

## ***Far from superficial***

*F. LIST GMBH*



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***Our team application technology***  
*Your management consultants*

***HAMUEL Maschinenbau – New machine concept HSTM 150 S2***  
*High-precision HSC 5-axes turn-mill machining of flow components*

***First in the industry***  
*90 years of HAMUEL Maschinenbau*

**HAMUEL**  
**REICHENBACHER**  
*Members of the SCHERDELGroup*



Picture (left to right): Andreas Leutheußer, Uwe Wenzel, Thomas Czwielong



## An eventful year

Dear business partners, dear colleagues,

This current issue of our magazine Insight is to present to you the latest projects and topics from our HAMUEL Reichenbacher group of companies.

We are always happy to see that – for reasons of their innovative products – our customers are trendsetters in their industries. This edition introduces to you several companies that secure their positions as premium manufacturers in their markets with our machining centres. We thank them very much for these impressive insights!

Get to know our department application technology and the specialists working there. They use their know-how to give advice and support to our customers and to make our machines a perfect match for the individual requirements of each customer.

We attach great value to the vocational training for young people – more than 10% of our employees are apprentices! This high ratio of apprentices will ensure the premium quality of our products and our company growth also in the future.

Our Meeder location rounds off its range of products by presenting the new turn-milling machine HSTM 150 S2 for the machining of flow components. The big success in the market already in the initial stage led to the construction of a new assembly hall with an area of 1,800 square metres. It houses the cycle production of turn-milling machines to the latest standards. The hall was handed over to production on the occasion of the company's 90th anniversary celebration.

Our success over the last years has made us optimistic for the future, as our products are in greater demand than ever before. This impetus directs our focus once more on being always one step ahead of the market with our progressive technologies.

**Andreas Leutheußer**  
Managing Director  
Reichenbacher Hamuel &  
HAMUEL Maschinenbau

**Uwe Wenzel**  
Managing Director  
HAMUEL Maschinenbau

**Thomas Czwielong**  
Managing Director  
Reichenbacher Hamuel



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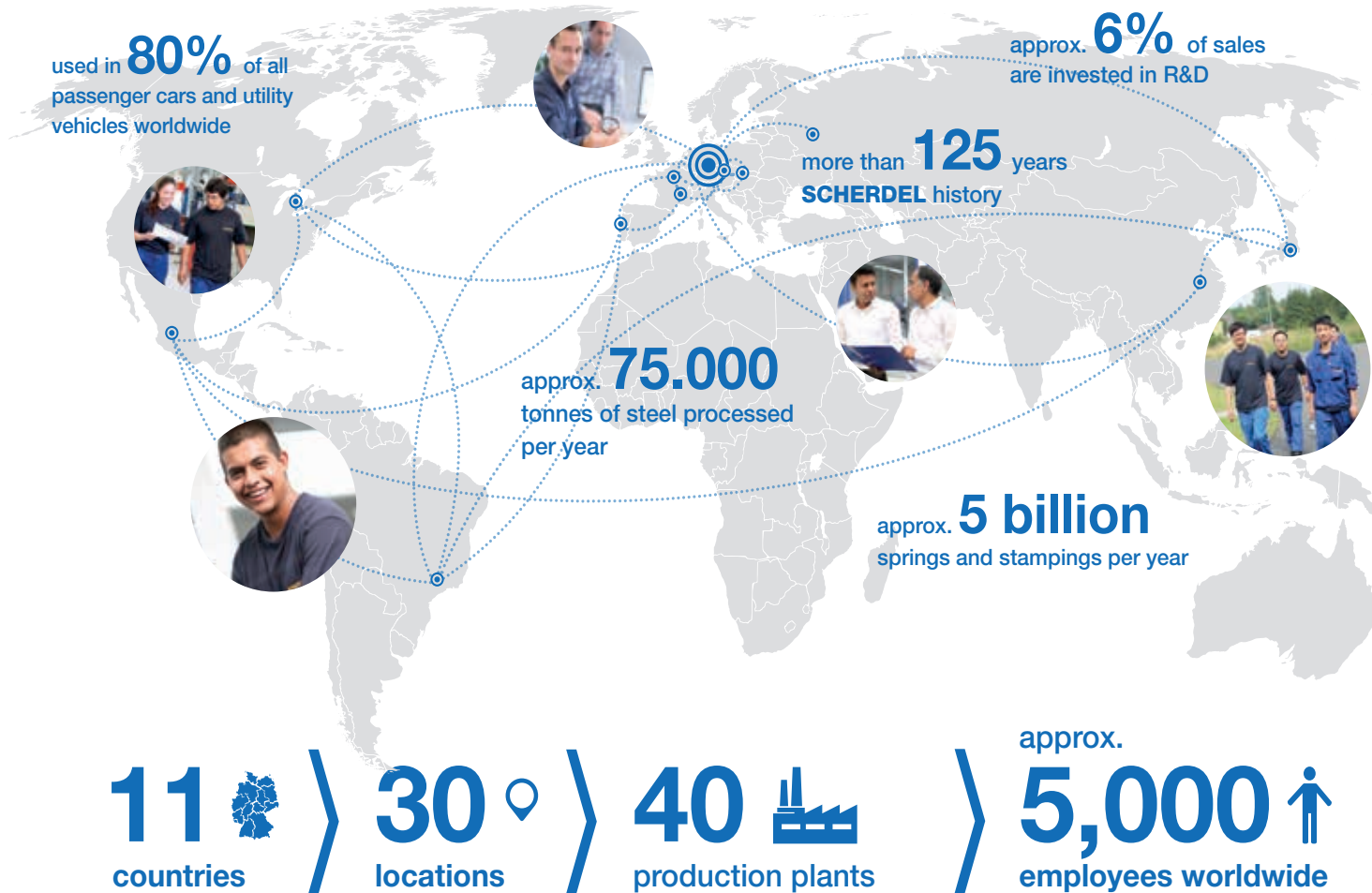
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## HAMUEL / Reichenbacher / SCHERDEL

