Application Report

More efficient grinding process thanks to automation

Heiko Röhrig | Head of Sales and Marketing
EGS Automation GmbH

AMETEK® / EGS AUTOMATION

Robotic palletizing system automates grinding machine at Scherzinger Pumpen in Furtwangen, Germany

Whenever pumps are used, they become essential components for the reliability of a machine's overall performance. That's why pump manufacturer Scherzinger Pumpen, in Furtwangen in the Black Forest, describes its products as „the heart of hightech" and promises „Scherzinger pumps keep your application running and meet all gear pump requirements."

The company was founded more than 80 years ago and produces customized pumps for automotive engineering, mechanical and plant engineering, and power plant technology. The pumps are used for applications such as auxiliary heaters, chemical metering, two-component adhesive metering, or turbines.

Their portfolio includes gerotor pumps, external or internal gear pumps, and vane pumps.

The company has five locations in four continents and employs 210 people, 160 of whom work at the Furtwangen headquarters.

The aim is to gradually increase the level of automation in production, so that employees who are tied up with simple tasks can work in more demanding activities. Another motivation for automation is to increase the efficiency of existing machinery.

The first automation project was the loading and unloading of an existing machine in the grinding shop - a Kellenberger cylindrical grinding machine. This process had previously been done manually.

Two main features were included in the requirements profile. First, it must be possible to continue loading small batches manually and to have full accessibility through the operator door for setup. At the same time, space is limited and the new automation process had to fit into the area previously used by the machine operator.

When searching for a suitable automation solutions partner, the sought out a company with extensive automation and robotics experience in geographical proximity. As it turns out, EGS Automation in Donaueschingen is quite close to Scherzinger Pumpen. The company has been offering experience in robot automation since 1999 and had already installed more than 2,000 robots. EGS develops and implements customer-specific solutions, but also offers a large portfolio of standardized machine loading systems.

Further discussions revealed that one of the EGS standard automation solutions from their SUMO series was perfectly suited to meet the requirements. A standard solution saves costs since the engineering effort is significantly lower. Furthermore, the standard product line is tried and true as it has been used in various applications.

Author: Heiko Röhrig
Date: 15.11.2022

The SUMO Multiplex, a 12-fold palletizing system based on the paternoster principle turned out to be the perfect solution for Scherzinger. Component handling is performed by a Yaskawa GP7 robot. This 6-axis jointed-arm robot has a range of approx. one meter with a payload of 7 kg and is compactly attached to the palletizing system. The fast travel speed and high accuracy ensure fast, reliable, and accurate part changes in the machine.

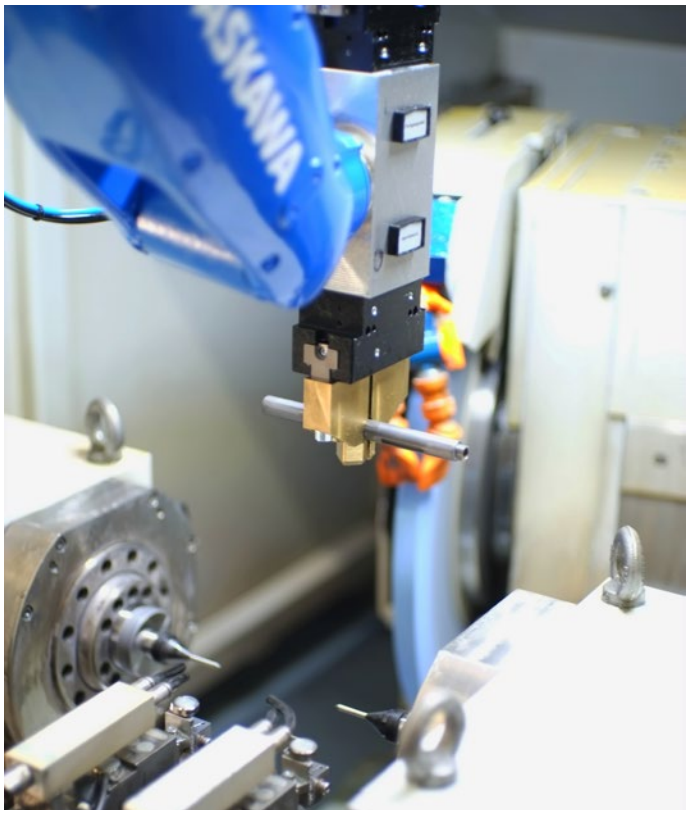
The system was built with a side-shifting device that allows the entire unit to be shifted on its side in seconds, giving full access to the grinder. Additionally, \this system can just as quickly be pushed back in front of the machine and precisely indexed so that it can resume automatic operation.

Pump shafts with a diameter range of 10 to 40 millimeters, and a length of 100 to 200 millimeters can be handled by the machine.

The workpieces are loaded and clamped into the machine. Typical machining time is between three and five minutes. The components are then stocked on universal pallets, which are adapted for the respective workpieces by means of component-specific plastic clips. EGS assisted in the selection and design of the workpiece carriers.

Due to the large storage volume of the SUMO Multiplex, an autonomous runtime of one to several shifts, in some cases even a complete weekend, is achieved without the need for human intervention, depending on the component.

Due to the improved utilization of the machine and additional unattended shifts available, more component versions can now be processed on



the machine. The robot is equipped with a double gripper tool, with the gripper jaws universally designed for the workpiece portfolio. To be able to stock as many shafts as possible on the pallets, they are picked up from a standing position. The robot picks them up from the pallet at one end of the shaft, places them in a gripping station, picks them up again and places them in the machine for clamping. During unloading, the

Author: Heiko Röhrig
Date: 15.11.2022

workpieces return to the pallet in the opposite direction.

SPC parts, which are used for measurement for statistical process control, can be requested by an operator if required and are then discharged by the robot. Defective workpieces are deposited in a bad parts bin. The machine provides this information after processing it via the electrical interface. For this electrical automation interface of the machine, EGS has developed and implemented the appropriate counterpart on the automation side of the SUMO Multiplex to ensure perfect communication.

The entire automation system can be converted to machine a different workpiece version in just a few steps, completely without tools.
The SUMO Multiplex can store pallets of different heights. Thanks to its clever partitioning, it is making maximum use of the storage space in each pallet. Finished part pallets can be removed and new unfinished part pallets can be inserted at any time in automatic mode without interrupting the process.

Patrick Wehrle, machine operator at Scherzinger Pumpen, is enthusiastic about the automation system: „The robot relieves me of monotonous tasks. I had no robot experience before. After programming training at EGS, I now create new programs myself and am thrilled with the technology.“

Besides the increase in efficiency, which was achieved very quickly thanks to the new automated process, Production manager Sabrina Löffler sees another important aspect in dealing with the shortage of skilled workers: „We have to offer dedicated employees challenging tasks and relieve them of monotonous tasks. In this specific case, we have succeeded in this in the best possible way.“

Contact

EGS Automation GmbH
vertrieb@egsgmbh.de
www.egsgmbh.de

Author: Heiko Röhrig
Date: 15.11.2022