QUICK, SUCCESSFUL AND ADVANCED

With the successful delivery and commissioning of an automatic cable assembly machine for a worldwide leading manufacturer of railway vehicles, Metzner has once again proven its expertise as a specialist for customized projects.

Material which is warehoused costs money. Money which could be saved in many cases. With an automatic cable assembly machine from Metzner, Siemens SGP has been able to manufacture cable harnesses for installation in trains and trams just in time and vehicle-specifically for some time now, without unnecessary warehousing space.

As one of the worldwide leading manufacturers of railway vehicles, Siemens SGP was looking for an automatic solution for producing cable harnesses for versatile railway vehicle manufacturing. With Metzner, they found the right partner who made the following demands on the system: The system must completely assemble all cords from 0.5 mm^2 to 16 mm^2, cut conductors to a length between 0.3 m and 35 m and then deposit them exactly positioned, resulting in a ready-to-install cable harness. In addition, the system must guarantee consistent computer-integrated production, i.e. integration of the system in the existing IT network. To operate the system, including all set-up work, only a single worker should be required. All applied procedures must fulfil the standards applicable for railway vehicles and be tested for a service life of 30 years by means of recognized testing methods.

Network integration

The automatic assembly machine with a total length of 48 meters (including the stacking table of 36 meters) is set up in an assembly hall for railway vehicles. The assembled

Metzner

The Facts

Customer profile

Siemens SGP is one of the leading manufacturers of railway vehicles worldwide. With its multifaceted new developments, like the underfloor railway vehicles for example, Siemens SGP has attracted international interest.

Requirement

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

- Complete assembly of all cords in the range from 0.5 mm² to 16 mm² for a complete tram train within one production shift
- Only one worker is required for the entire system operation – including all set-up work
- Consistent computer-integrated production, i.e. integration of the system in the existing IT network of the company and acceptance of the CAD-based project planning for production
- All applied procedures must fulfil the standards applicable for railway vehicles and be tested for a service life of 30 years using recognized testing methods
- Production and completion of the system within four months

Benefit

With the Metzner cable assembly system, Siemens SGP has had savings of an order of magnitude, which allows them to produce competitively, even at a high-wage site, thanks to set-up time optimisation and order -specific manufacturing.

cable harnesses are either directly installed in the railway vehicles in the hall or are wound up and delivered to other assembly halls. For optimum production, integration in the existing IT network is necessary. This way, existing CAD data can be imported and, in combination with special Metzner software, all data for assembly generated – with optimised set-up times and order-specific.

The implementation

The cables to be processed are fed into the automatic cable assembly machine by an electrically driven drum coiler. A cable reservoir with various sensors controls the coiling speed exactly according to the processing speed of the assembly system and constantly ensures tension-free material feed.

For the optimum adhesion of the subsequent colour markings and ink-jet labels, the cables are treated all-around with Corona in continuous operation. The use of two ink-jet printers with black and white UV-resistant ink guarantees the best colour contrast for every cable colour for good label legibility and the required durability and legibility for a period of 30 years.

Cutting and stripping

A cutting and stripping machine specially designed for such applications, which has a built-in ultrasound welding station, ensures precise cable cutting and stripping. With belt feeds, the cables are transported with a length precision of <0.5% and cut and stripped with program control.

Ultrasound welding

The ultrasound system used by Metzner also guarantees the desired result for cables having a cross section of 16 mm². This prevents the splicing of cables for the later assembly, which makes wiring much easier.

Position-exact depositing

After cutting, the cables are deposited exactly positioned by a 36 m long cable depositing system. The depositing positions selected by the program control are reached so precisely that a ready-to-install cable harness can be bound afterwards.

Finally, a cable coiler takes over the winding of the cable harnesses for simple transport to the railway vehicles.

Metzner Maschinenbau GmbH | Messerschmittstraße 30 | 89231 Neu-Ulm | Germany
Phone: +49 731 40199-0 | Fax: +49 731 40199-33
Email: sales@metzner.com | Internet: www.metzner.com