Regarding its own area of expertise, each of the following subsidiaries within the SCHERDELGroup of Companies holds its acknowledged status in the market for machinery.

Their great innovativeness has gained **Reichenbacher Hamuel GmbH** a world-wide reputation as a manufacturer of first-class CNC-machining centres. In Dörfles-Esbach near Coburg they develop and manufacture 5-axes-lines with highest safety standards for the use in aircraft, automobile, ship and rail vehicle construction, as well as in the woodworking industry or at the manufacturers of components from plastics or composites. Under the aspect of finding the “best-fit-solution” for their customer, all these lines are bringing processes, such as milling, drilling and sawing, to perfection. Based on a modular system, these machines are perfectly matched with the requirements of their customers and convince by remarkable details, great ease of operation and impressive results.

The specialist for high-speed cutting technology (HSC) is **HAMUEL Maschinenbau GmbH & Co. KG**. In Meeder optimised CNC-machining centres are manufactured, which are used for the processing of components from steel, cast materials, titanium, Inconel, light metals and composites, always bearing in mind sustainability, energy- and cost efficiency. Convinced customers are from the aerospace technology, the automotive industry, from model and mould making and from other industrial sectors. Owing to their excellent vibration-damping, the machine components from mineral cast are trendsetting and entail an increase in productivity. HAMUEL is your sole counterpart for all steps from the development of the components, via the design and manufacture of the moulds, to the actual casting process and the subsequent finishing.

The manufacture of demanding sheet-metal, bent and welded parts by the processing of structural steel, stainless steel and aluminium is the area of expertise of **HAMUEL Maschinenbau Plauen GmbH & Co. KG** operating out of the Saxon city of Plauen. Their excellence in metal processing has firmly established them in the market. Not only have these specialists been certified with the internationally supreme standard DIN EN ISO 3834-2:2006 regulating the quality requirements for fusion welding of metallic materials, but they have also been approved as an expert company per WHG. However, the latest technologies are not only applied for manufacturing welded assemblies, but also in laser cutting and sheet-metal processing, in flame cutting and for the finishing of components by blasting, priming or stress-relief heat treatment.

## Synergies within the SCHERDELGroup

Our customers benefit from the cooperation between our highly specialised subsidiaries within the group of companies.

In our globalised economy, the efficient utilisation of synergies within a group of companies will bring decisive advantages for the customer, above all from the point of view of cost minimisation and process optimisation. „Together the parts make a giant,“ is a phrase, Marcus Bach, managing director of the group, interprets for the SCHERDELGroup as follows: „The pooling of knowledge from the various process technologies specific to the highly specialised subsidiaries of the group results in remarkable synergies. As a group we do not only possess comprehensive know-how, but also the corresponding resources to elaborate and implement „best-fit-solutions“.

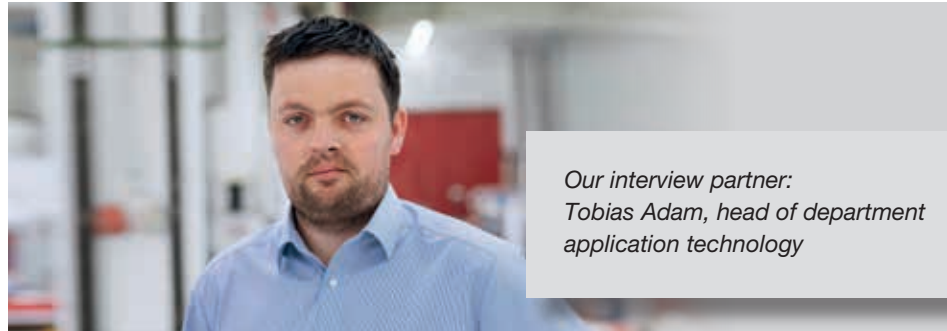
The objective of our modern company policy consists of developing individual and practical machine concepts for our customers with cost minimisation in mind. The SCHERDELGroup, a medium-sized company run by the owners, with its headquarters in Upper Franconian Marktredwitz, is operating out of 30 locations world-wide and has about 5,000 employees. For generations, the company has successfully obtained a position in the market as a manufacturer of functional and other components in the automotive supplier sector. Although SCHERDEL is not a mere automotive supplier.

