



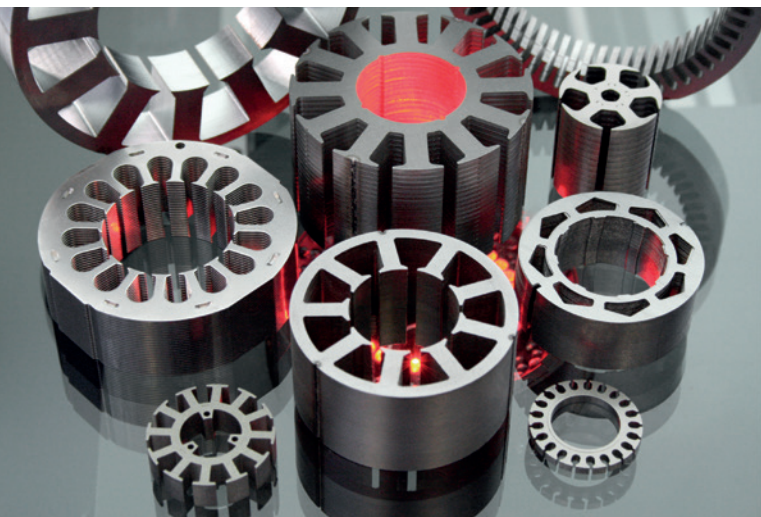
**VARIETY AND
FLEXIBILITY
THE SECRET
TO SUCCESS.**



Electric motors have become an integral part of our daily lives, with applications ranging from small computer fans via servo motors in cars and washing machines through to industrial motors with megawatts of performance. They are simple to build, deliver high performance and have an excellent energy footprint. We visited a specialist manufacturer of basic components for electric motors – Erich Grau GmbH in Sersheim.

Electric motors are now found in virtually every modern technical product. In today's cars alone there are around 40 different ones, from the starter to the windscreen wipers, the seat adjusters and the electric windows, not to mention the brushed and brushless direct current motors. They are always manufactured in the same way. The performance-generating components are made of individual lamination stacks called the rotor and the stator, made out of electrical steel strips comprising steel with silicon content and with high magnetic properties. The sheet metal parts are assembled by stacking the individual stamped parts in the tool. During the stamping process, studs are often added which combine to form a fixed unit with the gaps in the previously stamped sheets. Another option is the use of bonding varnish. Electrical steel sheets coated with bonding varnish are stamped, stacked and then baked under heat and pressure. This process seals the individual laminations together strongly and also insulates them from one another.

Erich Grau GmbH in Sersheim is a genuine specialist in the production of flat stamped parts, in particular using electrical steel or cold rolled and slit strips as well as stainless steel. For over 60 years now, the company – which



Motor packages: stacked, laser-welded and bonded.

has grown to around 150 employees – has been producing transformer sheets, ready-core laminations, strip and electric motor sheets and even complete lamination stacks. "We manufacture stator and rotor sheets for almost all types of electric motors based on customer drawings," says proprietor Günther Grau, running through the comprehensive range of products. "AC and three-phase motors, direct current, internal and external rotors, linear motors and generators, all as ready-to-use lamination stacks, regardless of whether they are riveted, welded, stamped and stacked, or baked. Furthermore, we also produce laser-cut and wire-eroded special sheets for sample and prototype construction and limited series. As you can see, we very much like to think of ourselves as having everything under one roof."

Grau is convinced that this comprehensive offer is one of the main strengths of Erich Grau GmbH, pointing out that "there are no long and complicated decision-making processes with us! Our customers have come to appreciate the genuine agility and flexibility of Erich Grau, whether it be for simple items or technically very demanding parts."

Depending on the task, Erich Grau GmbH uses various different techniques, and Grau himself is a trained technician who is proud of his own stamping presses. "They obviously can't hold a candle to a BRUDERER high-performance precision stamping press but we do carry out the simpler tasks on our own machines. For more demanding manufactured parts, we turn to our BRUDERER BSTAs."

Those machines are certainly put to good use, with the demands in terms of the efficiency of electrical devices and consequently of electric motors leading to increasingly lighter solutions which in turn mean thinner sheets. "The thinner the sheets, the lower the eddy-current losses at high frequencies," Grau explains. "That increases the efficiency of the motor, but at the same time, it means that more sheets are required for the same construction height, and that also raises production capacity."

The demand for light and thus efficient motors is considerable, and the order books at Erich Grau GmbH are correspondingly well filled. The main concern for the company, and indeed for all those in the same branch, is the overall lack of raw materials. After the pandemic-induced shutdown, the



Günther Grau,
Managing partner, Erich Grau GmbH.

manufacturing sector is now once again going full steam ahead, but steel production is currently failing to keep pace, affecting delivery times and prices (as of mid-2021). "After the COVID-19 crisis, the price of a tonne of steel went through the roof," says Grau, with a tonne of hot strip recently costing more than it had since 2017 as demand is simply outstripping supply. "Our flexibility has enabled us to absorb some of this huge price rise, but our customers are feeling the pinch too. With additional costs of more than 50% for materials alone, we can't stem the flow all on our own."

Nevertheless, Grau feels that his company and its product portfolio are well set up for the future, and as such there is considerable expansion work going on at the firm's own site. "We need to extend both our administration and our production areas. Things have started to become a little cramped of late." This should come as no surprise when you consider that Erich Grau GmbH now has its own tool-making department with some 40 employees, the tools being used exclusively for in-house production. „It perfectly reflects our 'everything under one roof' philosophy," says Grau.

When the new facilities are ready to be used next year, the stamping capacity will also be increased, and Grau is sure that more BRUDERER BSTAs will be brought in for that very purpose.



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