



METAL CASTINGS FOR AUTOMOTIVE

FANUC for Seeger

Task To produce a vast array of precision turned parts for the heavy goods, passenger, commercial vehicle and motorcycle industries

Solution 65 Star Micronics automatic CNC machines and 27 Miyano machines make up today's machine inventory. For maximum flexibility, every machine is equipped with FANUC's renowned CNC. This control offers easy upward compatibility and the smart functions required to complete a diversity of jobs to extremely high standards

Result Currently Seeger is running 18 shifts per week. Some 150,000 turned parts are produced day in and day out. Despite these high production numbers, all Seeger's output exhibits incredibly high levels of repeatable accuracy



From Choppers to Heavy Vehicles

Seeger Präzisionsdrehteile GmbH (Seeger Precision Parts Ltd) produces non-stop for the automobile industry on Fanuc-controlled machines.

The ideal turning machines, according to Seeger GmbH, should be sturdy, precise and fast, and they should be equipped with a Fanuc CNC control. The precision turning experts have remained true to this principle for 30 years now on for all 92 machines located in their facility. These include 65 long and 27 short automatic turning machines that in addition to a variety of turned parts for the heavy vehicles and passenger car industry, still machine a product they developed themselves: forward foot rests for motorcycles.

To go into production of forward foot rest kits for motorcycles is something only a passionate biker would do, someone who caught the "chopper virus" when seeing the classic film, Easy Rider. The name "chopper" stands for modified motorcycles with forward foot rests, long front wheel forks and high handle bars, on which you can sit upright when cruising down country roads. At the same time, Wilhelm Seeger recognised the business potential of the chopper boom. That's why he established a company in 1981 bearing his name, in order to produce those very foot rest kits. Even at the beginning of the 1980s, there were very few choppers you could buy off the lot – neither from Honda, Yamaha, Suzuki, Kawasaki, and nor even from Harley-Davidson. So motorcycle aficionados had to roll up their sleeves and modify their standard models.

Wilhelm Seeger has fond memories of that time: "For nearly all standard motorcycles, we developed kits with which the foot rests could be moved forward by 50 cm or more. To this day, consumers and dealers can order these TÜV-certified, i.e. street-legal, products from us. The best period for these trend products was between 1985 and 1995. At that time, Seeger earned roughly one million DM in sales per year with five full-

time employees. For Wilhelm Seeger, however, it was in fact a part-time job. Because as head of production for a large company, he remained loyal to his job up until the end of 2005. Only then did he devote all his efforts to his own company.

Productivity is a top priority

Seeger's company continued to develop over the years. Initially, Seeger also took on turning jobs as the extended workbench of various companies. When Wilhelm Seeger's employer decided in the 1980s to



outsource the turned parts from 3 mm to 40 mm for reasons of cost, the first series orders followed. Seeger emphasises: "We had to face off against the competition, and we were not awarded the business based on my relationships, but rather due to quality and a competitive price." He attributed the latter to the minimal administrative costs, which even remain a



high priority today at Seeger Präzisionsdrehteile GmbH (Seeger Precision Parts Ltd). Of the 85 employees, only 1.5 persons are employed in administration, the others work in production.

Thanks to the good value for money that Seeger was able to offer, the orders increased. And with those orders, the precision turning specialists from Salem, a town on Lake Constance, always invested in the right machine. Wilhelm Seeger explains his strategy: "We calculated each individual order and submitted a bid. After being awarded the business, we ordered the machine on which we could produce the part most economically."

Conventional curve and turret lathes stood in the production facility for the foot rests and initial commission orders.

"In 1989 Wilhelm Seeger ordered his first CNC machine – with a Fanuc control. A well thought-out decision, after all, he knew all the CNC providers from his main job. His reasons were the following: Already back then, Fanuc controls were considered utmost reliable and easy to operate – which also proved true throughout the years at Seeger Präzisionsdrehteile GmbH (Seeger Precision Parts Ltd) "

Consistency in Machines and CNC controls

Today the Seeger machine inventory consists of 92 machines, including 65 Star Micronics automatic turning machines and 27 Miyano machines. They are all equipped with CNC controls from the Japanese

world market leader. "For good reasons", explains Moritz Seeger. Together with his brother, Manfred, he took over the company from his father in 2010 and since that time has been responsible for the CNC department.

"Fanuc controls have an incredibly high level of availability. We have never experienced any machine downtime due to CNC problems. It is even rare for a screen to become defective".

Continuity is an additional strength of Fanuc controls. Amid all the advancements in the control technology, any operator who has worked once with a Fanuc control knows immediately where to find a particular menu, even on a new model. Thus he can immediately focus on the machine-specific innovations.

The consistency on the control side naturally has additional advantages that are manifest above all in the work routines. Almost every worker is able to operate all the machines, which is part of Wilhelm Seeger's company philosophy. As he points out: "If one worker is absent due to illness, for example, we can readily divide up the work to others, for example. In addition, operating the Fanuc CNC is easy – another advantage that Seeger mentions: "Given the shortage of skilled technicians, we place great value in straightforward operation of the machine and in high reliability. If I need a specialist for each control, that creates a dependency that I do not wish to have." Whilst the company does train skilled workers, mostly only semi-skilled workers are available for the 2nd and 3rd shift. They are glad to be able to operate the CNC and the machine without comprehensive training sessions.



