

Passionate about the extraordinary

A TECHNICAL ADVENTURE

New additive manufacturing system
3DM-AMS 800

A perfect fit
Fast with first-class processing quality

Highest demands on technology
Resilience versus aerodynamics



Foreword by Johannes Karl.

3D-printing systems and customised solutions

Dear customers, business partners and colleagues,

The following must be said in advance: we are living in exciting times and should see this as our chance. Radical changes to the extent companies are currently facing worldwide in all markets for reasons such as climate change, sustainability, artificial intelligence or digitisation, were last seen at the beginning of the industrial age.

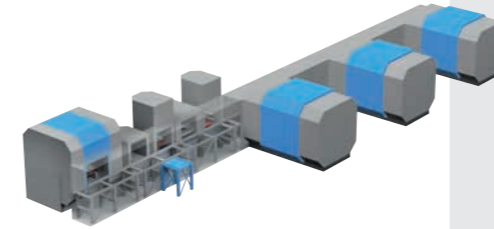
This is an enormous challenge: companies, however, who see the credo 'never change a running system' as the right strategy and consider trends towards change a danger for established values will miss the chance and most probably be taught a different lesson by reality (see the automotive sector). However, as some people won't ignore new ideas, and exactly those people will be ahead of all others in the future.

We at Reichenbacher Hamuel see this change as our great opportunity to open up new markets and to engage in entirely new technologies, which, in our opinion, are gaining ground and will become dominant in the market over the next few decades – such as 'additive manufacturing'. You need partnerships to get involved here, where each partner contributes his very own expertise to the development and implementation of promising new processes.

On pages 4-6 you will read about a technology entirely new to us: the additive-manufacturing system. In cooperation with our partner 3D-Mectronic we have developed and patented a 3D-print manufacturing line, which aims at convincing users from the automotive and aircraft industry, as well as manufacturers from medical technology, mould construction or the toy industry, to have printed components from various materials and have them finished at once in the future – and this in a closed system.

I hope you will enjoy reading this issue,

Dipl.-Ing. (FH) Johannes Karl
 Head of Design and Development Department
 Reichenbacher Hamuel GmbH



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Imprint

Publisher:
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Review Fair Formnext 2019

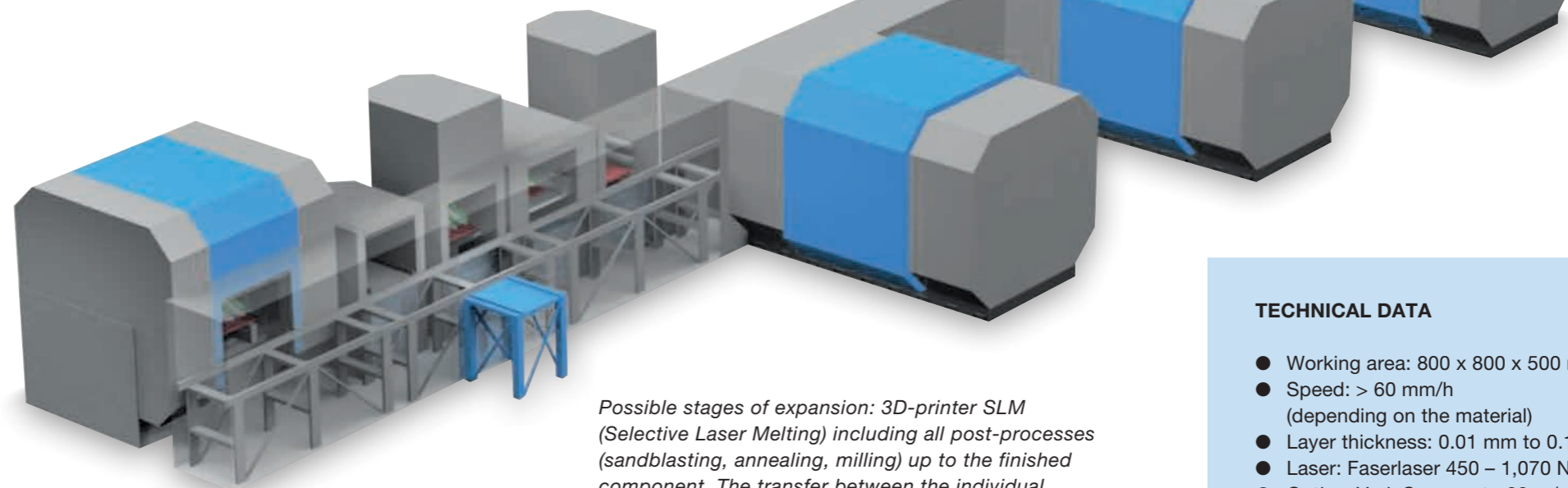
New additive manufacturing system with 3D-MECTRONIC.



