

Ameridrives

Bauer Gear Motor

Bibby Turboflex

Boston Gear

Delevan

Delroyd Worm Gear

Deltran

Formsprag Clutch

Guardian Couplings

Huco

Jacobs Vehicle Systems

Kilian

Kollmorgen

Lamiflex Couplings

Marland Clutch

Matrix

Nuttall Gear

Portescap

Stieber

Stromag

Svendborg Brakes

TB Wood's

Thomson

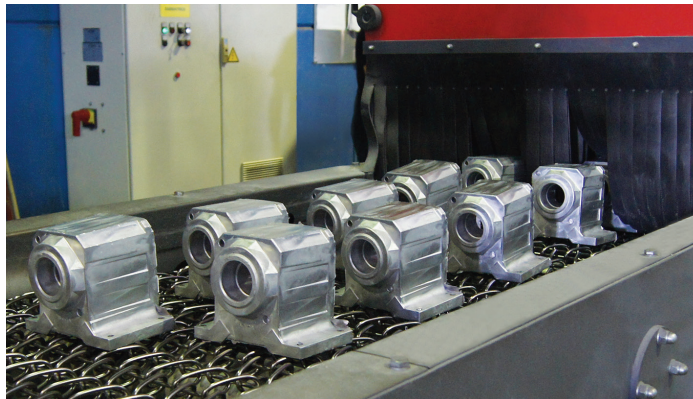
Twiflex

Warner Electric

Warner Linear

Wichita Clutch

Aluminium Die Casting Some Light on Its Value



Aluminium Die Casting Some Light on Its Value

Aluminum is the second most widely used metal globally thanks to its versatility, which makes this material popular among various industries. In particular, the metal is recyclable, lightweight, durable, resistant to corrosion, ductile and malleable. By leveraging die casting manufacturing processes, industries can further maximize the benefits of using aluminum and gain a considerable competitive advantage.



Aluminum is the second most widely used metal globally thanks to its versatility, which makes this material popular among various industries.

Pierluigi Buffagnotti, Production Manager at Aluminium Die Casting, looks at the strengths and challenges in making the most of aluminum die casting.

Cold chamber die casting is a fast and economical manufacturing process for the high-volume production of metal parts. This process liquifies aluminum - or any of its alloys - in furnaces, transfers it into a cold chamber and subsequently injects the metal into designated molds or dies. These are designed and created with exact specifications in order to obtain products that can fulfil the specific application by means of defined shapes and attributes.

Unlimited Design Possibilities for Metal Parts

The greatest capability offered by aluminum die casting processes is their ability to create parts of any shape in a highly accurate manner by means of suitable molds. More precisely, industries can benefit from fully customizable mold designs that deliver products with negligible dimensional variations.

The design possibilities are limitless as aluminum die casting can produce parts with weights ranging from a few grams up to tens of kilograms. In addition, this technique supports complex shapes that combine multiple functions in one uniform object.

Nonetheless, particular attention should be given to any angles within the mold. More precisely, draft angles should be carefully designed and undercuts should be avoided, as they can hinder the removal of the end product from the mold.

In order to address this issue, Aluminium Die Casting, a brand of Altra Industrial Motion Corp., offers advanced insights into what constitutes the optimal design for die castings. Experts check the product design provided by the customer and develop a suitable mold design. If necessary, variations in product design are suggested to facilitate the extraction of the product.

Deliver Consistently High-Quality Castings

Another key aspect that Aluminium Die Casting takes into account to deliver high-quality metal parts is the presence of air during the injection of aluminum. This is a common issue in die casting, as it causes defects and inhomogeneities within the object's microstructure. Therefore, the company regularly performs advanced computational fluid dynamics (CFD) simulations, porosity analysis and thermal imaging during the mold design phase to minimize the likelihood of trapped air and ensure homogeneous castings. In addition, vacuum systems are in place during the casting process to remove any remaining air, giving Aluminium Die Casting's customers further assurance about the quality of its products and solutions.

More Than Casting

Aluminum die casting also opens up new possibilities in terms of product wall thickness, which can reach extremely low values. For example, Aluminium Die Casting can produce metal parts with thicknesses as low as 2 mm with its current equipment. As a result, it is possible to build lightweight metal structures.

