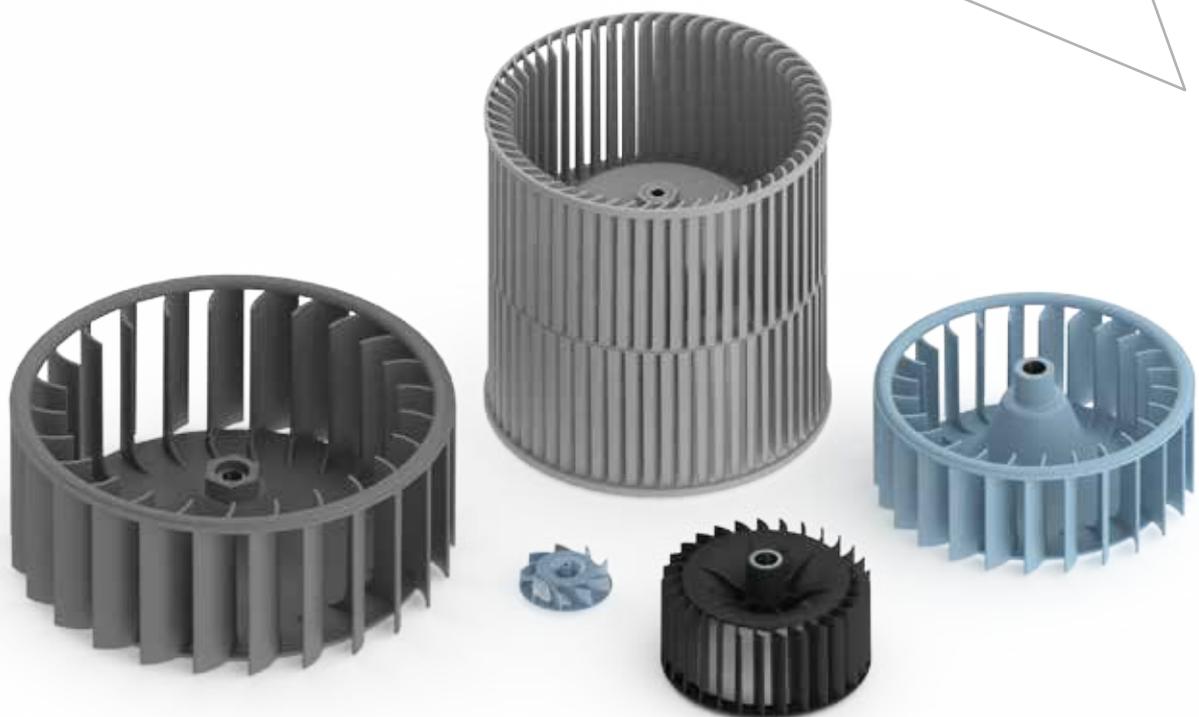
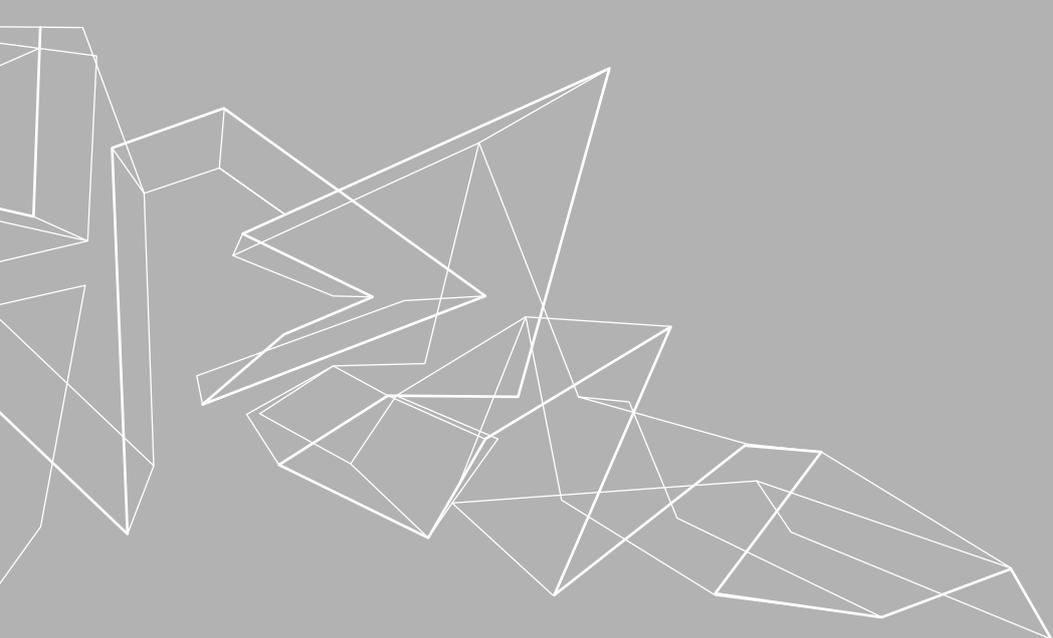


