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Electrical Engineering / Electronics / Automation / Plastics Technology / Industrial Engineering / Fluid Technology

FULL AUTOMATION SETS NEW STANDARDS IN ENCAPSULATION

TARTLER GROUP implements an integrated system solution for cutting-edge encapsulation technology

For increased productivity and efficient production of large quantities, more and more electrical engineering companies are taking advantage of the possibilities offered by automated encapsulation. In order to serve these needs, the TARTLER GROUP has developed a complete solution consisting of a resin dosing and mixing system, a robot-assisted encapsulation station and an external refilling unit for a renowned manufacturer of plug connector and motor protection products. .

Michelstadt, April 2023. – Regardless of the quantities involved, grouting is a traditional encapsulation process used in the production of electrical and electronic components and assemblies. Circuit boards, transformers, controllers or sensors, for example, are coated with a synthetic resin coating or encased in a block of synthetic resin that offers electrothermal insulation and protection against splash water, dust and humidity. Two-component systems of polyurethane, epoxy resin or silicone are usually used for this purpose, which have to be processed according to defined parameters. Dosing and mixing are just as important as application and pouring of the free-flowing compounds. These requirements are fully covered by the portfolio of TARTLER GROUP, a leading medium-sized plant manufacturer based in Germany. When the group recently received an order from a well-known manufacturer of motor contactors and plug connectors to implement a fully automatic electric encapsulation station, a decisive factor for the award was the finely balanced interaction between the parent company – TARTLER GmbH – and its subsidiaries. The result was a modern complete

solution consisting of a flexibly controllable dosing and mixing system, a robot-assisted application system and a 2K refill unit that enables continuous encapsulation of already wired assemblies.

Precise dosing and mixing

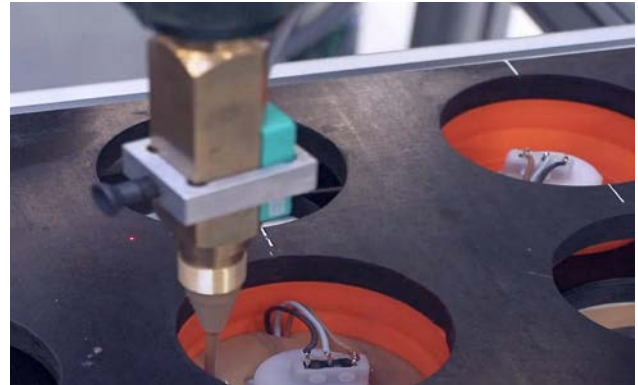
The dosing and mixing epicenter of this encapsulation station is a controlled PU system of the NODOPUR series with automated refilling. It has a volumetric flow meter for the A and B components and a Siemens PLC with color touch screen and allows automatic, variable control of the mixing ratio and output. The system ensures that the potting compound can be precisely



Implemented TARTLER GROUP companies: Fully automatic system solution consisting of dosing and mixing unit, encapsulation station and refilling unit.



The robotic cell of the encapsulation station has a pneumatic gate for moving a workpiece carrier in and out, sensors for sensing distances and positions, and windows that allow easy access to the system.



A 6-axis cobot precisely guides the mixing head with the exit nozzle over a mold carrier and identifies which positions are loaded with the components in the mold shells.

metered and has the desired properties when cured. It masters even the processing of resins in delicate mixing ratios and with high viscosity differences. Its range of functions includes permanent pressure and level monitoring, shot quantity control, recipe management, numerous safety features, and the use of rotating static mixers from TARTLER's injection molding line.

Accurate application of precise quantities

The resin mass produced in the NODOPUR is applied by a 6-axis cobot working in a booth (180 x 170 x 250 cm) with exhaust air extraction. It is connected to the dosing and mixing process by a control unit and guides the mixing head with the outlet nozzle – supported by a camera system – with high precision over a workpiece carrier fed through a pneumatic gate. In doing so, it recognizes which positions are equipped with components standing in mold trays and only allows the defined amount of synthetic resin to flow in there. As specified by the customer, certain areas of the components are left out of the potting compound.