Machine construction with its long tradition in the overall group makes a decisive contribution to continuity and the successful implementation of business objectives and is an important mainstay in addition to forming technology. Around the world about 4,000 CNC-machines from SCHERDEL are in use, the top technology of which is appreciated in many industries. Currently, 700 people at SCHERDEL are employed in the numerous subsidiaries of the machine construction sector with its more than impressive growth within the overall group of companies.



## Your management consultants

It is all about the customer.



Our interview partner:  
Tobias Adam, head of department  
application technology



**Interviewer:** Can you briefly describe what is meant by application technology?

**Adam:** The department application technology is the direct interface to our customers, along with the sales and the service department. We have quite a bunch of tasks: starting with functional tests at quality assurance units up to the creation of user programmes and user cycles. For potential and existing customers there are machine presentations with components placed at our disposal or with sample parts. Customer specifications are included in CAD/CAM and DIN/ISO-programming. In addition, there are milling and material tests for quality assurance. Other tasks are: CNC-training and support for our after sales service. Moreover, we are often present at the numerous fairs with Reichenbacher participation.

**Interviewer:** What kind of qualification is necessary to become part of the team application technology?

**Adam:** As you can see from the range of tasks, profound knowledge in NC- and CAD/CAM-programming will be imperative. Our job cannot be done without it. Moreover, mathematical knowledge will be required for implementing specific user cycles, such as measuring programmes.

This should be rounded off by a high degree of willingness to learn and motivation, as we always have to be up-to-date.

**Interviewer:** For that matter, must everyone be able to do everything or are there specialists for certain tasks in the team?

**Adam:** Of course, it is desirable that every team member can perform every task. In spite of this, our team comprises three specialists for CAD/CAM-programming (NC-Hops, Alphacam, TopSolid) and two colleagues well versed in DIN/ISO-programming. They all are available to provide support with the multi-channel machines and special solutions.



**Interviewer:** What are the advantages of specialisation?

**Adam:** When each of the team members has a special area of expertise, projects can be handled with a clear focus on the solution. This results in enormous time savings. If someone possesses profound expertise in a certain area and intuitively recognises backgrounds, problems and potential solutions, he can reach results in an easier and faster way. We all know this from our own experience: we master a software programme the better, the more often we use it. And this is true for our team, too.

**Interviewer:** To what extent is your every-day work routine influenced by customer requests?

**Adam:** Of course, our every-day work is determined to a certain extent by our customers: this starts with phone calls to diagnose the fault in the case of machine standstills and spans to optimisation work based on customer requests, where the handling and operation of their lines is concerned.

**Interviewer:** Why is the department application technology so important at Reichenbacher?

**Adam:** We act as an interface and this capacity is predominantly based on detailed knowledge on programming. Other departments cannot themselves accomplish these tasks to this extent. For example, with our expertise we provide our sales department with assistance in acquiring orders – in meetings or with machine presentations. Moreover, the lines are becoming ever more complex. As a result, also their handling is becoming ever more difficult. Therefore,

it is necessary to automate certain processes to facilitate machine operation for our customers. This is implemented by establishing user cycles.

**Interviewer:** What is your personal contribution to keep the team successful also in the future?

**Adam:** My leadership principle is always that of fair interaction. I want to keep it this way, as I consider it important to preserve this team spirit. In addition, I want to show my colleagues their prospects for the future, above all with respect to further qualification.









**Interviewer:** One final question: How, do you think, is your work going to change in the future?

**Adam:** There are ever more intricate special machines, mainly owing to the automation of processes. This comprises the integration of our CNC-machines into production lines, but also automatic component loading with handling systems and robots. Therefore, there will be more and more tasks in machine monitoring with respect to standstills, production optimisation, time recording, etc. Moreover, Siemens regularly develop their machine control systems further. In this context, too, we will have to keep pace and to come to terms with new types of machinery.



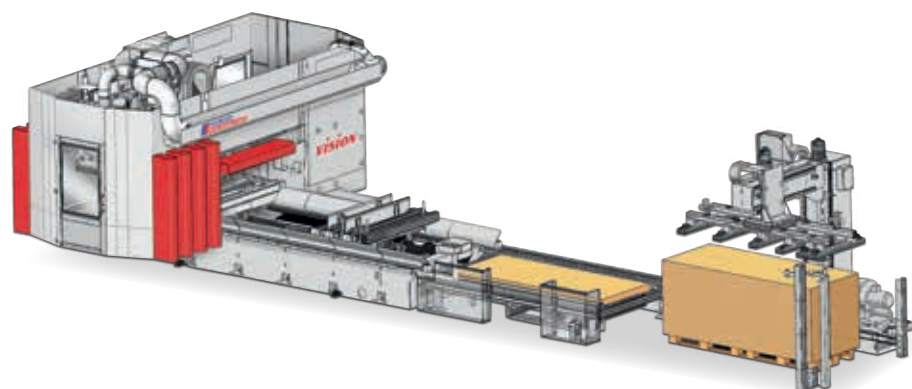
## Fairs in 2017

Past and future.

