

# Multi-Layered

## Manufacturing of Multiple Component and Hybrid Parts with SmartWire



Hybrid parts made from metal and plastic are used in a wide range of applications in both the industrial and the private sector. The manufacture of high-quality plastic metal components requires extensive know-how. For example, the in-mould insulation of rotors and stators of electric motors involves very demanding process requirements. On the one hand, the insulation must be as thin as possible; on the other hand, increased safety requirements mean that the material must be applied without any gaps, in order to exclude the possibility of short-circuits. The Söhner Group has perfected the in-mould insulation process. Söhner uses Moeller motor starters with SmartWire to implement a monitoring system for the production of enclosures for electronic controls.

### High-quality development processes

The Söhner range of services includes the complete design work for integrating customized geometries, in addition to the plastic-compatible design of individual components and modules. It is therefore ensured that the company's many years of experience in the processing of all typical performance plastics are incorporated into every single part, right from the first development steps. The range of services encompasses the manufacture of prototype tooling, stack tools, 3 plate and hot runner tools, multi-component tools, as well as reel-to-reel overmoulding tools and specialist tooling for the overmoulding of rotors and stators. All the current reinforced and unreinforced technical plastics are processed, along with high performance polymers and plated metals. A wide range of customized solutions are developed, planned and designed in the company's own tool and special machine construction unit. This also includes electrical engineering and control cabinet construction.

### Demanding core business - the automotive industry

The automotive industry is a key business sector for the Söhner Group. Several special plastic hybrid parts are manufactured on complex production systems – from motor management, ABS braking systems, air conditioning to fuel preparation, right through to emission or energy management. For example, a customer required a monitoring system for the production of enclosures





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## INFO

 **The Company:** www.soehnergrou.com

 **Products:** "Plug & Work" for motor starters  
SmartWire, MSC motor starters

 **Quicklink ID: MS1911** [www.moeller.net]

The Söhner Group is an innovative family business that operates in plastics technology. In addition to its concentration on automotive plastics, the company is also involved in the areas of household technology, plumbing, electronics, electrical engineering and medical technology. Founded as Walter Söhner GmbH in 1966 in Schwaigern, Germany, the Söhner Group has 6 locations

worldwide in 2008. In Germany with the Walter Söhner GmbH & Co. KG, Steffen Söhner GmbH, in the United Kingdom with the Waldon Ltd., in the USA with GRW Technologies Inc., in Switzerland with the addex ag and in China with the Soehner Technology (Suzhou) Co., Ltd. The Söhner Group currently has around 1,200 employees and has a total production area of 57,000 m<sup>2</sup>.

with an integrated interface connector. All the process steps are monitored to achieve 100 percent quality assurance.

In the first production process, an injection moulding machine is fed automatically with punched parts that are overmoulded with plastic and provided with two seals in the same tool. The produced parts are automatically placed on workpiece carriers and undergo an extensive check.

The first examination is a seal integrity test. Three high-performance cameras then continuously compare the images of the seals with the set values. This is followed by a continuity and short-circuit test of the overmoulded contacts. The test objects then undergo a height measurement in another station using analog value processing. The station-related test object data is then passed on via an identification system to the PLC controller for evaluation.

### Modular testing system with SmartWire

A modular design was chosen so that the testing system could be adapted more easily in future to different processes. This also applied to the system control. All motor starters for the drives are controlled via SmartWire. SmartWire replaces the cumbersome

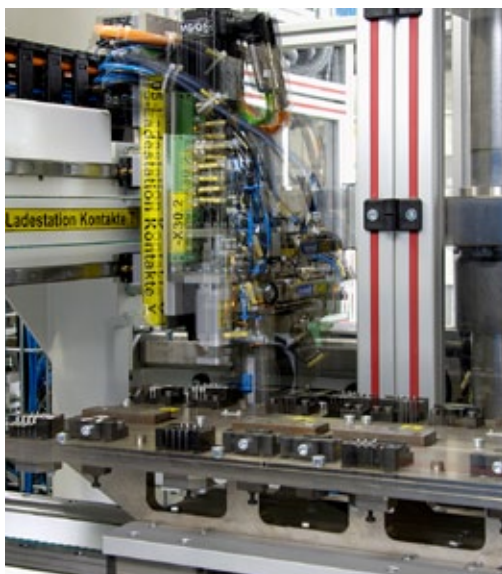
control wiring between motor starters and the I/O level with pluggable, pre-assembled connecting cables. The I/O level is now therefore located directly at the motor starter. In order to make a motor starter SmartWire-compatible, the user simply plugs an additional SmartWire module onto the standard contactor. The primary main circuit connection is implemented cost-efficiently using three-phase commoning links or busbar systems. The SmartWire connection cable provides the contactor actuation and indicates the switch position of the contactor and the motor-protective circuit-breaker.

Up to 16 SmartWire-compatible DOL or reversing starters up to 15 kW can be connected with a gateway to which the control voltage is also fed. For systems with more than 16 starters users can simply combine several gateways. After the SmartWire installation is completed, all that is needed to address the motor starters is to press a button on the gateway so that the addresses are assigned automatically in series.

The SmartWire motor starters eliminate the need for PLC I/O modules as well as complex and error-prone control wiring otherwise required. A modular switching cabinet design is also future proof since it allows the motor starters to be adapted easily at any time when system requirements change.

### Highly automated

The fully automated production monitoring system ensures 100% quality control



### Without control circuit cabling

SmartWire brings efficiency to the switching cabinet



## CONCLUSION

"Product cycles are becoming increasingly shorter, especially in the automotive industry. This requires us to be able to adapt our production and testing equipment quickly. The simple and modular switching cabinet design made possible with SmartWire is an ideal solution, since we save costs and respond flexibly to customer requirements," Martin Klein from the electrical engineering department at Söhner explains. "The excellent cooperation between our electrical wholesaler Otto Klenk, Heilbronn, and the local Moeller branch were decisive factors in choosing SmartWire technology for this project."

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