

In-mould monitoring

The Portuguese division of Schneider Form GmbH have challenged themselves with an ambitious R&D project — the development of an in-mould monitoring system. Read on to learn which advantages the recently developed system has to offer.

SF Moldes S.A. is the Portuguese division of the Schneider Form GmbH Group, a worldwide designer and manufacturer of high-quality precision moulds for the injection-moulding of polymeric materials required to meet the demands of major brands, especially in the automotive industry, according to the company. The company invests in R&D activities as a driver of innovation and product and process differentiation, with the goal of meeting customer needs. To meet this rising demands, SF Moldes S.A. has carried out the R&D project, i-M2S 4.0 — “In-Mould Monitoring System 4.0”.

Recent years have seen increased development and availability of a wide range of sensory media with potential theoretical applicability in the precise measurement of key variables and parameters in process quality control and moulding structure (e.g., temperature, pressure, vibration). However, to date, such sensory solutions have not been integrated into a single monitoring and storage solution, with the ability to present critical information

in the injection moulding process of polymeric materials in a structured and intuitive way, the company explains.

SF Moldes S.A. has developed a monitoring and data storage system with dedicated instrumentation that integrates the moulding tool, enabling:

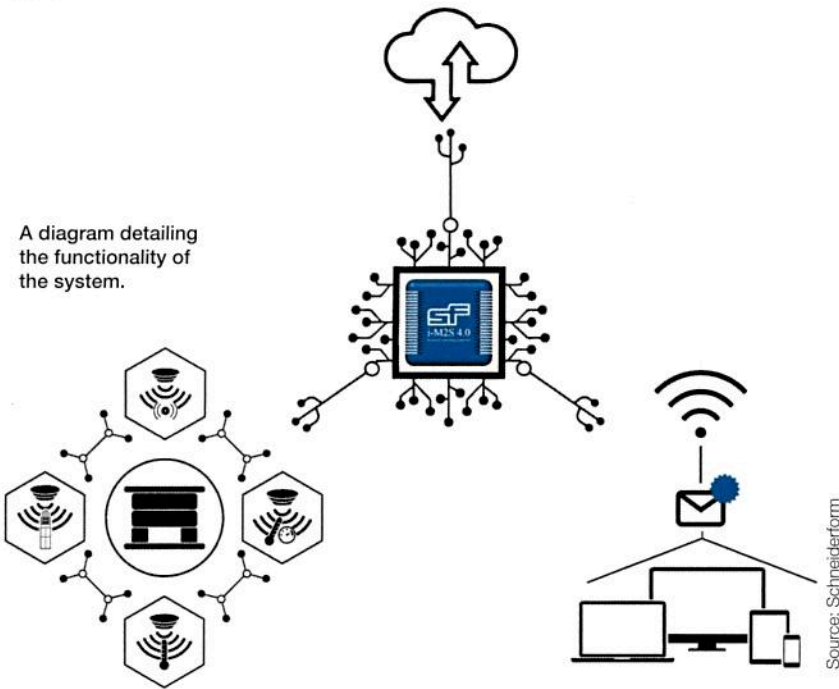
- the continuous diagnosis of the moulding tool operability level by monitoring the quality of the cyclic processing;
- the continuous diagnosis of moulding tool failure during service;
- the early identification and establishment of preventive maintenance actions on the moulding tool, based on continuous monitoring;
- the endogenisation of new knowledge that will allow the manufacture of new and evolved moulding tools, which will stand out for the superior “printed” quality of the moulded part and for the operability and durability of the mould.

The research and development activities within the project aimed to achieve an innovative monitoring and data storage system (Figure 1). The com-

The entire project was a response to the rise of sensory technology. However, this had not been incorporated in a single system.



Source: Helloquence (Unsplash)



pany goes on to explain that this system allows for the control of all parameters and variables that, directly or indirectly, influence the injection moulding process of polymeric materials and result in numerous gains, such as:

- efficiency gains through rigorous and precise control of the moulding process, leading to significantly lower production downtime and associated costs, due to the higher repeatability that will be ensured;
- gains in material waste reduction, given that the developed solution has a higher degree of accuracy, efficiency and repeatability, substantially minimising non-conformities in the part production process of the mould;
- performance gains, as the solution will provide a significant advantage over other existing solutions by overcoming all market gaps;
- gains in the extension of mould durability, considering that the monitoring system promotes permanent monitoring of the tool condition, alerting the user company to act timely and preventively in case of technical problems through predictive capacity.

As a result of the considerable technical-scientific challenges that the team of SF Moldes S.A. set out to overcome, an R&D team from the Department of Mechanical Engineering of the University of Aveiro (Portugal) was chosen to participate in the project, thus enhancing the dissemination and the enrichment of technical-scientific know-how in the various areas that the project addresses.

The project promises to enable the transition to an eco-friendly society and economy through eco-innovation, significantly contributing to a sustainable and highly efficient material injection moulding process, promoting resource efficiency through digital systems.

In view of the above, the project under consideration promotes the creation of an innovative, state-of-the-art mould solution, combining a complex monitoring system integrated into the polymeric material injection moulding tool, the company explains.

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schneider-form.de

Source: Schneiderform

ETMM

R&D IN BRIEF



Source: Anika Langebeck Bias GmbH

3D laser metal deposition

The MAPEX Center for Material and Processes at the University of Bremen has been granted 2.2 million euros by the German Research Foundation for the development of a 3D laser metal deposition device for high throughput development of new alloys and composite materials.

uni-bremend.de/en/mapex

Taming ultra-fast electrons with light

Physicists from the University of Luxembourg, together with European researchers, have exploited light to control

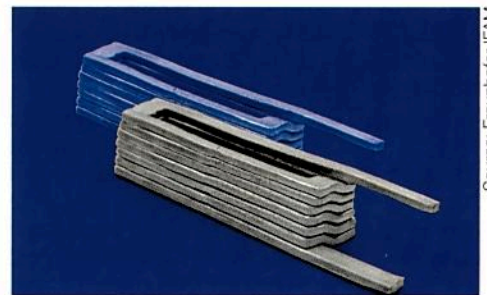
the motion of electrons in a metallic nanocircuit. This could have major implications for the future of data processing and computing.

uni.lu



Source: University of Luxembourg

Die cast aluminium coils for efficient electric motors



Source: Fraunhofer IFAM

Researchers at Fraunhofer IFAM have developed a technological casting process that enables the production of lightweight windings made of aluminium with a high slot fill ratio. A study has now shown that aluminium coils increase the continuous output of electrical machines compared to copper windings, reduce the operating temperature and at the same time save weight and raw material costs.

ifam.fraunhofer.de