COMPOSITE-EXPO		28.02. – 02.03.2017	Russia	Moscow
JEC WORLD		14.03. – 16.03.2017	France	Paris
CIMT		17.04. – 22.04.2017	China	Beijing
METALLOBRABOTKA		15.05. – 19.05.2017	Russia	Moscow
LIGNA		22.05. – 26.05.2017	Germany	Hanover
EMO		18.09. – 23.09.2017	Germany	Hanover
COMPOSITES EUROPE		19.09. – 21.09.2017	Germany	Stuttgart
HOUT PRO PLUS		31.10. – 03.11.2017	The Netherlands	Brabantallen

Reichenbacher comments on LIGNA:

### New location in hall 27 / stand H40



LIGNA always offers an ideal platform for expert talk, where we will present a compact and efficient CNC-line of type VISION-I Sprint to the international audience. This line, which is to be delivered to Switzerland as soon as the fair closes, convinces by several technical highlights.

The CNC-machining centre, which is

equipped with an automatic beam table with 6 beams, features a torque support, a special extraction concept, a sword brush for automatic workpiece cleaning, a cardanic 5-axes-head, a separate multi-spindle drilling head with 15 spindles, a plate tool changer with 24 places and a pick-up station for saw blades with diameters up to 400 mm. Apart from a high Z-stroke with a cle-

rance 400 mm in height, especially the automatic feeding system with stacking places and loader is to be pointed out. This permits the independent processing of workpiece stacks during regular working hours and breaks, but also when regular working hours are over. For a small handicraft or industrial operation this means far better utilisation and broader options for use. Our Swiss customer is going to machine components from solid wood, wood materials and plastics with this machine.

As we have successfully supplied highly modern CNC-lines for the machining of plastics and composites for decades, we have something to offer on this subject, too. During the entire fair we will present machine concepts dealing with the efficient machining of components from plastics and composites and our experts will answer all your questions on site.



## Reach the goal as a team!

Vocational training is a social responsibility and in our company practical relevance has top priority to keep up motivation.

Dual training is an important social task with a longstanding tradition in Germany – also at Hamuel Reichenbacher. Apart from high-quality professional training, at our company and in the whole group great attention is also paid to the personal development and enhancement of the apprentice. Gently, we introduce the apprentices to everyday work. This begins with a tour of the factory and important instructions on shop-floor safety, on rules of conduct and internal guidelines. „Our Dos and Don'ts, so to speak, as our apprentices soon are to take on responsibility themselves“, explains head instructor Frank Welsch. In the industrial sector the first year of apprenticeship will predominantly take place in the well-equipped training workshop.

Top priority is quick practical relevance and „when it is convenient, we will include our apprentices also into real cu-

stomer orders by giving them simpler tasks.“ For many of them, this is a real motivational kick. In their second and third year of apprenticeship the apprentices will then be introduced to other departments. An additional focus is on exam preparation, which is backed up by crash courses, if necessary. True to the motto: „No one will be left alone, as mutual assistance and good teamwork are of utmost importance to us“. As an absolute highlight, we offer these young people the possibility of gathering experience abroad. Here, the apprentices can accompany their experienced colleagues during a service intervention or take part in an exchange programme.

In our opinion, modern leadership for employees is not restricted to giving instructions.

The emphasis is on showing initiative, coming up with independent ideas and using individual skills, as well as taking on responsibility. This is what we convey to our apprentices, as only human beings with an objective in mind and capable of understanding the meaning of their actions will experience success. „Human beings can be top-performers when they are given room for development and see the sense of their work“, this is the conviction prevailing on the management level of Hamuel Reichenbacher.





# Visionary decisions level new grounds



Industrialised production for clever lightweight constructions.

