

Company profile, issued January 2010

ACTech GmbH

Situated in Freiberg/Saxony, ACTech GmbH was set up as the first independent Rapid Prototyping specialist for castings in 1995. The enterprise has since established itself as a worldwide leader in the design and production of casting prototypes and small batches. ACTech began with a special technology, a rapid manufacturing method of sand casting molds – laser sintering of Croning[®] molding material (Direct Croning[®]). ACTech's main field of activity is still the rapid manufacturing of highly complex and almost series-commensurate casting prototypes in low quantities – from industrial pumps to turbochargers and V-10 race engines to components for aircraft turbines or rockets. Customers can rely on the experience ACTech has acquired through working with more than 15,000 individual requests resulting in the implementation of more than 100,000 castings. Each month more than 1,000 new castings, whether prototypes or small batches, are produced in Freiberg.

Unlike conventional casting methods, which are highly time-consuming and expensive, ACTech saves its customers up to 80% in time and costs by combining highly specialized Rapid Prototyping technologies.

The clientele of ACTech now comprises more than 950 enterprises. This number directly or indirectly includes almost all the well-known car manufacturers and engineering firms in the world. But ACTech also has prestigious customers from the aircraft and aerospace industries as well as machinery and equipment manufacturers. Given its international client structure and its close relationship with the automotive industry ACTech, in addition to its headquarters in Freiberg, also set up a US subsidiary in 2003. ACTech North America Inc. is located in Ann Arbor near Detroit. In the 2008 fiscal year ACTech with its 330 employees, nearly 30 per cent of whom are engineers, generated a turnover of EUR 33.5 million. After a management buy-out in 2007, the Halder holding group based in Frankfurt am Main became the majority shareholder of ACTech GmbH. Dr. Florian Wendt, an engineer, is the founder and managing director of ACTech.

In July 2008, ACTech responded to its constantly rising business volume by strengthening its management team as a vital and fundamental precondition for further growth. With effect from July 16, 2008, engineer Ray Wünsche, Sales Manager, joined the management of ACTech.

ACTech service portfolio

ACTech GmbH helps companies reduce to a minimum the development and manufacturing time for prototypes with series-commensurate properties and individual components. ACTech customers believe that the more intricate and complicated the component and the more demanding the physical requirements, the more sense it makes to use the support offered by the Freiberg-based specialists. ACTech makes components of aluminum, iron, steel and customized special alloys in its own foundry laboratory. Depending on the individual customer's requirements, the most advanced technologies in the field of investment or sand casting can be applied. ACTech quality management has been certified according to ISO/TS 16949 and thus meets all the requirements for supplying tier 1 suppliers and OEMs in the automotive industry. Besides qualified prototype and small-batch production, the company also offers product and technological development for cast parts. From the beginning of the engineering process, ACTech optimizes casting designs in terms of material quality, weight and strength according to customers' requirements, taking advantage of all the technical opportunities available. Furthermore, ACTech is constantly developing innovative manufacturing techniques in the Rapid Prototyping and casting fields. In this, the firm works closely together with the foundry institute of TU Bergakademie Freiberg and other research facilities. As a Rapid Prototyping expert, the Saxon company sets standards and has created numerous technologies and products which have been patented worldwide.

The types of Rapid Prototyping technologies ACTech engages in

The special technique for the rapid manufacturing of sand casting molds, laser sintering of Croning® material, is an essential factor in the success of ACTech. This Rapid Prototyping technology was developed in cooperation with EOS GmbH, the leading European manufacturer of laser sintering equipment. It has been patented worldwide in the meantime. Unlike conventional Rapid Prototyping technologies, in laser sintering of Croning® material only the sand casting mold is manufactured rather than the component itself. Manufacturing is based exclusively on 3D data records provided by the customer or developed by ACTech in cooperation with the customer. In this way, the Saxon enterprise dispenses with the time-consuming use of modeling equipment in mold production. ACTech can pour any sand casting material, enabling it to quickly achieve the series-commensurate properties needed for test parts. "Direct Mold Milling®" and "directed solidification in sand casting molds" are other sand casting techniques created, patented and used by the firm. "Direct Mold Milling®", especially in combination with laser sintering, is suitable for castings that are both very large and complicated. In "Directed solidification in sand casting molds", ACTech improves the structure and thus the castings' load capacity by enforced cooling. ACTech developed a vacuum-supported pouring procedure capable of manufacturing extremely thin walled castings made of aluminum, iron and steel. In addition to the Rapid Prototyping technique, ACTech offers production using CNC milled pattern equipment for higher casting qualities – in particular for pilot

production capable of use in testing after the development stage. Even when manufacturing prototypes in investment casting, the Freiberg specialists use several technologies they were instrumental in developing. Laser sintering of polystyrene, in combination with plaster or ceramic chilled casting, as well as the Rubber Plaster Mold Process as an alternative to injection molding prototypes are also applied.

Production infrastructure

When manufacturing casting prototypes and small batches, ACTech has at its disposal extensive, state of the art equipment in-house. Different CAD systems, multiple 5-axis CNC milling machines, a number of EOSint-S stations, melting, fettling and heat treatment machinery as well as conventional metal working machines. The in-house foundry laboratory is equipped with several furnaces of maximum 300 kg volumetric capacity, making it possible to simultaneously implement a number of prototyping projects with different alloys. In order to guarantee the quality of casting prototypes, ACTech offers its customers inspections of castings. To carry out analyses and exploring mechanical and metallographic parameters, the company employs a wide variety of laboratory equipment such as spectrometers, X-ray equipment and thermal analysis devices. The Rapid Prototyping expert also maintains cooperative relationships with internationally renowned, accredited test laboratories.

ACTech and environmental protection

ACTech GmbH not only engineers and manufactures casting prototypes. As a medium-sized enterprise, it also takes its corporate social responsibility seriously. For instance, ACTech has defined various environmental protection objectives and has voluntarily committed itself to playing an active and targeted role in creating a sustainable, healthy environment while ensuring the responsible use of material resources. The Freiberg firm for the engineering of casting prototypes was, for example, one of the first industrial enterprises to use geothermic equipment to cool its investment casting foundry while at the same time supplying room heating from stored thermal energy. In this way, ACTech GmbH reduces not only its production costs but also its CO₂ emissions many times over. To guarantee an ongoing improvement process, the environmental management system of ACTech has been certified according to EN ISO 14001.

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