

Forging of thin walled aluminium

Umformtechnik Radebeul (UFT) has specialised in forging difficult aluminium shapes and surfaces for the last seven years in a bid to become less financially dependent on others. The business is succeeding in its mission.

Seven years after Stephan Schneider took over UFT and founded Aluminiumtechnik Radebeul (ALTR), both companies have prospered. Last year, the 107 employees generated some 11.6 million euros. By the middle of this year, there were open orders for about 15 million euros. The company built an additional 1,400 sq m production hall this May, ready for more forged pieces to be reworked mechanically at five milling machines and two lathes. Even entire groups of components are assembled. In September 2012, the next project will be a sanitary and administrative building with space for the production engineering, financial, controlling, and human resources departments, as well as for the management of the company. Having invested some 4.7 million euros in buildings and machines, there is now no further need for investment over the upcoming five years.

It is difficult for ALTR to find CNC-milling machine apprentices, but their local reputation as a good employer helps them to attract people. In the interview process young women are informed that having children is not a problem at all for the company. In return, employees communicate much more openly on when and how they plan their parenthood. That allows the company management to plan for such changes effectively.

The bumper

Stephan tells the story of the two men who came to a trade fair stand of Umformtechnik (UFT) Radebeul with an impact absorber from a car bumper cast from aluminium.

"Can you forge this?" they asked his colleague



Chief Executive Officer Stephan Schneider and Chief Operating Officer Mike Müller talk with constructor Thomas Zschippang.

Mike Müller. Having taken a close look at the thin-walled and geometrically challenging piece, Müller said yes. "I was eighty per cent convinced, twenty per cent was sportsmanlike ambition", the 46 year old engineer and expert in metal technology admits. Later, it turned out that the two prospective customers worked for a manufacturer of premium cars, and at the trade fair they simply couldn't find any other competent company courageous enough to venture such a step. Back in Radebeul, Mike Müller, with his twelve years of experience in forging aluminium, got to work on the two millimetre thin structure. He tried out various tools to shape the large surfaces as well as the complicated geometry, all in order to get an impact absorber that doesn't have to be reworked mechanically. In the end, only four screw holes had to be drilled.

One of the greatest difficulties was that when the upper tool is driven onto the lower one, aluminium, because of its viscosity, flows over corners and edges. That often creates

small creases which look unappealing and are a threat to ideal rigidity. They often act as small predetermined breaking points. It worked, but as it sometimes happens, the prototype did not go into production. It was with a different car type that this specialist in forging aluminium got a chance, and today delivers between 56,000 and 70,000 pieces to the car manufacturer. Although forging is up to twice as expensive as casting, especially since material consumption is much higher, forged aluminium is much more rigid, and that's what car drivers also appreciate when it comes to their bumpers.

Forging solutions

In March 2011, a sports items manufacturer who had gone elsewhere asked UFT to solve an issue with production of the two parts of a touring ski binding in four weeks. Mike Müller realised that the joint between the upper and the lower tool was not positioned the way it should be. The ALTR designers established a different mould break, and found additional solutions for weak spots, so the components hardly required any rework. As a result 150,000 of these binding components are being forged in Radebeul. As of 2013, ALTR will manufacture five more components for the ski binding. The major advantage of aluminium over steel is that it is lighter and more resistant to corrosion. Compared to high quality plastic, it can cope better with very low temperatures, when plastic materials turn brittle.



Checking and finishing the forging.

UFT makes the footrest system for a well-known German motorbike manufacturer. A classic for UFT: thin walls, a complicated geometry, plus large surfaces. Further elements are added which increase strain, and the visual appearance is important as well for such a visible part of the vehicle. The solution is another triumph for a more rigid forging solution over a casting one.

Umformtechnik Radebeul GmbH and Aluminiumtechnik Radebeul GmbH are exhibiting at Aluminium Düsseldorf exhibition in Hall 14 stand number C 30.

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A case for diversification

When Stephan Schneider took over Umformtechnik (UFT) Radebeul as CEO in 2005, the 37 employees generated eighty per cent of the 6 million euro turnover with just a single customer from the automobile industry. A dangerous dependence, thought the 56 year old engineer, for both parties. The expenses for aluminium and material made up sixty per cent of the turnover, and the value added was small. The CEO Stephan Schneider and COO Mike Müller developed a strategy to get the company on a sound financial basis through diversification, specialised products and a higher vertical range of manufacture.

Seven years later, the automobile industry makes up half of the 11.6 million euro turnover, with various manufacturers and suppliers. Another focus is the electronics industry, but companies from the medicine and sports business (most of them from Europe) also have components produced on the seven drop forging presses in Radebeul. At the same time, the company has specialised in thin-walled and complicated die-forged parts. Core lot sizes range from 10,000 to 100,000 pieces. All this has increased the value added, so the cost of material has gone down to currently only forty per cent of the turnover.