© Airex: KISS Aeroexpress Compositing



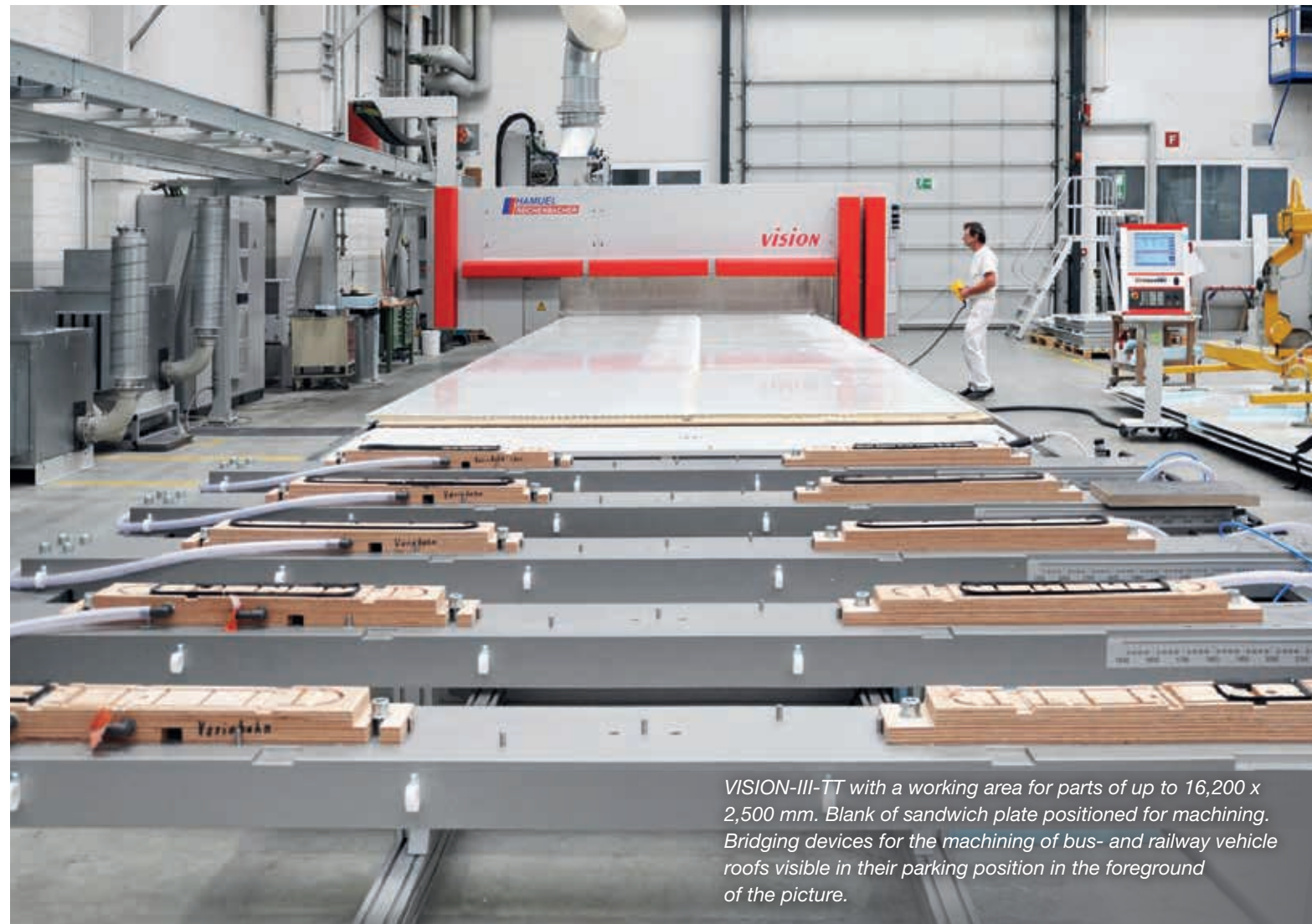
Top: Heatable floor systems (COMFLOOR®) for railway vehicles are developed and manufactured precisely to customer requirements.

Left: The Kiss Aeroexpress in Minsk.

Increasing urbanisation everywhere around the globe asks for ever more efficient and low-emission systems in public transport and stationary industrial plants. The Swiss company Airex Composite Structures knew at an early stage that clever lightweight construction is a precondition for the efficient movement of weight, for effortless acceleration and for excellent mechanical performance. Thus, they have become established as the leading provider where structural and functionally integrated composite systems for mass transit by rail or road are concerned.

Their success is based on the fact that the Swiss company has the best answers to market requirements. In railway vehicle construction it is about energy efficiency and comfort, for bus manufacturers about modular production and maximum weight reduction, and for industrial products about customised solutions made from composite materials. To this end they had to move away from a manufactory towards industrialisation a few years ago. This comprised the acquisition of additional machinery on a large scale, the entry into the CNC era, combined with the upending of the entire production flow and optimisation of the material flow analysis.

The challenge for Reichenbacher was a very specific one: is it possible to use a CNC-line to partition the big bonded Comfloor components to get the required parts? Area sales manager Kurt Kutschmann answered this question in the affirmative and presented the VISION series. The demands made were based on some essentials: on one hand there was the size of the components, on the other hand the material to be machined, and finally the precision required of 0.01 mm for the Z-axis and of 0.1 mm for the X/Y-axes. This very precise machining of the Comfloor® plates had to be ensured, as the primer coating had to be left undamaged. The precondition here was the absolute precision of the milling process.



VISION-III-TT with a working area for parts of up to 16,200 x 2,500 mm. Blank of sandwich plate positioned for machining. Bridging devices for the machining of bus- and railway vehicle roofs visible in their parking position in the foreground of the picture.

A peculiarity of the line is to be found in the design of the machine table. The grooved HPL table is a standard one, but the concept of the vacuum system is to be pointed out, as it permits optimum nesting. 16 vacuum areas with 2 high pressure blowers, one for each side, generate large-volume vacuum. In addition, there are 2 vacuum pumps to provide vacuum in certain spots. Moreover, a quick changeover between the flatbed and the vacuum table will be possible. The concept featuring different clamping devices permits an easier and quicker conversion of the table from flat materials to curved components – and quick convertibility is a decisive factor, as unprofitable downtimes are minimised. The 5-axes-CNC machining centre, a 4-column portal unit with Gantry drive, features travels of up to 16,540 mm in the X-axis and of 2,800 mm in the Y-axis, and thus enormous dimensions.

