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Battery Systems manufacturing processes: comparing injection molding to compression molding

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The Kautex Pentatonic Battery System

As vehicles grow in complexity, their components and systems must evolve to work in concert. The Pentatonic Battery System answers this challenge - a full battery system integration with thermal management capabilities. Unlike other steel and aluminum battery housings (which can be heavy and limited in freedom of design) the Pentatonic Battery System offers a customizable, lightweight solution in either thermoplastic composite or composite metal hybrid. Our system can be utilized in electrified vehicles, from full hybrid to full battery electric vehicles.

Using reinforced materials and integrating structural elements directly into our injection and compression molding processes, we are able to eliminate timely assembly steps. This “one shot” process means fewer secondary operations, such as welding and riveting, resulting in shorter cycle times than our steel and aluminum counterparts, while offering better leak-tightness.

One common question that comes from this is: what is the difference between injection and compression molding?

Injection molding

Injection molding involves pelletized plastic resin that are fed into an extruder which utilizes heat and pressure to create molten plastic. The molten plastic is then injected into a mold where it fills the cavity to form the shape, and then is cooled to create the final product. Injection molding is ideal for forming complex parts and shapes with fast cycle times.

At Kautex, we utilize fiber-reinforced plastics like uni-directional profiles and incorporate glass fiber reinforcement sheets to meet the strict requirements for FHEV and PHEV battery systems with a length of up to 750mm.

Compression molding

Compression molding utilizes the same extrusion process as mentioned above but the extruded thermoplastic material called a “charge” is placed into the mold with a robot. The heated mold is then closed under immense hydraulic pressure, which compresses the charge causing the material to spread throughout the mold and forming the part. Similarly, to injection molding we can realize short cycle times for high-volume applications as common in the automotive industry.

Compression molding gives us the opportunity to integrate continuous fiber reinforced structures into the molding process. This enables us to achieve the structural requirements associated with PHEV/BEV systems with a part length bigger than 1150mm.

Interested in learning more about Kautex’ lightweight battery enclosures for the EV segment?
Email batterysystems@kautex.textron.com

ABOUT KAUTEX

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Mehr als 6000 MitarbeiterInnen, 30+ Standorte, 14 Länder - Das sind wir. Wir sind ONE Kautex.

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