Fan Wheels from GRONBACH

Construction, Tool Manufacturing and Production



GRONBACH



GRONBACH – since 1964

Find inspiration in the variety of our technology and discover brand new applications for stainless steel, aluminium and synthetic materials.

GRONBACH is a leader in the field of metal surface finishing and has for decades been amongst the most progressive companies world-wide in the processing of high-quality stainless steel, aluminium and synthetics. As well as design-orientated products, we also manufacture mechanical and kinetic components, assemblies and entire OEM appliances. We supply world market leaders and are successfully active in the most varied of areas; household goods, furniture, kitchens, sanitary goods, entertainment and the automotive sector.

The GRONBACH Group is an extremely energetic network consisting of four specialised sites in Germany, Austria, Italy and Slovenia. But the birthplace and home of our company lies in Wasserburg, a small town in Southern Bavaria.

The Wasserburg Site

The core skills of our location lie in the processing of synthetic materials, stainless steel and aluminium as well as in the finishing of their surfaces. As a result, we can offer everything from a single source: from the development to the construction of prototypes and on to serial production.

You will not find any average 'OK' solutions at GRONBACH, just the opposite in fact. We develop, produce and deliver exclusively customised products. Our processes remain flexible, lean and efficient. We also thereby attach particular importance to the careful use of resources. We invest in sustainable energy concepts, operate the most up-to-date photovoltaic plants and employ intelligent LED lighting.

What we accomplish in Wasserburg can be seen everywhere: single components such as for example furniture handles in aluminium design, sophisticated assemblies such as our doors for microwave ovens or innovative household appliances such as the GRONBACH furniture vacuum cleaner – winner of the distinguished German Design Award. Our products do not therefore stand out merely from the technological point of view, they are also impressive due to their noble design.noble design.



Let Yourself Get Carried Away

Fan Wheels from GRONBACH

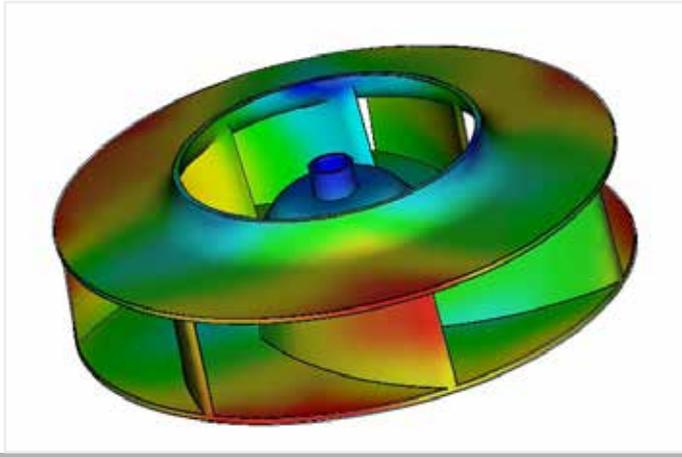
We have been operating a large injection moulding plant at our site in Wasserburg since the 1960s. There, we manufacture a multitude of various synthetic products that are mostly used to complete complex assemblies. Our greatest strength lies in the employment of a very large spectrum of technologies. This enables us to offer our customers an 'everything under one roof' service that hardly anyone else in the field can offer.