The line is equipped with a 15 kW spindle HSK F63 that reaches a speed of up to 24,000 rpm, which permits also thread-cutting. This highly complex line is completed by a blasting nozzle with ionised air to prevent the chips from sticking to the component, a tracing spindle unit with tracing bell, a 3D measuring sensor for determining the component positions in the X/Y-plane, as well as a cable chain placed in an elevated position to permit free access to the rear side of the machine.

The résumé is a clear one: process security in production and variability in the case of a product change provide for improved planning and thus investment protection. This likewise applies to milling precision and thus to consistent quality in series production.



## Far from superficial

„Beyond the Surface“ is their vivid corporate philosophy – and it is about generating perfect surfaces.



From the left: Stefan Schirrhofer and Hubert Haitler of F. LIST, next to them Kurt Kutschmann of Reichenbacher.

F. LIST GMBH have gained themselves a reputation as a supplier of modern interiors for yachts and aircrafts. They render possible what others consider impossible, and this refers to fire protection, as well as to a perfect surface gloss, but also to lightweight design where it did not exist before. They develop and manufacture premium interiors for business & private jets, yachts and luxury residences with no limits where the materials are concerned: from precious woods, ultrathin stone floorings and stone veneers, to components made from stainless steel, brass, aluminium, fibre-reinforced plastics or carbon, there is everything the customer might desire. This innovative power convinces aircraft manufacturers like Bombardier, Embraer, Pilatus Aircraft and Gulfstream, just as Lufthansa Technik and others from the industry.

For years, the company has undergone rapid development and this necessitated a considerable shop-floor expansion. In this context they also had to invest in new machinery. Bearing in mind a clear objective: to meet the great challenges faced in the highly sensitive aircraft industry, as the demands for utmost precision are many times higher there than in other industries.

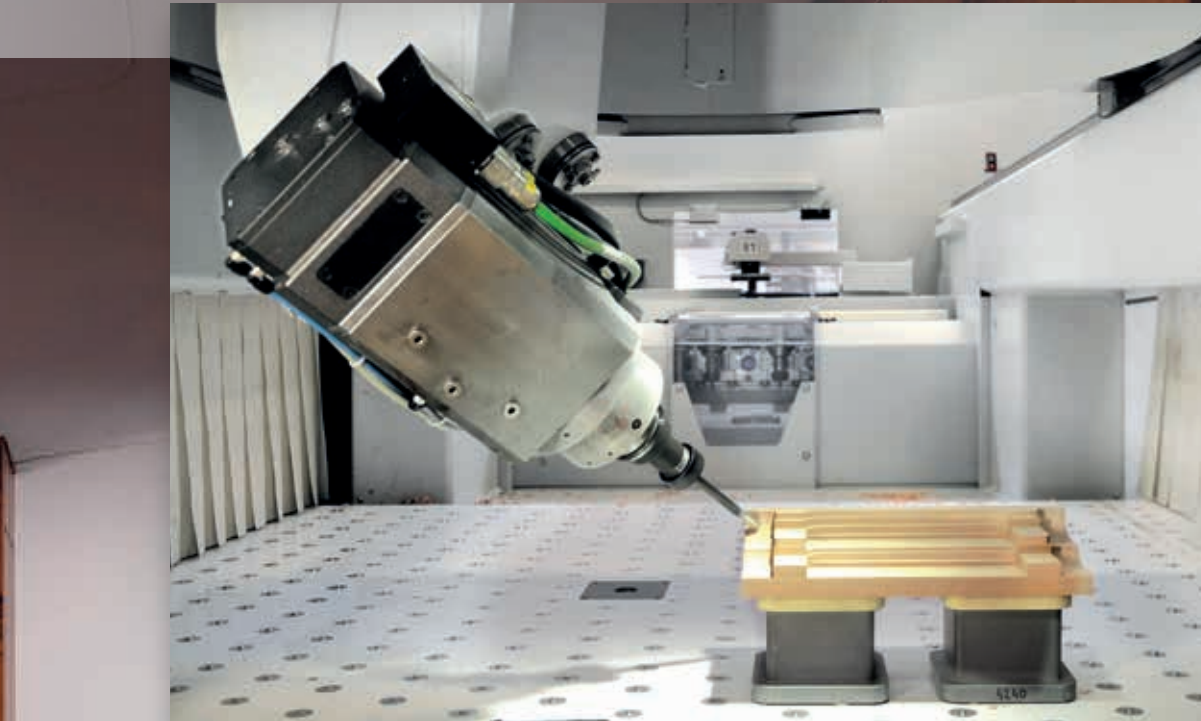
They departed from the idea that each machine acquired should be able to perform all machining tasks. This is essentially possible, but not wise. Therefore, depending on their respective tasks, the three CNC-machining centres of the VISION series differ in their technical configuration. While for one machine the component sizes required a high Z-stroke, whereas the other machine needed nesting, for all three centres the focus was on utmost machining accuracy given the highly sensitive surfaces. The admissible tolerances in this extremely demanding sector are in the lowest tenths. After all, surfaces must be 100 per cent plane, as apart from the visual effect,



the feel of a surface is of essential significance. „Our customers quasi caress their surfaces and in such a case there must be no disturbing edges or unevenness“, explains Stefan Schirrhofer, Head of Department CNC.

