



SAFETY IN ALL POSITIONS

Modern ABS and ESP systems decisively contribute to driving becoming increasingly safer. To guarantee problem-free functionality, the highest safety standards are already applied in the production of these systems – also in the processing of PUR cables.

PUR cables are ideally suited for ABS and ESP systems based on their properties.

Already in 1937, PUR (DIN designation for polyurethane) was discovered by Otto Bayer together with his team in the laboratories of Bayer AG. Since polyurethane has different properties (soft, elastic, hard, brittle) depending on how it's manufactured, providing a wide range of variation possibilities in the application, this discovery led to increased commercial interest in polyurethanes. In 2002, around 9 million tons of polyurethane

were consumed worldwide. Some of this found its way into the safety systems of the automobile industry.

The requirements

Nexans, a worldwide leading supplier in the cable industry, was looking for a fully automatic assembly system for processing PUR cables and found what it was looking for at Metzner.

The system should be completely PC-controlled so human error can be avoided

during the production sequence. All processing steps (printing, roughing, stripping, depositing or winding) had to be taken care of in one run-through and be designed for PUR cables having a diameter ranging from 2 – 14.5 mm and a length up to 25 meters. In addition, set-up times should be reduced and the processing speed increased with the new system.

The implementation

The cables to be processed are clamped in a

The Facts

Customer profile

Nexans is a worldwide leading supplier for the cable industry. The product portfolio ranges from cables for telecommunication to those for the automobile and shipping industries. With offices in 29 countries, Nexans employs 20 thousand people, including 450 researchers.

Requirement

In addition to numerous technical specifications, the following main requirements had to be met:

- Fully automatic processing of PUR cables up to 25 meters and 2 – 14.5 mm in diameter for ABS and ESP systems The processing steps: printing, roughing, stripping, depositing
- PC-operated system (for reducing sources of human error) and integration in the existing IT network Data taken from piece list software
- Increase in the processing speed
- Only one worker is required to operate the entire system
- Design, realization and commissioning of the system within four months

Benefit

Nexans is able to process all work sequences in one run-through with the assembly system for processing PUR cables for ABS and ESP systems. Thanks to the PC-based sequence, sources of error can be nearly ruled out. The previous set-up times could also be minimized and the processing speed increased.



Metzner DR 1000 dereeler. A cable reservoir ensures that material is continuously dispensed to the feed device and sag control. A thermotransfer printer labels the cable afterwards. Due to the PC control, the stamp doesn't have to be changed during labelling. The printer receives all data via the software and stamps the required information on the cable. This eliminates expensive set-up times.

Precise roughing

All cables are provided with contact plugs after processing on the Metzner system. The beginning and end of the cable are roughened to ensure problem-free fastening. The Metzner roughing station grinds the circulating cable in line with two pivoted diamond grinding wheels to the exact roughing depth.

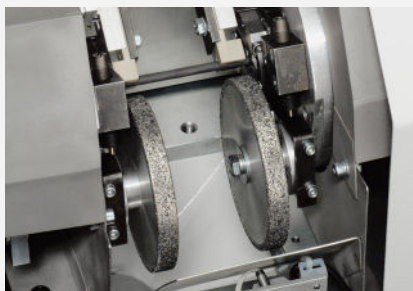
Exact cut

The outer sheath of PUR cables can expand

up to 700 percent. This only serves as a safety factor, however. When processing cable, it is therefore attempted to avoid expansion. In order to guarantee this during cutting as well, Metzner developed a customized variant of the Metzner AM 150/200 SVA. This machine has the property of clamping the PUR cable directly behind the matrix form knife at the right and left due to the offset feed. This way, the outer sheath is minimally expanded during stripping, thus optimising the stripping result. After the processing operation, the PUR cables are placed in a material stacker, or, for cables longer than six meters, wound up to form cable coils with an automatic winding machine.

Optimum cycle times

Based on the well thought-out structure, it is possible to move the processing station for optimising the cycle time. Thanks to this property, it's possible to produce a cable type without intermediate stops and with all work sequences (printing, roughing, stripping, depositing) in one run-through with very low tolerances in the length, printing and roughing positions, and at a higher processing speed. From the design to system commissioning, Metzner required four months.



Roughing station for PUR cables