Our fan wheels hold a unique position. This product group is delivered exclusively by us. The fan wheels have thus over time developed into an important pillar of our company. In the 1970s, we began with the first synthetic injections of fan wheels. Since then, development has been constantly evolving and over 100 million fan wheels have left our production facilities. And furthermore, of such high quality that balancing of the wheels is in most cases no longer necessary thus guaranteeing perfectly true running over the entire service life – more information can be found in our brochure.

Our success is based on our wide experience in the combination of hubs and wheels. As required, and synchronously with the injection moulding process, we produce the hubs out of stainless steel, die-cast zinc, sintered metal or aluminium. We manufacture axial, radial and drum rotors in various synthetic combinations that are used in a multitude of applications in domestic appliances or heating installations.

Synthetic fan wheels are light, stable in form and can be precisely reproduced. We control the entire manufacturing process incorporating the unique advantages of this product: from development to production, from simulation to tool manufacture, from ideal design to optimal raw materials. In this way we can offer our customers the best possible product at the optimal price-performance ratio.

GRONBACH has over 50 years experience at your disposal – set us a challenge!



Simulation of Warpage

PEOPLE

To construct a good fan wheel, you first of all need good designers and engineers. And we have them. Our engineers are experienced, technically skilled and knowledgeable about the requirements of many fields. For certain, they can also design a first-class technological and economical solution to suit your requirements.

- Which fan wheel design is best suited?
- What is the optimal composition of materials?
- What wall thickness is required?
- Which manufacturing process is economical?
- What must the hub do exactly?

Discuss it all with GRONBACH!

PROCESSES

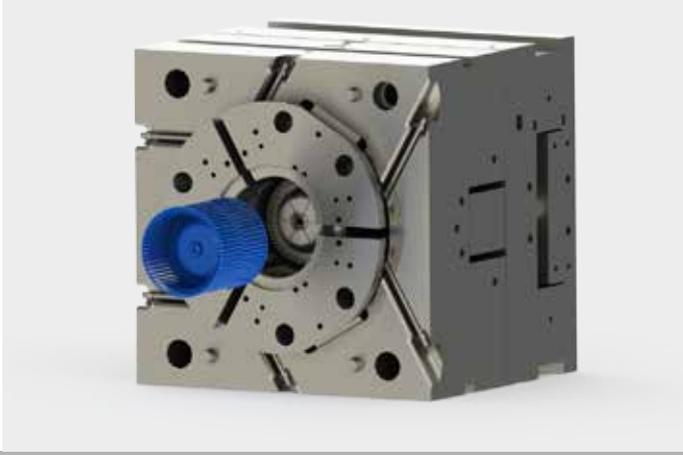
At GRONBACH, an entire team works for you from the start. You have only to notice and remember one face, however – the face of the GRONBACH project leader. He will guide you through the project, discuss the design plans with you, explain technical details and keep you fully up-to-date.

To enable us to estimate the manufacturing and installation properties at an early stage, we carry out an analysis of fault probability and fault effect (in short FMEA) and this already in the design phase. Thus we are able to forestall unwelcome surprises from the start.

SIMULATIONS

A fan wheel must operate - in as far as possible - silently, energy-efficiently and for a long time. This is why we carry out a simulation during the design phase – to ensure optimal manufacture of the fan wheels.

