

IMPROVING PRODUCT AND ENVIRONMENTAL PERFORMANCE, SAVING MANUFACTURING COSTS

Screw manufacturer baier & michels (b&m) presents new fastener technology solutions that are geared to the high demands of plastics processors.

Material mix, cost efficiency, sustainability – plastics processing companies sometimes have to strike a balance between conflicting challenges. When it comes to component joining technologies which are suitable for plastic, direct screwing is one of the established solutions. This reduces the number of work steps because, for example, embedding an insert is no longer necessary. The forming process of the direct screwing does not produce any chips. It can also be disassembled non-destructively to enable not only repairs but also separation and recycling of the various materials by type. “It makes almost no difference,” said Maxim Ort, application engineer at screw manufacturer baier & michels (b&m), “which materials the plastic is filled or reinforced with – with one major exception”: In high-strength materials with a carbon fiber content of 15 to 50 percent, direct screwing solutions are generally considered unsuitable, according to Ort. “The method of choice for CFRP components was therefore primarily non-releasable joining methods such as adhesive bonding.”

b&m has now succeeded in developing a suitable direct screwing solution: b&m-CARBONPLAST® is designed for carbon fiber reinforced plastics. Through using a special steel to manufacture the screw, it is possible to make direct contact with the carbon fiber without a corrosion reaction. Moreover, the thread crests are resistant to the abrasive wear of the fibers. The b&m technicians have also adapted the thread geometry to promote the material flow and to avoid radial stresses that could lead to delamination effects.

Speaking about the market response, Jana Tischler, Head of Sales New Business at b&m, said: “Our customers from the injection molding segment, who in turn are producing for automotive, furniture or medical technology manufacturers, among others, have responded extremely positively to b&m-CARBONPLAST®.” The Lehvoss Group in Hamburg, a producer of carbon-reinforced thermoplastics, reports that it has extensively tested the direct screwing system. Eric Folz, Market Development Manager at Lehvoss, concludes: “Screwing our materials using the b&m-CARBONPLAST® is a straightforward and reliable process.”

Another technology that baier & michels considers to be process-reliable is one that sales expert Jana Tischler considers an „intelligent alternative“ to turned parts production: “With ‚b&m-ECCO TEC®‘, whose name stands for Ecological Coldforming Technology, conventional

long-turned parts with different external contours can be made precisely, quickly and resource-efficiently – without cutting.” According to Tischler, the principle of forming instead of machining ensures short process times and high output quantities of machine-made parts. “At the same time, our process reduces both manufacturing costs and the carbon footprint.”

One product that can be manufactured with “b&m-ECCO TEC®” is, for example, a threaded bolt that is suitable for plastics: The b&m-REPTO® B can be inserted via ultrasonic embedding, overmolding and heat embedding. Jana Tischler explains: “Here, cold forming enables the material to be used more efficiently and the thread strength to be increased further.”



Suitable for forming threads in CFRP materials: The b&m-CARBONPLAST® direct screwing system is made of a corrosion-resistant austenitic steel. Photo: b&m



More sustainable thanks to “b&m-ECCO TEC®” forming technology: The threaded bolt b&m-REPTO® B features an impressive one hundred percent material utilization, high strength due to strain hardening and uninterrupted grain flows. Photo: Shutterstock / b&m