This aspect is particularly advantageous for the automotive, transport and aerospace industries, which can improve the fuel economy of their vehicles by replacing heavy steel structures with lighter, yet equally strong aluminum counterparts.

The ability to fine-tune dimensions on such a scale also means that die cast surfaces tend to be smoother than most other casting production methods, offering near net shaped engineered parts. While many metal components are used “as cast”, there may be special applications that require particular mechanical or surface properties. In these cases, heat treatments or surface finishes can be included.

In order to provide its customers with a single point of contact, Aluminium Die Casting offers a broad range of services that complement the die casting offering. More precisely, the company offers heat and surface treatments, such as painting, varnishing and impregnation, as well as CNC machining that can further optimize the quality and performance of end products. For example, in addition to its 10 high-pressure die casting machines, Aluminium Die Casting boasts a total of 19 computer numerical control (CNC) machines.

Thus, the company not only provides an aluminum die cast raw part but a completely finished high-quality and reliable product to its customers.

At the Forefront of Innovation

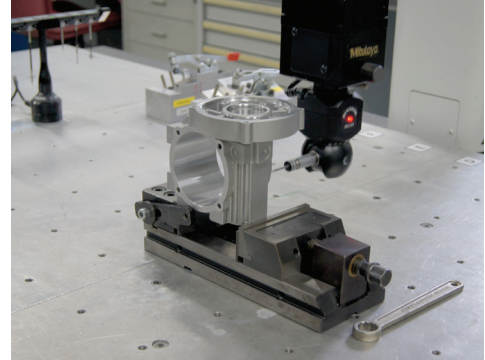
Die casting is an efficient, fast, reliable and reproducible method for the “just-in-time” production of high-quality metal components. The latest advances in industrial automation, process control and robotics can further maximize the capabilities of this production method, as they provide greater actionable insight into the manufacturing processes.

Aluminium Die Casting is committed to total quality management practices to deliver complete solutions that comply with environmental regulations as well as energy-efficient production processes. According to its strict quality control and quality assurance systems, the company performs in-line and off-line product testing within its in-house facilities.

In addition, each die casting machine is equipped with robotic arms that make it fully automated and independent. Similarly, robots are responsible for loading components on several of Aluminium Die Casting’s CNC systems.

Such an automated factory floor not only improves product quality and reproducibility, but also results in shorter production times that can substantially help customers to receive their metal parts quicker and in a more economical manner.

Thanks to these cutting-edge solutions and its extensive expertise, Aluminium Die Casting offers futureproof technologies for the production of metal parts.



Aluminium Die Casting follows strict quality control and quality assurance protocols to deliver high-quality products.



Aluminium Die Casting allows customers to create parts of any shape in a highly accurate and reproducible manner.

Viale Veneto, 48
35020 Saonara (PD) – Italy
+39 049 8798011
+39 049 8790141 (fax)
www.aluminium-casting.com

For a complete list of our
global sales offices visit:
altramotion.com/contactus

About Altra Industrial Motion

Altra is a leading global designer and manufacturer of quality power transmission and motion control products utilized on a wide variety of industrial drivetrain applications. Altra clutches and brakes, couplings, gearing and PT component product lines are marketed under the industries' most well known manufacturing brands. Each brand is committed to the guiding principles of operational excellence, continuous improvement and customer satisfaction. Highly engineered Altra solutions are sold in over 70 countries and utilized in a variety of major industrial markets, including food processing, material handling, packaging machinery, mining, energy, automotive, primary metals, turf and garden and many others.

Altra's leading brands include Ameridrives, Bauer Gear Motor, Bibby Turboflex, Boston Gear, Delevan, Delroyd Worm Gear, Deltran, Formsprag Clutch, Guardian Couplings, Huco, Jacobs Vehicle Systems, Kilian, Kollmorgen, Lamiflex Couplings, Marland Clutch, Matrix, Nuttall Gear, Portescap, Stieber, Stromag, Svendborg Brakes, TB Wood's, Thomson, Twiflex, Warner Electric, Warner Linear and Wichita Clutch.