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Linde and Wirth break new ground together in physical foaming with CO₂

Unterschleissheim, August 2021 - Linde and plastics technology specialist Wirth Werkzeugbau GmbH cooperate in the area of physical foaming with carbon dioxide (CO₂): Together, the two companies are testing new ways of optimising and applying the PLASTINUM® Foam Injection Moulding process developed by Linde with cooperation partners under practical conditions. On 23 and 24 September, the results of the cooperation will be presented on an industrial scale as part of an Innovation Day at Wirth in Helmbrechts, Upper Franconia.

Wirth Werkzeugbau GmbH, with around 70 employees, designs and manufactures plastic tools and moulds weighing up to 40 tons on a production area of around 4,000 m². As a leading supplier in this field, the company is also broadly positioned in terms of process technology with its own technical centre. Since 2011, one focus has been on designing solutions for physical foaming, which today account for over 50 percent of the tools manufactured at Wirth.

The nitrogen-based process used up to now had proven itself, but was generally expensive and therefore often not economical, especially for smaller and medium-sized injection moulding machines. For this reason Managing Director Werner Wirth set out to find a powerful alternative that was achievable with today's state of the art. According to the tool specialist, this should be "more cost-efficient, less complex and above all more flexible, because we wanted to offer our customers a solution for every machine in the future".

The innovative PLASTINUM® Foam Injection Moulding process, which uses carbon dioxide (CO₂) for physical foaming, proved to be the ideal solution for Wirth's requirements.

PLASTINUM® Foam Injection Moulding: physical foaming with CO₂

With PLASTINUM® Foam Injection Moulding, dried plastic granulate is already impregnated with CO₂ under pressure before being fed into the injection moulding machine. The gas diffuses into the granulate. The new process thus combines the simple handling of chemical foaming processes with the positive effects of physical foaming.

In this way, considerable material and weight savings can be achieved. In addition, the process enhances product quality by ensuring high dimensional stability and functionality of the foamed injection moulded parts.

The PLASTINUM® Perfoamer production cell from system partner ProTec Polymer Processing GmbH is a central element. It makes the production process faster and more flexible, as all the process equipment required for PLASTINUM® Foam Injection Moulding can be combined with any machine on the market via plug & play,



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regardless of the manufacturer, and can be easily integrated into existing injection moulding systems. In the current advanced version, the system also includes a pressurised buffer tank. The buffer tank ensures intermediate storage of the impregnated granulate and thus prevents the CO₂ from diffusing out. This ensures consistently high product quality throughout the entire process.

Cooperation with Linde, KIWM and ProTec

As part of the current cooperation, Linde provides a PLASTINUM® Perfoamer of the latest generation. Together with the Kunststoff-Institut Lüdenscheid (KIWM) and ProTec as further development partners, the device and the process have been tested under laboratory and practical conditions.

The result shows that PLASTINUM® Foam Injection Moulding is indeed a convincing alternative to conventional physical foam processes.

Captions:

Source for all images: Linde GmbH



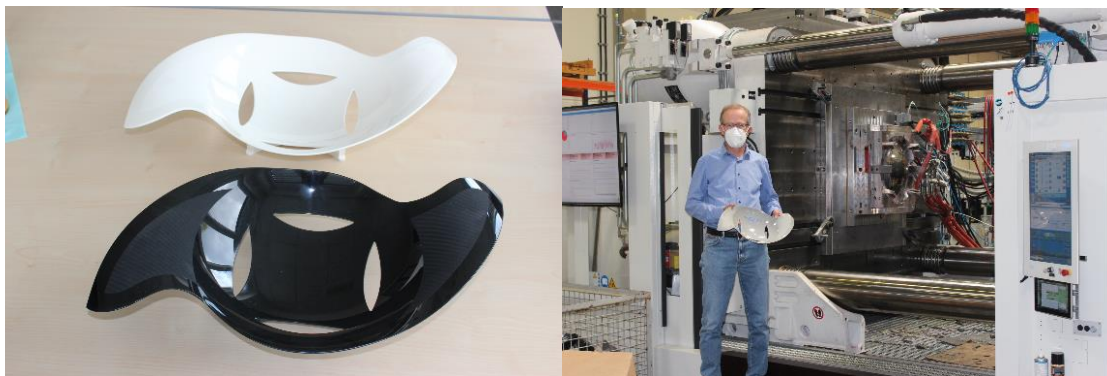
Linde and plastics technology specialist Wirth Werkzeugbau GmbH are cooperating on the subject of physical foaming with carbon dioxide (CO₂) and are jointly testing the PLASTINUM® Foam Injection Moulding process developed by Linde

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PLASTINUM® Foam Injection Moulding combines the easy handling of chemical foaming agents with the positive effects of physical foaming. In the current advanced version the system also includes a pressurised buffer tank for maximum process stability.



The components foamed with PLASTINUM® Foam Injection Moulding are characterised by their reduced weight and yet high surface quality.



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About Linde

We live our mission of *making our world more productive* every day by providing high-quality solutions, technologies and services which are making our customers more successful and helping to sustain and protect our planet.

The company serves a variety of end markets including chemicals & refining, food & beverage, electronics, healthcare, manufacturing and primary metals. Linde's industrial gases are used in countless applications, from life-saving oxygen for hospitals to high-purity & specialty gases for electronics manufacturing, hydrogen for clean fuels and much more. Linde also delivers state-of-the-art gas processing solutions to support customer expansion, efficiency improvements and emissions reductions.

For more information about the company and its products and services, please visit www.linde.com.

About Wirth

Under the motto "Everything from a single source", Wirth Werkzeugbau GmbH designs and manufactures tools and moulds of up to 40 tons on a production area of approx. 4,000 m². Founded in 1989 in Oberweißenbach near Helmbrechts in Upper Franconia, Wirth Werkzeugbau GmbH has developed into a renowned medium-sized family business with around 70 employees. State-of-the-art machinery, enthusiasm for new technologies and a passion for tool and mould making form the basis of their success.

For more information about the company and its products and services, please visit www.werkzeugbau-wirth.com.

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