The specifications raised also the topic of sensitive scanning, as the extremely delicate component surfaces must not be damaged by such a process. The comprehensive experience the German specialists had gathered in implementing such scanning for recognizing even the smallest difference in material thickness, was another plus for Reichenbacher. The open CAD/CAM-interface was one more asset. Almost 99 per cent of the components for the aircraft sector are nowadays machined by the Reichenbacher 5-axes machines, which guarantee their continuously high level of quality.





Those responsible on site are still impressed by the system's stability, which is of essential significance for a company manufacturing products for the luxury segment. As customers, among which there is also someone like Niki Lauda, have no sympathy for delays caused by production downtimes. Thus, we understand why Haitler and Schirnhöfer point out what they appreciate in partners such as Reichenbacher: reliability, commitment and precision. And this refers not only to the failsafe CNC-machining centres, but also to the competent after sales service. Thus, the prompt spare part deliveries and the remote diagnostic capabilities are entirely in keeping with this innovative company.

The unique selling point of F. LIST is the use of finest primary products and trendsetting materials they process into perfect surfaces which leave nothing to be desired as to sound insulation, vibration damping and feel. Thanks to innovations, such as the laying of stone floorings in business jets, the Austrian company enjoys a lot of sympathy in this industry intent on lightweight constructions and fire safety. They are the absolute experts when the task is to precision-grind natural stone slabs about 3 cm thick to floorings 2.5 mm thin or to veneer versions of 0.8 mm. A separate department is busy preparing eleven different types of granite and two kinds of marble for installation. The same perfection is applied to all other materials, too. The perfect quality of all components can be seen from the fact that they are all certified and installed immediately upon delivery without the need for further checks. Service centre employees who have been given special training by the aircraft manufacturers will install the components in compliance with all regulations and based on detailed layout drawings.



## Part of the interior design

Here, no staircase is like the other.

There is a good reason for architects and house builders to come to Bavaria from far away when they are looking for intricate staircases as a statement of individuality and exclusivity. „No staircase we build is like the other,“ managing director Thomas Thoni puts the secret of his success in a nutshell. „If we build two identical staircases it is only because we need two of a kind in the same building“. Experts from Vancouver, London, Manchester, Zurich and Moscow take to these unique staircases.

What is it that makes these staircases so special? On one hand there are their intricate shapes, and on the other hand there are the impressive, high-quality materials and the fascinating combination of wood with stainless steel, glass, concrete or stone. The concepts benefit from a great deal of imagination while great importance is always attached to an exclusive flair provided, for example, by recessed lighting elements, where the elaborate preparation includes even the layout for the power supply lines.

Apart from spacious storage areas, their shop floor is above all characterised by technically sophisticated machinery. There you find two 5-axes machining centres, each more than six metres in length, of VISION type with gantry drive, which have been supplied by the machine builder Reichenbacher. Thomas Thoni provides an explanation, both simple and logical: „You must be in a position to offer modern technology and versatility to remain competitive and to be able to keep up with the architects' visionary design ideas“. Eye-catchers of the line with the automatic beam table are the chain tool changer for up to 60 tools and the multi-spindle drilling head. Whereas the machine with the grooved HPL table is equipped with a plate magazine for only 24 tools, however, completed by a pick-up place for big saw blades.

On this basis, the person in charge of process planning can react very flexibly and assign the enormous range of products, such as most different short or long stringers, steps, handrails, newel posts or special parts, taking into account their size, material or intricacy, to the machine with the technical configuration to perform the various machining modes in an optimum way. For components greater in height the CNC-line



Picture from the left: Florian Mauch, area sales manager of Reichenbacher, managing director Thomas Thoni and machine operator Gerhard Reiter.

Picture below: CNC-machining centre VISION-II-T with multifunctional grooved table to be used for nesting, plane surface for double-acting suction cups.



equipped with a Z-axis of 735 mm will prove its advantages, whereas for other components the machine with the greater table depth will be more suitable, while for components requiring a multitude of drilling and milling processes the line with a great number of interchangeable tools will be predestined to obtain optimum efficiency.

95 per cent of the company's products are made from oak, but the experts have already put their hands - or rather their machine - on any other type of wood. When faced with the considerable variety of materials and the ever increasing intricacy of the components, Florian Mauch, our area sales manager, immediately knew that only a four-column portal line would provide the expected results to meet these challenging requirements. As this structural design assures utmost precision - even in the case of really big staircase components. Apart from the technical equipment perfectly suited for the customer's requirements, also his request for a special extraction unit could be met.

Length, width and height of the first VISION had been adapted to the maximum size, each, as staircase designer Thomas Thoni had foresight and knew that these dimensions are mandatory. The second machine with a nesting table was delivered shortly after, because they wanted to become more flexible as to setup time. This left them also well-prepared for the manufacturing of very small series. Moreover, two machines provide even better process reliability.