Sensors for sensing distances and positions are located in the robot cell. Multiple windows ensure easy accessibility to all major system areas. For reasons of work safety, the cell is designed so that the potting process can only start when the booth is completely closed. On its front side there is space for a roller table for manual potting operations. For this purpose, another mixing head with tension balancer can be latched into the system. This allows small batches of special parts to be cast manually while the system is automatically processing the standardized series parts.

Continuous supply ensured

As the third component of the new encapsulation station, the TARTLER engineers integrated a refill unit located directly next to the dosing and mixing unit and the robotic cell. It ensures the continuous and process-reliable replenishment of synthetic resin and hardener from two 200-liter drums via an automatic control system. The unit includes pneumatic diaphragm pumps, suction lances and lifting devices.



The power units of the encapsulation station: A NODOPUR dosing and mixing system, a closed cell with robot-guided mixing and application head, and a refill station.



The refill unit of the new encapsulation station is located directly next to the dosing/mixing system, and robotic cell and ensures reliable replenishment of synthetic resin and hardener .

Several companies of the TARTLER GROUP were involved in the realization of the encapsulation station. TARTLER GmbH contributed the dosing and mixing technology, while SOMATA GmbH designed the robot cell with the 6-axis kinematics and various measuring optics for automated mixing head handling. The electrical design and programming of individual components as well as the overall system were delivered by ETP Walther GmbH. The development and implementation of the integrated solution are proof of the successful interaction of engineering services available within the TARTLER GROUP.

TARTLER GmbH and TARTLER GROUP

Dosing, mixing and filling technology for system and supplier services

TARTLER GmbH has its headquarters in Michelstadt in the Hessian Odenwald. The medium-sized family business was founded in 1981 and has been managed by Udo Tartler and Sandra Tartler-Herbst since 2008. It is part of the TARTLER GROUP, which also includes ETP Walther GmbH, ZT Odenwald GmbH, SOMATA GmbH and the foreign subsidiary TARTLER China (Shanghai) Co. Ltd., and TARTLER India Pvt. Ltd.

The TARTLER GmbH in Michelstadt is the parent company of the TARTLER GROUP and has been one of the leading German plant manufacturers in the field of dosing and mixing technology since 1981. As a specialist for special designs for the application of polyurethane, silicone and epoxy resins, TARTLER GmbH realizes customer-specific dosing, mixing, filling and application systems for the processing of synthetic resins in research, indus-

try and trade with a high degree of customer orientation and in close cooperation with well-known material manufacturers.

ETP Walther GmbH is also headquartered in Michelstadt and is considered a specialist for electro-technical planning, electrical design as well as control engineering and switch cabinet construction (also certified according to UL 5008 A). The company provides equipment installation and programming from one single source. The equipment and assembly of dosing and mixing systems as well as the realization of control systems and switch cabinets for conveyor, painting and fountain systems have been part of the core business since 1987.

ZT Odenwald GmbH based in Erbach, produces as a specialist in machining technology, small and medium-sized series as well as pro-

totypes, individual parts and special parts using state-of-the-art lathes and milling machines. It is a system and component supplier for TARTLER GmbH, but with its focus on the realisation of high-quality and geometrically complex metal components for use in fluid technology, it is enjoying growing demand from renowned machine, plant and apparatus manufacturers.

SOMATA GmbH is also located in Michelstadt and was founded in order to realize special machines related to dosing and mixing technology. As a system manufacturer of assemblies – with the focus on automation of handling devices – SOMATA GmbH is a system supplier for TARTLER GmbH and others. The planning and manufacture of these assemblies, as well as the implementation of granted patents are also business areas.

Note for editors: Text and pictures are available at www.pr-box.de/



Further information about the company and its product portfolio can be found on our website:

- ▶ <https://www.tartler.com/en/2021/07/30/image-film-2021/>
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