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Future trends in automotive sector behind die-casting boom

Review: Turbulent times

For the German die-casting industry, 2018 began with high capacity utilization and euphoric future prospects. However, in the course of 2018, especially in the second half, the problems being experienced by OEMs pushed production figures down below the level they were in 2017. Typical problems were obstacles to approval under the WLPT standard (worldwide harmonized light vehicles test procedure), which substantially reduced call-off figures.

Status quo: stable situation/dynamic investments

In the first eight months of 2019, German die-casting foundries were able to maintain the high level of the previous year. At the same time, European passenger car registrations were down by more than 3%. This is an impressive illustration of the outstanding performance of German die-casting foundries. The production forecast for 2019 can be broken down as follows:

- 90% aluminium die casting	648,000 t (432,000 t)	2018: 616,740 t
- 2% magnesium die casting	16,500 t (11,000 t)	2018: 17,921 t
- 8% zinc die casting	58,500 t (39,000 t)	2018: 59,252 t

The values in parentheses show the preliminary production figures January to August 2019, extrapolation for September to December 2019

Within the dominant aluminium casting segment, die casting accounts for more than 61%. And aluminium die casting accounts for just less than 54% of total non-ferrous metal casting in Germany.

For years, international vehicle manufacturing, especially passenger car production, has been an increasingly dominant customer segment. In addition, die-cast components are also making inroads into commercial vehicles and are therefore capturing new market segments. In the meanwhile, about 80% of non-ferrous metal castings from Germany are being produced for use in vehicle manufacturing. The remaining 20% are destined for a number of different client segments like electrical engineering and general mechanical engineering.

The good demand in recent years has led to a stable investment rate of around 5% of revenue. In respect of investment budgets, two-thirds of foundries are prepared to invest

much more in 2019 than in the previous year. Alongside ongoing investment for rationalization and replacement, investments to expand capacity are playing a defining role, according to an analysis by the Munich-based Ifo Institute for Economic Research. A decisive criterion for investment decisions is the modification of product range, with component structure increasingly shifting towards structural parts (see also “Outlook” below).

Nevertheless, die-casting foundry operators do have a few concerns at present. Due to the discussions about the future of the internal combustion engine in general and the diesel engine in particular, many die-casting foundries need to adjust to structural changes in demand. In this context, an explicit openness to technology in the development of mobility is absolutely imperative. At present, satisfactory answers have not yet been found for all of the issues arising in this conjunction. At the same time, there are strategic decisions that need to be taken that will have a long-term impact on policymakers, OEMs, consumers and also suppliers – like die-casting foundries. In this context, policymakers need to develop reliable and robust strategic guidelines, but they should be no more than guidelines!

Outlook: die casting is set to become more important in existing and new areas of application

The areas of application and complexity of die-cast products are constantly increasing. The requests being received necessitate new alloy developments and process technologies, for example to meet specifications for chassis and structural components. As well as mechanical properties, castability and a definitively calculable die service life, die-casting foundries are also focusing on conformal cooling, additive manufacturing, joining technologies, (bonding, welding), heat treatment, digitalisation and simulation, as well as composite materials and the development of hybrid components.

For Germany’s die-casting foundries, these challenges offer corresponding opportunities to consolidate their global position as a quality leader by increasingly offering consultancy and system expertise in more complex processes. “As a result, there will be more discussion about the strategic alignment of the industry towards both a lower and higher degree of vertical integration to improve its competitiveness,” says VDD Managing Director Thomas Krüger.

Innovative solutions in existing and new areas of application for die-cast parts will be on display at the forthcoming EUROGUSS.

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