



SACS Aerospace GmbH

The Art of Aerospace.

Wire EDM boosts toolmaking and production.

Within only 20 years, SACS Aerospace in Empfingen has developed into an internationally acclaimed supplier to the aviation industry. This success is attributable not only to the excellent reputation of the four founders in the industry, but also to their outstanding production equipment. The technicians in Empfingen particularly appreciate the flexibility, precision and reliability of the MV1200S NewGen wire-cut EDM machine that they have been using to machine components for toolmaking and production for roughly the last six months.

Success thanks to outstanding production engineering.

SACS Aerospace

The Art of Aerospace.

SACS Aerospace GmbH is an owner-run company with its headquarters in Empfingen. In addition to engineering, quality and manufacturing, the company focuses on high flexibility and closeness to the customer.

Today's SACS Aerospace GmbH (Solid Aerospace Connecting Systems) was founded in 2002 as a production and development company and is devoted to innovative solutions for everything from individual components to system assemblies on a daily basis.

The very latest manufacturing technologies and efficient supply chain management facilitate precision at the highest level. Expert teams in the areas of aerostructure, interiors and standard hardware are an assurance of expertise and experience.



... the ready-to-install armrest: SACS has all the necessary production and assembly processes.

From sheet metal for instrument cabinets ...



Rolf Kuhm, one of the four founders of SACS Aerospace GmbH along with Oliver Dratius, Achim Mayenberger and Steffen Grunert and now Vice President Engineering, is hugely enthusiastic about aviation. He and his colleagues, he says, were working for the aviation industry even before they founded the company, but were unable to realise their forward-looking ideas and plans in their previous positions. At the time, they dreamed of optimised production technologies, well thought-out component design and flexible production. Only since they have been running their own company have they been able to put these ideas into practice. Their success has vindicated them. In 2015, they moved into a stylish office and production building in Empfingen near the A81 motorway. The company currently employs 170 people.

High vertical integration

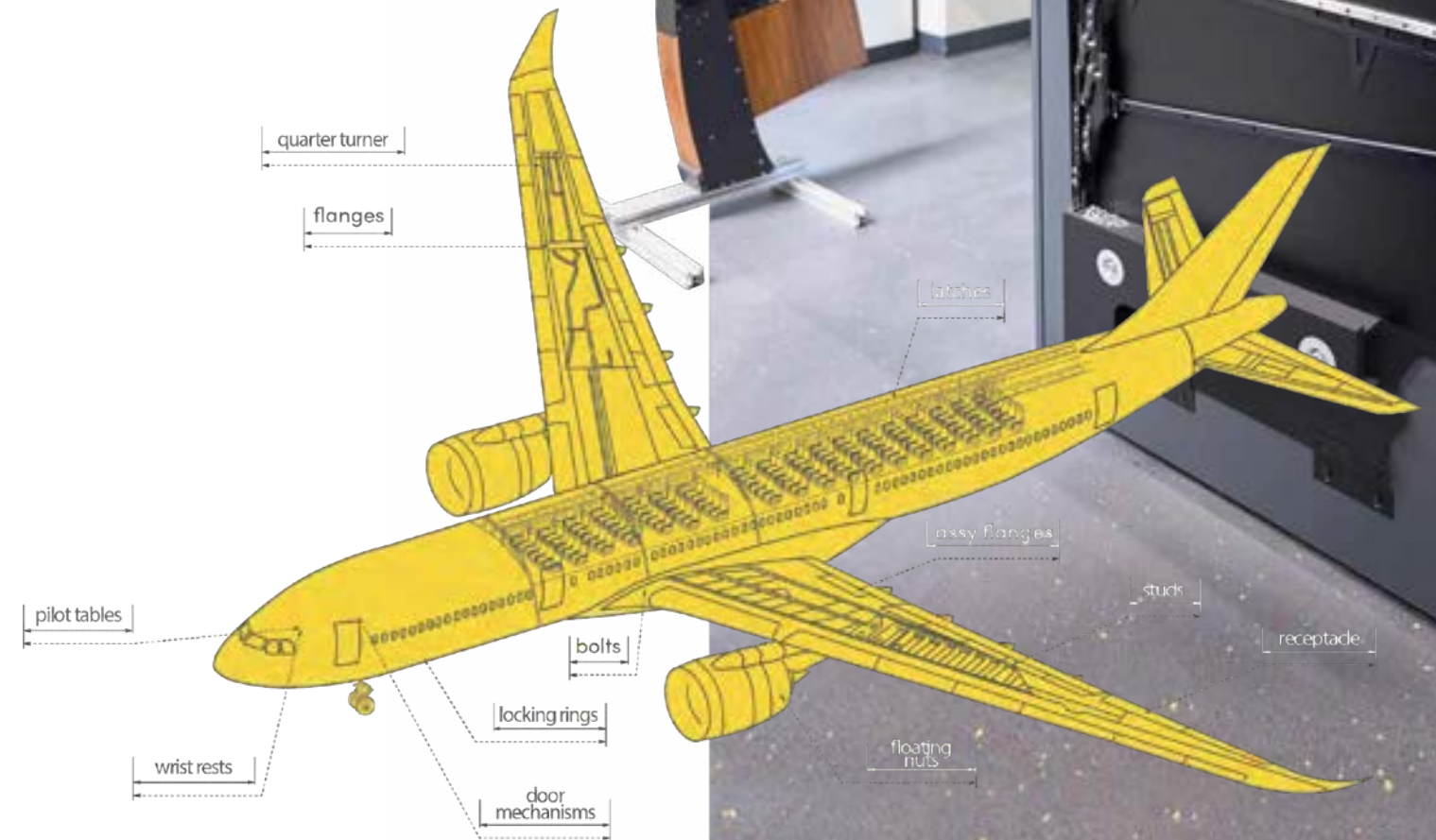
Kuhm also sees the company's high vertical integration as a key factor in its successful development. "We have all the production and processing methods for machining and forming metals. These include turning, milling, grinding, deep drawing and punching. Our skilled workers have extensive expertise in aerospace component assembly. In this way, we can offer everything from a single source, from design to the supply of ready-to-install parts and components. Since we are certified for aviation and