Thoni emphasises that he had never had any problems regarding delivery dates, although the installation dimensions of the staircases were often only known at a relatively late stage of the construction phase. There can be delays for reasons of modifications requested by the house builders, but predominantly owing to the time required for drying the wood. To compensate for this risk, the company has on stock many regional, PEFC/FSC certified types of wood, but also exotic types, such as cherry, walnut or teak and Macassar. This permits not only an efficient control of the time required for drying, but also of the wood quality, as the storage area has floor heating, is lighted to daylight standards and moisture-controlled. Thus, short delivery times and flexibility keep them extremely competitive.

Background: Spiral staircase from solid wood at Sternbrauerei Salzburg.



## New machine concept HSTM 150 S2

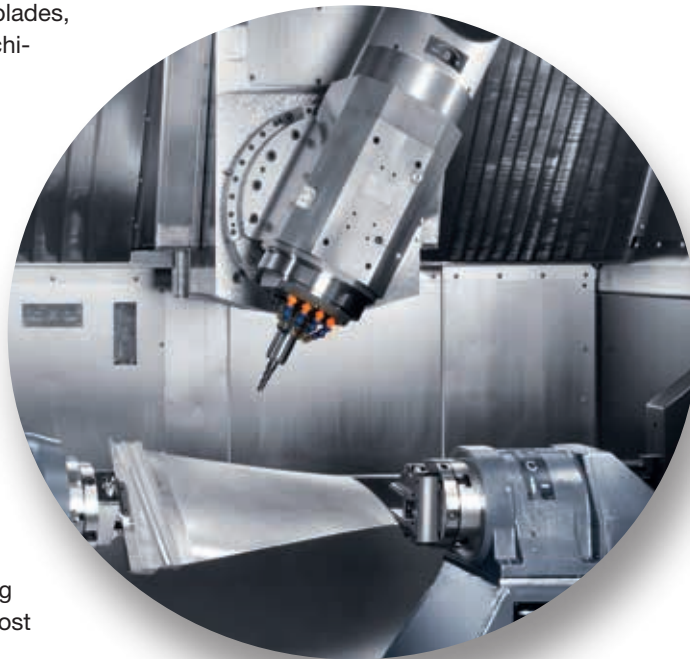
High-precision HSC 5-axes  
turn-mill machining  
of flow components.



The requirements for the manufacture of turbine- and compressor blades, blisks or radial compressors are very challenging ones. A HSC-machining centre needs excellent properties to meet these extraordinary demands as to the required accuracies and surface qualities. Sturdiness and rigidity are essential criteria, where the efficient machining of horizontally placed components from highly alloyed and highly heat resistant materials is concerned.

The turn-milling centre HSTM 150 S2 from HAMUEL with HSC-technology warrants for utmost productivity and its compact structure permits quick and flexible installation. The working area is such that, apart from optimum mass distribution, it ensures also an excellent view of the machining situation.

This HSC-turn-milling machine is ideally suited for sophisticated machining applications in the range of up to 800 mm between workpiece spindle and counter-spindle. Owing to the pivot range of the B-axis – one-sided up to 100°! – even blisks with an outer ring or closed blisks can be machined. Thus, this line meets even the most demanding criteria of modern blade machining in full.



## 90 years of HAMUEL Maschinenbau



### Pride in common achievements.

There are those who need to talk a lot and loudly about their expertise and others setting benchmarks in a rather unobtrusive way. One of these so-called „Hidden Champions“ is HAMUEL, a member of the family-run SCHERDELGroup.

It happened almost unnoticed that they reached the top with machines for the production of blades needed for steam and gas turbines, as well as for jet engines. „At a market share of 44 per cent we are the world's number one in this sector“, states managing director Uwe Wenzel with visible pride and adds that they are also considered first in the industry, where the production of basic machine structures is concerned.

It is important to celebrate such a success together and to look back at the developments over the past 90 years. And what you can see is impressive for everyone involved.

This success has entailed continuous expansions in Meeder. A new factory hall has just been put into service, which is to house a cycle production that allows for a finished machine to leave the hall every three days. And there is one more success to be reported: HAMUEL have invested three million Euros in the manufacture of machine bases from polymer concrete to replace bases from steel and cast iron. The latter are characterized by the unpleasant property of transmitting vibrations with the effect

that lathes and milling heads show deviations of hundredths of millimeters from the specified values and cause premature wear of the tooling. Polymer concrete, however, has a vibration-damping effect and can be cast to form a multitude of shapes.



„Since 2015 we have nearly quadrupled our turnover in the mineral casting sector and almost all German machine tool manufacturers are our customers“, says Uwe Wenzel. But this is not the only fact worth mentioning: HAMUEL also assumes the position of an equipment supplier. They can do everything, from the machining of the cast component to the assembly of the entire machine.



# ***Automatically better!***

***Intelligently integrated manufacturing –  
4.0 for trade and industry***

*VISION – trendsetting CNC-technology for the  
efficient machining of components made of  
aluminium, wood, plastics and composites.*