- Mould flow analysis for optimal flow characteristics for the components and injection moulds
- Numerical simulation procedures ANSYS for flow-optimised geometry of fans and blades
- For particularly tricky physical cases, we can call on our exceptional partners from the worlds of science and research



Fan Wheel Tool

PRECISION

We don't only have fine engineers at GRONBACH, we also have outstanding specialists in the field of tool manufacturing. And we need them too. Ultimately, the quality of the tools is decisive for the efficiency of the components that follow.

From the start, our toolmakers work in close cooperation with their colleagues from the design department. They produce the required tools for the fan wheel manufacture in an impressive quality and precision. And indeed, so precise, that a fan wheel from GRONBACH will in almost all cases never need to be balanced again.

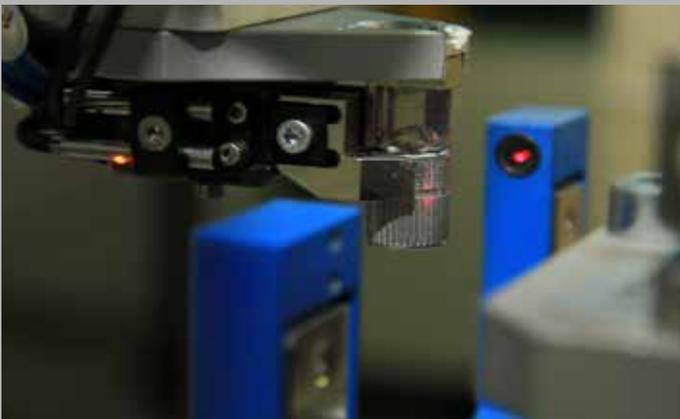
FLEXIBILITY

To be able to satisfy the many applications and specifications of our customers, we have at our disposal in our workshops an excellent infrastructure and exceptional technical equipment. We are thus able to manufacture precision tools for a multitude of different fan wheel variations:

- Tools for fan wheels with a diameter from 30 to 250 millimetres
- Tools for conventional de-mouldable fan wheels as well as for complex slide tools
- Tools for fan wheels as well as for wheels with welded discs
- Measuring and testing equipment for serial production quality control

In the GRONBACH workshops, we only use high-quality steels, the most up-to-date techniques for tempering and surface finishing and standard components from leading manufacturers. If desired, we can also build made-to-measure test equipment. This is how constant high-quality is obtained in serial production.

State-of-the-Art Turning Machine



INNOVATION

The hub is the technological heart of all fan wheels. Our experience allows us to always be able to construct hubs with an optimal connection to the motor shaft. To make the production possible both economically and in large quantities, however, automatic installations incorporating the latest technology are required.

We produce hubs out of the most varied of materials such as stainless steel, die-cast zinc, sintered metal or aluminium – as required.

At GRONBACH, the hubs are produced using ultra-modern automatic lathes. With extreme precision, high working speeds and rapid tool changing, they render possible almost every conceivable hub design. And a very good thing it is too. Ultimately, a technically well-thought out hub is indispensable for a clean synchronous operation of the fan wheel.

DIVERSITY

We have a large range of machinery available at our plant in Wasserburg. Thanks to our high level of automation, we can manufacture fan wheels that are not only cost-effective but also quickly and in large quantities.

- Closing force from 50 to 250 tons
- Injection weight from 3 to 300 grams
- Automatic hub feed
- Rapid extraction of finished fan wheels
- Ultrasonic welding equipment
- Central material supply
- Drying plant



Measuring Device for the Axial and Radial Runout



SERVICE

On completion of the fan wheels, however, we are still far from finished. We also accompany and support you beyond our factory hall as far as logistics and quality assurance are concerned.

- We design and manufacture measuring devices for quality assurance.
- We conduct radial and axial running tests.
- We determine CpK values to ensure attaining your internal specification aims.
- We record and communicate all relevant measurement data.
- We supply disposable or re-usable packaging as required.
- We deliver ship-to-line with documentation from the serial quality testing.



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