

Reduction of cycle times to 30 Seconds at Zorn



SCARA robots speed up production

When it comes to pinpoint accuracy and strong lighting systems, Zorn is often involved. The German company has been making miniature bulbs especially designed for the medical sector for 50 years.

Perfect to the smallest detail

High-precision bulbs of this type require the highest levels of quality and reliability – down to the smallest detail. To meet the requirements of these exceptional products, highly complex fully-automated and semi-automated systems had to be developed and built specifically for production.

In addition to being extremely accurate, the robots needed to move as fast as possible to achieve the required throughput of the line.

A complex, delicate procedure

At the two manual workplaces, the bulbs for the lamps are inserted into specifically tailored frames, which are called boots. In the next step, the light filaments are inserted into the open bulbs from the top. The filaments themselves consist of only 0.1mm strong tungsten filaments and the connections for the operating voltage. These connections are fixed mechanically with a glass pearl.

Each boot contains 22 nests with one lamp each. The equipped boots then move into the robot cell via a lift. A laser scanner checks whether there is a bulb in every nest. Once this check is completed, the pre-assembled component is placed into a drum on the rotary table.

The piece is carried to the welding machine via the rotary table. There the bulb is joined to a separately supplied small glass tube, the so-called “pump”. An Epson SCARA robot extracts the glass bodies from the welding station with a rotary gripper.

The piece is then carried to another station for quality control. The lamp is scanned by two cameras perpendicular to each other, and it is checked whether the glass body was correctly welded and the light filament fits 100% correctly.

If the movement of the bulb into the lamp testing position in front of the cameras is inaccurate, the test results may be slightly distorted due to the deviating position, leading to a large number of rejected parts and lower system efficiency. The integrated Epson image-processing system, on the other hand, ensures precise results and minimum rejection.

Depending on the result of the last quality control, the robot places the lamps into the designated position from where they are transported to the next working step.

Zorn

The combination of Epson robots and vision systems mean that incredibly small components can be assembled reliably every time, while maintaining fast cycle times.

Volker Spanier

Head of Robotics - Epson

Key Facts

Zorn chose Epson's SCARA robots for their medical lightbulb production line, as they are both fast and accurate.

SCARA robots offer Zorn incredibly fast throughput, with cycle times as low as just 30 seconds in total.

The high precision of the system means minimum rejection of poorly assembled bulbs.

For more information, visit www.epson.eu

