact carrier bottom

### Safeguarding production by rotary transfer systems

BOSCH found a solution for safeguarding production in high-cycling, cam-controlled rotary transfer systems from the automation specialist PFUDEER. They are now supplementing the pneumatically powered systems with workpiece carrier rotation in the area of assembling high pin count plugs. The investment in the new systems quickly paid off for the customer, BOSCH. The systems from teamtechnik Automation run significantly faster and, therefore, produce a much higher output.

#### BOSCH in Germany

For over 125 years the name „BOSCH“ has been associated with forward-looking technology and trailblazing inventions that have made history. BOSCH does business all over the world and is active in the most wide-ranging sectors. Here you can find out more about our business sectors and divisions in Germany.

### System availability of 95% plus

The short-cycling rotary transfer system RTS® from teamtechnik Automation generally requires little space. The circular design of the rotating base module enables access to workpieces from the inside and outside. This provides maximum accessibility for operation and maintenance. „The availability of these systems is significantly higher than 95 %. That is one of the great advantages of the cam drive. It ensures fault-free operation,“ Sandra Lutzenberger explains. In addition to the high cycle performance and availability, further advantages of cam-driven systems are lower energy consumption and low-noise operation, and she adds: „Thanks to the steady, smooth movement, cam controls operate with significantly less noise than pneumatic drives. Compared with conventional systems, cam-controlled systems use less energy.“

*»That is one of the great advantages of the cam drive. It ensures fault-free operation«*

*Sandra Lutzenberger, teamtechnik Automation Maschinenbau GmbH*

The high pin count plugs consist of six components: a retaining plate, mat gasket, contact carrier top, radial seal, slider and contact carrier bottom. At the first station, the contact carrier top is fed in and inserted in the workpiece carrier. Next, the presence of the component is checked with the help of a camera. At station 3, a gripper retrieves the gasket from the separation unit and inserts it in the contact top via cam-controlled handling. A camera checks the component for color and position. In station 7, the contact carrier bottom is inserted. Afterwards, the contact carrier bottom is pressed into the contact carrier top by a cam-controlled toggle press. Next, the assembly is turned over, the mat gasket is placed in a temporary workplace and its position is acquired via camera. A rotation unit moves the gasket into position to insert it in the contact carrier top. A camera checks whether the gasket has been inserted.

In order to feed in the slider and insert it, a dotted strip moves the sliders into a sorter attachment. In their aligned position, they are conveyed on a single-lane conveyor. In the separation unit, a slider is removed from the conveyor, turned by 180° and inserted in the contact carrier top. Next, the retaining plate is conveyed from a supply hopper into a sorter attachment and fed to the separation unit via a single-lane conveyor. Depending on the feeding position, the retaining plate is turned to the correct position during the insertion. Next, the retaining plate is pressed in, followed by a final check of the assembled components. Finally, the finished plug is labeled using a laser.



**One team:**  
Steffen Wihofszki, Robert Bosch GmbH and Sandra Lutzenberger, teamtechnik Automation GmbH