

## An unusual idea with a major impact

Baking powder optimizes the casting process at Georg Fischer

What do the managers of the Aldi discount supermarket chain and the engineers at the Georg Fischer foundry in the German town of Mettmann have in common? The answer is, both are looking for simple yet effective solutions. This strategy is not only a remarkable success for Germany's biggest retailer, it is also benefiting the Georg Fischer foundry in Mettmann, which, with 1,100 employees and an annual capacity of 180,000 tonnes, is one of the world's leading iron foundries and much in demand as a supplier to the automotive industry.



### Improved core sand binder

"Why look far afield, when the best and simplest solution's so close at hand?" asks Rolf Rietzscher with a grin. The foundry manager at Georg Fischer GmbH in Mettmann and his team of dedicated young engineers are constantly searching for ways to improve processes and quality. "We regard being better than our competitors as a sporting challenge." The latest innovative idea from Mettmann is the

successful optimization of core sand binder using modified baking powder. The new process prevents the formation of hairline surface defects on the castings.

Core sand binders are needed to produce sand cores. Cores are largely made of quartz sand and are used to form cavities in castings. To ensure that cores do not expand at high temperature or break when they come into contact with the molten iron, thereby causing casting defects, an additive is used as a buffer.

### Effective and efficient

In their quest for the perfect additive, the Mettmann team and representatives of the German Institute of Foundry Technology shifted their thoughts to a completely different skill – cake baking! Maybe the bubble-forming properties of the baking powder used in cakes could be used to improve the core sand binder? No sooner said than tested ...

Using hastily bought baking powder from Aldi, trials were conducted at the Institute of Foundry Technology. It was found that adding modified baking powder enhances the elasticity of the binder in the sand core, while heat-related expansion of the quartz sand is reduced.

"Thanks to this idea we are saving time and money and keeping ahead of our competitors by a nose", says Rietzscher. These days baking powder is delivered to Mettmann by the truckload.

This innovation is further testimony to the vigour of the Mettmann foundry. Patent applications have been filed worldwide and a patent has already been issued for the invention in Germany.

## Basic attitude

### Learn from others – for the customer's benefit

"You have to think outside the box if you want to be successful in business. We regularly look at other sectors, such as the food industry. Often it's the smallest ideas which help us make the biggest step forward."

*Rolf Rietzscher, foundry manager, Georg Fischer GmbH, Mettmann*

## Potential for success

### Less is more

<b>Time</b>	Adding the modified baking powder means that the smoothing step can be omitted in some cases. Foundries apply smoothing agents to moulds and cores to smooth the porous surface of the moulded part and avoid defects.
<b>Costs</b>	Less material is required to manufacture the sand core, so manufacturing costs are reduced.
<b>Quality</b>	The manufacturing process is safer as well as leaner. Castings are free of defects. The modified baking powder can be added as required and without causing any problems.
<b>Environment</b>	The new additive is odourless. Additives used previously – such as wood meal – created smoke when they were incinerated.

## GF Automotive in Mettmann

### One step ahead

<b>Production range</b>	Spheroidal graphite iron castings for cars and commercial vehicles, including transverse links, pivot bearings, semi-trailing links, crank shafts, rear axle casings and wheel hubs.
<b>Castings per year</b>	30 million
<b>Customers</b>	Audi, DaimlerChrysler, Ford, Mitsubishi, Opel, Porsche, Toyota, Scania, VW, Volvo and others.
<b>Certifications</b>	DIN EN ISO 9001 / DIN EN ISO 14001 / EMAS / VDA 6.1 / QS 9000 / ISO TS 16949
<b>Location</b>	Mettmann is near the German cities of Cologne and Düsseldorf (known for their carnivals) and is world-famous for the Neanderthal valley, where the remains of a Stone Age man were found.

## "Adding Quality to People's Lives"

### GF Automotive makes driving smooth and safe

<b>Our quality of life would deteriorate rapidly without castings</b>	Over half the objects we come into contact with on a daily basis directly or indirectly involve castings. Cast parts are used in water treatment and supply, in the healthcare sector and in automotive construction, for example. Thanks to castings we can use public transport such as buses, trains and planes, so we wouldn't be able to get around if it weren't for cast components.
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