The specialists at SACS design and produce complete assemblies, such as self-locking closures for flaps.

our processes are validated, we can flexibly handle orders from aviation companies all over the world."

SACS Aerospace's customers include such aircraft manufacturers as Boeing, Airbus, Bombardier, Embraer and Dassault, as well as such airlines as Lufthansa, SAS Scandinavian Airlines, SWISS and other illustrious names in the international aviation industry. For these, SACS Aerospace produces, firstly, components for the engineering of commercial, cargo and business aircraft. At the same time, the Empfingen-based company also produces spare parts for the ongoing maintenance of a multitude of various aircraft types. The product range produced by the aviation specialists is correspondingly broad and extends from small hinges and easily detachable closures for



For everything from spacers to door closers, SACS is an expert supplier to the international aviation industry.



SACS' portfolio includes components for aircraft interiors.



A forward-looking technology like the MV1200S NewGen wire EDM machine is ideal for the environment of the challenging aviation industry.

Rolf Kuhm, Vice President Engineering

inspection flaps and cowlings (so-called quarter-turns) to components for turbine engines, e.g. valves and screw connectors for fuel pumps, and complete fixtures for the aircraft interior, such as folding tables and brackets with integrated power supplies for laptop computers.

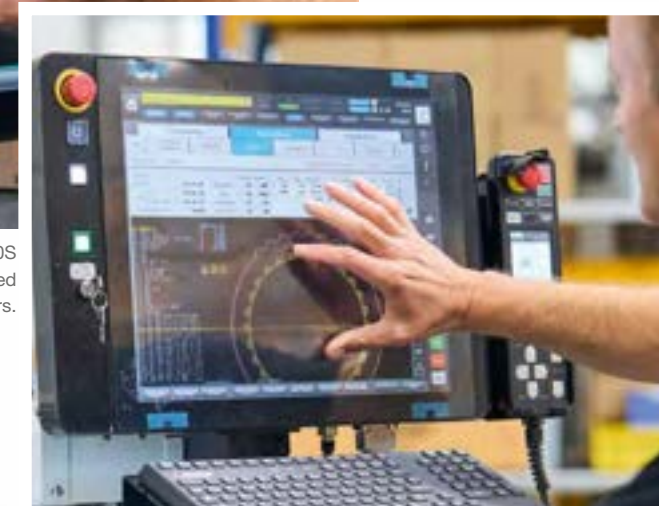
Wire erosion for toolmaking

Since they also produce numerous parts and components for assemblies, the aviation specialists in Empfingen also design and produce stamping and forming tools themselves. "It is our constant aim to create innovative components. For this, we need special sheet metal parts that can only be manufactured with highly intricate tools, and mostly progressive dies. That's why we have our own shop for tools and moulds. Our in-house specialists are the only ones capable of making the tools required for our innovative sheet metal parts sufficiently swiftly and flexibly," Kuhm explains. Wire erosion, he continues, is indispensable in the making of tools and moulds. That is why the toolmakers have been using this production technology since the company was founded. However, the machine they originally used soon proved to be short of the mark. In 2022, they therefore invested in an MV1200S NewGen wire-cut EDM machine. "After only a few months, this wire erosion machine has proven to be significantly better and more efficient," says Kuhm. The MV1200S

For the production of safety-relevant components, SACS is also certified to international standards.



