

PRESS RELEASE

FRIMO Innovative Technologies - Back to JEC World 2024

Lotte - January 15th, **FRIMO Innovative Technologies focuses on delivering a perfect technology fit to individual customer demands. This includes consulting, manufacturing technology and automation solutions for the production of high-class plastics and composite components.**

During the JEC World which will take place in Paris from March 5-7, 2024, FRIMO Innovative Technologies will present its latest developments for a complete range of tooling and machinery equipment, including PU Processing, Flexible trimming, Punching, Pressing/Forming, Thermoforming, Laminating, Edge Folding as well as Welding and Joining. The offering also includes all necessary upstream, intermediate and downstream process steps.

Customers will be accompanied from start to finish from the early development phase until series production and After Sales Service. FRIMO Innovative Technologies is also the right contact for companies that want to think outside the box and implement innovative, sustainable product ideas for newly developed materials.

Wet compression molding

To produce fiber-reinforced structural components in automobiles, FRIMO Innovative Technologies offers fully automated systems for wet compression molding of monolithic and sandwich components. In this process, dry continuous fiber layups or fabrics are impregnated with a reactive resin outside the press, then brought into the press and consolidated there, where the matrix materials cure.

The lower process pressures compared to RTM make it possible to combine the fiber composite structures in the pressing process with sandwich cores, for example made of foamed polyurethane or polyethylene cores, or paper honeycombs in a single step. In addition, more cost-effective tools can be used and cycle times can be significantly reduced. Another advantage WCM has over RTM is the elimination of three-dimensional preforming of the fiber structures in advance.



Joint project “LightMat Battery Housing”

The trend towards electric cars leads to a strong focus on the whole battery package. The aim of the joint project LightMat Battery Housing (EFRE-0801511) is to develop functionalized, unidirectional fiber-reinforced semi-finished products for high volume production of highly stressed lightweight plastic battery housings. For the battery housing, this translates to a significant weight reduction compared to today's e-vehicles with maximum functional integration in terms of stiffness, strength, EMC shielding, fire protection and process flow. FRIMO is contributing with its expertise in developing special tooling and process technology for UD and D-LFT Tapes.

UD-tapes are continuous fiber-reinforced thermoplastics that offer the most mechanical properties in fiber direction. Direct long fiber thermoplastics (D-LFT), however, provide more design freedom because of their good flow behavior. When both are combined and metal inserts are added, a new degree of freedom is reached and the lightweight potential for hybrid structures can be better utilized. Combining different materials creates special requirements for tooling. FRIMO has developed a special tool concept for this. In this concept, the pre-heated, compressed UD tapes (tailored blanks) along with the D-LFT strands are placed in the tool cavity and compressed with precision-controlled advancing pins. The advancing pins in the FRIMO Tape-D-LFT tool drape the "tailored blanks" and form the rib structure cavity to be locally overflowed with D-LFT. The additional tool closing movement presses the D-LFT into the ribs. The FRP/metal mixture makes weight savings of up to 25% possible compared to a steel construction, with a cycle time of less than a minute. This doesn't just turn into weight savings, but also time and money savings.

New hybrid tool technology in the joint project “Hydrun”

The demand for highly stressed, complex-shaped hybrid lightweight structural components is constantly growing. Light metals with their high specific strengths offer decisive advantages, but these cannot be fully exploited in monolithic construction. For this reason, the use of light metal/thermoplastic composites or corresponding hybrid components is increasingly becoming the focus of product and process development. More resource-efficient processes therefore need to be developed for the hybridization of lightweight structural components. The technological goal pursued as part of the project was to combine the individual processes of die casting and injection molding and adapt them to each other to such an extent that, for the first time, metal die casting and plastic injection molding can be combined inline. The functionalization of the light metal component takes place directly in a new type of hybrid tool system technology, with which hybrid material composites



and structures of high load-bearing capacity and durability can be realized on one system. (HyDrun 03XPO383E)

Lightweight solutions by FRIMO Innovative Technologies offer project specific advantages, e.g. cost saving, reducing of CO2 footprint/emissions, improved energy efficiency, material saving, simplified application or production process, integration of functions, bundling of technologies and reduction of production cycles and assembly times. FRIMO Innovative Technologies will support customers to bring their ideas into production.

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