Precision turned parts for the automotive industry and other sectors

Currently Seeger Präzisionsdrehteile GmbH (Seeger Precision Parts Ltd) is running 18 shifts per week.



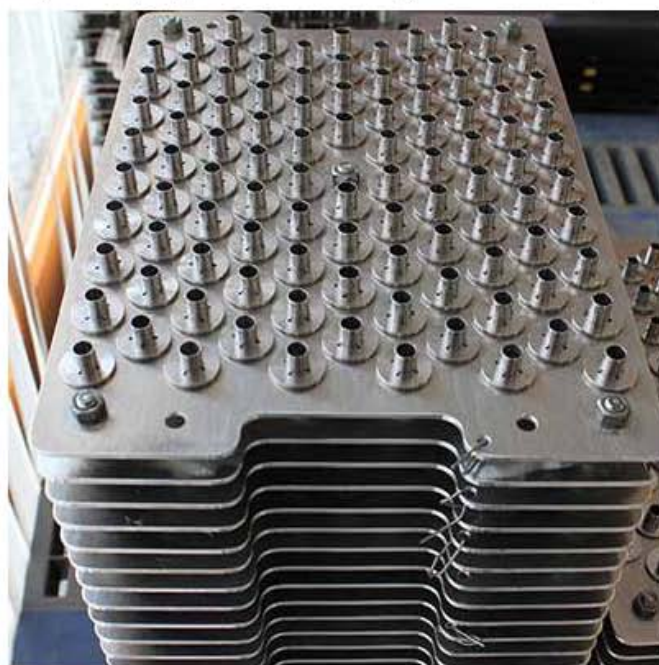
Some 150,000 turned parts are produced day in, and day out. In bar machining, the part diameters are between 3 mm and 40 mm. The motorcycle market hardly plays a role anymore these days. The foot rests now only contribute a mere one percent to overall sales. A large share of the parts, some 50 percent, go instead to the commercial vehicles industry, and another 20 percent to the passenger vehicles industry. The rest comprises general machinery, medical equipment and other sectors.

One speciality of these precision turning experts are, for example, individual parts for electromagnets used in gearbox controls, in steering hydraulics and brake systems. Even the material itself requires special production expertise. Because stainless, yet magnetic, steel alloys are used in the magnets. This is where many years of experience with respect to machinery

selection and machining routines, revs and feed rate, all pay off. After all, the final product delivered by Seeger is required to be within a tolerance range of 10 to 20 μm . A level of precision that is validated and documented 100 percent by discerning customers from the automotive industry.

The Quality has to be 100 Percent

"Our machines, whether it be Star or Miyano, maintain an accuracy of 1/100 mm", relates Moritz Seeger. "But you cannot eliminate all the influences that lead to inaccuracies. That is why quality assurance is a very high priority for us." Seeger set up its own test area in which each component is measured. Five employees are assigned to several fully automatic measuring stations, some of which are proprietary developments. They are equipped with a testing robot which picks



up the parts from the pallet and holds them under a high-precision imaging system which decides whether a part is OK or not OK. After each result, the robot then places the test object back on the pallet and rejects it



if the dimensions are not to spec. The latter occurs relatively seldom, however, as Seeger is able to rely on his employees and machines. Especially the combinations of Star / Fanuc and Miyano / Fanuc are well coordinated teams that function reliably and support the workers with helpful functions. These are primarily macros that ensure



precise machining routines. For instance, a piece counter can be activated to signal when the cutting plates of the tool are to be replaced.

The tool parameters must be constantly corrected due to wear. This is the case if the machine operator discovers when measuring the work pieces that the diameter is approaching the upper tolerance size. For the correction, he is only required to press a special offset button on the Fanuc control and is taken to the proper screen – without having to page through lots of menus. "This button is located in the same place on all Fanuc controls", confirms Moritz Seeger, "even beyond control generations. And it is a tremendous benefit to us that the Fanuc CNCs are consistently upwardly compatible." This means that, as a general

rule, a program written for an older control model will also run on the latest generation of controls. Moritz Seeger gives an example: "We launched a program from a 2001 Star Micronics on a new Star built in 2011. It ran without any modification. We have witnessed this compatibility on all Star machines of the models SR-20, SR-32 and SA-16 that are equipped with the Fanuc controls from the Series 16i, 18i and 32i."

Seeger Präzisionsdrehteile GmbH (Seeger Precision Parts Ltd), Salem/Neufrach, Germany, ...

... is a contract manufacturer for precision turned parts, delivering primarily to the commercial vehicle and passenger vehicle supplier industry. Standard unit volumes range from pre-series starting at 1,000 units up to annual lot sizes of several millions. The parts are delivered installation ready and already pre-assembled where required. A 100% inspection ensures the demanded quality. In 2010 Seeger Präzisionsdrehteile GmbH had a staff of 85, achieving revenues of EUR10.5 million. For 2011, at least EUR12 million in revenues are anticipated.