The highly user-friendly and intuitive multi-touch display of the MV1200S NewGen comes with freely configurable menus and can be operated using the gesture control familiar from tablet computers.



NewGen from Mitsubishi Electric is up to three times faster than the old machine from a rival manufacturer. The specialists at SACS program the workpieces on a conventional CAD/CAM system installed at a PC workstation in the workshop near the wire EDM machine. The MV1200S NewGen is particularly easy to parameterise and operate via the touch screen, Holger Pfriendr and Matthias Beckmann, the two wire EDM specialists agree. The training in Ratingen associated with the installation and commissioning of the machine was highly detailed

and effective, they say. After only three days, they were familiar enough with the functions and the way the machine works, parameter settings and set-up that they were able to use the machine productively on their site without any problems. This means that the toolmakers can now machine dies and punches for punching and forming tools using tool steels 1.2379 and 1.2210. Special steels can of course also be used.

Wire EDM, Kuhm explains, is often preferable to other machining processes – firstly to produce special component geometries, e.g. small apertures with sharp corners. It has organisational and economic advantages as well. The wire-cut EDM machine also operates reliably unattended, Pfriendr and Beckmann agree. They can program and set it up during the supervised shift. The MV1200S NewGen runs overnight, and the next day they can install the finished components in their punching and forming tools. Above all, the specialists have been impressed by the highly



All-round precision: special gears produced with wire erosion



“Because of its high reliability in unattended operation, the MV1200S NewGen can also be used efficiently in production for small batches.

Rolf Kuhm, Vice President Engineering

Reliable and unsupervised production.



Holger Pfriender appreciates the smart user interface of the MV1200S NewGen.



In production, SACS uses the option of cutting stacks of sheet metal.

reliable wire threading. “We can rely one hundred per cent on the programmed components being cut from the clamped panels,” is how they sum up their experience with the MV1200S NewGen.

Expandable production process

In the meantime, the specialists at SACS also exploit the benefits of wire EDM in production. “Thanks to the dependability of the MV1200S NewGen, we also effortlessly process small workpieces for ongoing production on the machine. Although the process is slower, productivity is high. We have a few tricks up our sleeve to achieve this,” the specialists in Empfingen explain. For example, to produce small discs only a few millimetres in diameter from thin, high-strength steel sheet, the specialists clamp stacks of several dozen layers of metal sheet in the workspace of the MV1200S NewGen. A special feature of the discs being cut is that they have alternating polygonal geometries on the inside and outside. On a stack of sheet, the discs being cut are intelligently nested by the NC program. In this way, an externally round and internally polygonal sheet is placed adjacent to another sheet with complementary geometries, i.e. internally round and externally polygonal. The MV1200S NewGen cuts the sheets out of the sheet



SACS produces spacers on the unmanned MV1200S NewGen.



SACS also designs and produces complex progressive dies for small series.

stacks reliably and with high precision.

“In production in particular, we benefit from the reliable wire threading,” says Kuhm. “When cutting discs from stacks of sheet metal, for example, we can rely on several hundred or more than a thousand discs being cut overnight from a stack of sheet metal clamped in the evening. Should the wire threading system ever fail to find the kerf at the break position and be unable to thread the wire, the machine simply moves on to the next cutting job, i.e. to the next disc on the sheet.”

The MV1200S NewGen’s record of how much wire is left on the reel and how much has been used also

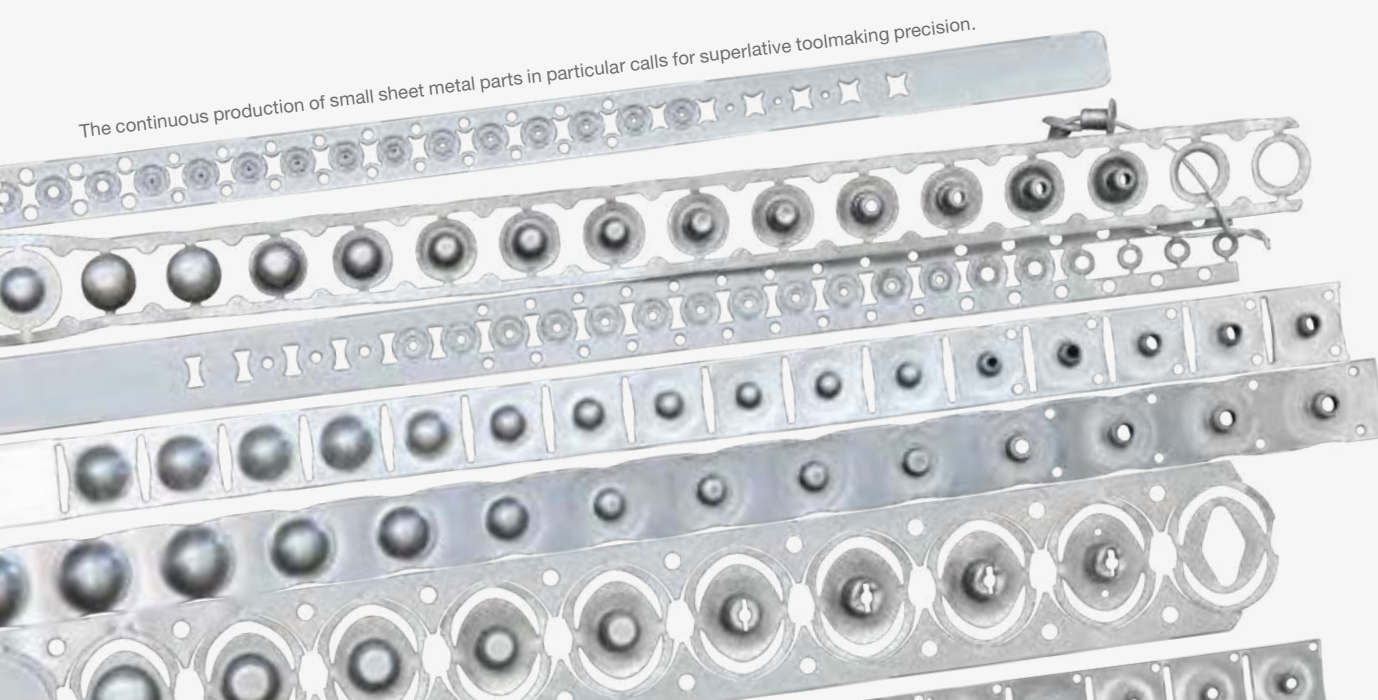
contributes to the machine’s high reliability. This enables the staff programming and setting up the machine to estimate whether the wire left on an installed reel is still sufficient for a programmed cutting job. If not, they change the wire reel in anticipation. This is quick and easy to do, says Pfriendr.

In addition, the already partially used wire reels can be used again and again, as the MV1200S NewGen stores the remaining wire lengths on the reels and assesses them for subsequent cutting jobs. The technicians in Empfingen plan to equip their MV1200S NewGen with a larger wire station for wire reels weighing up to 20 kg. “This will allow us to use the MV1200S NewGen in production for entire

weekends,” says Beckmann.

Because of these ingenious functions, the MV1200S NewGen is already proving to be highly efficient after just a few months. Kuhm stresses the dual benefits for internal tool and mould making and for production. “In aviation, the batches we produce are usually small, and often only a few hundred components. If the functions of the wire EDM machine are skilfully used for this purpose, this number of

components can be produced directly on the MV1200S NewGen highly efficiently and cost-effectively. The machine offers the unbeatable advantage of running unattended, with high process security and precision,” says Kuhm, summing up his positive experience from the first six months with the MV1200S NewGen.



The continuous production of small sheet metal parts in particular calls for superlative toolmaking precision.



SACS Aerospace GmbH

Founding year

2002 in Rottweil
2015 move to its own office and production building in Empfingen

Managers

Achim Mayenberger and
Oliver Dratius

Employees

170

Core business

Development and production of equipment components, parts and spare parts for aircraft, and especially commercial and business aircraft

Contact

Robert-Bosch-Str. 15
72186 Empfingen
Germany

Tel. +49 (0)7485 97722 100

info@sacs.aero
www.sacs.aero

Unsupervised EDM – for reliable processes and high precision.

SACS Aerospace