Additive manufacturing, or the term 3D-printing often used as a synonym, is much talked about and has taken a remarkable step forward especially in the last few years.

Some of our customers have long ago adopted additive manufacturing for their purposes. Aircraft manufacturers are already producing various components, such as parts of the safety belts, by 3D-printing. We were well aware of one fact: the more components are printed, the less machining and thus milling units will be required. Therefore, as a machine manufacturer we have taken an open-minded approach and with foresight made an investment into this new technology.

The manufacture of operational additive components requires more than mere printing. The dominant players in the market are currently dealing mostly with the various printing systems, but not with the required subsequent processes. The printing systems alone, however, neither ensure the necessary accuracies nor perfect surfaces. This is why the components always have to undergo post-processing.



Possible stages of expansion: 3D-printer SLM (Selective Laser Melting) including all post-processes (sandblasting, annealing, milling) up to the finished component. The transfer between the individual processing steps is fully automatic.

TECHNICAL DATA

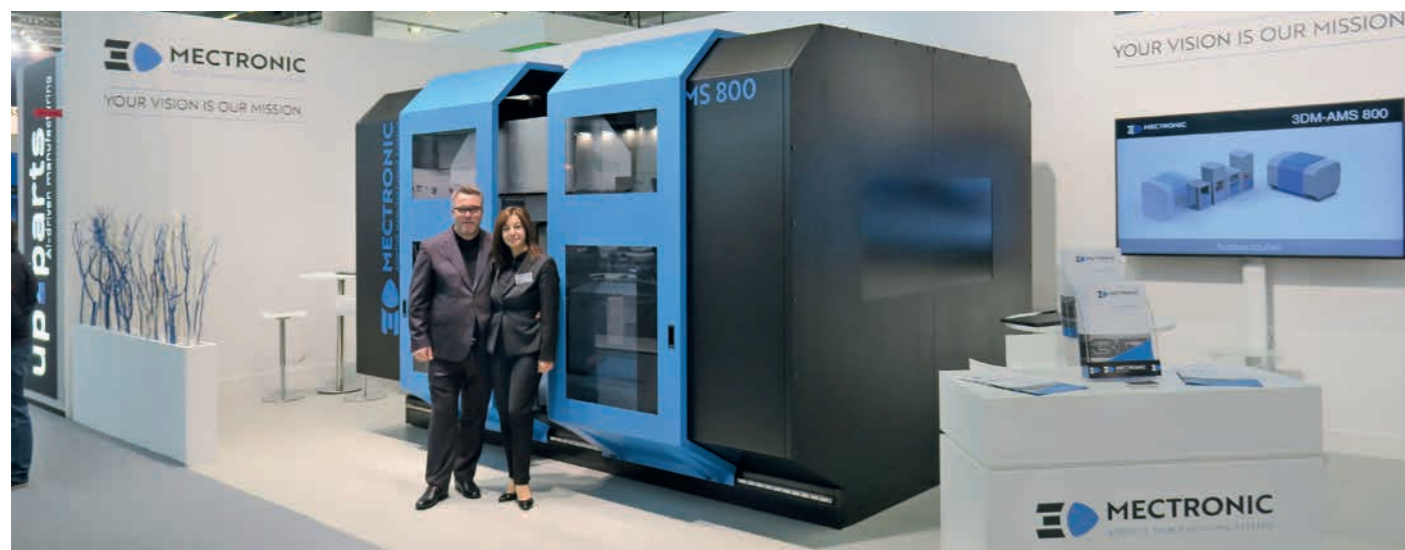
- Working area: 800 x 800 x 500 mm
- Speed: > 60 mm/h (depending on the material)
- Layer thickness: 0.01 mm to 0.12 mm
- Laser: Faserlaser 450 – 1,070 NM (selectable)
- Optics: VarioScan up to 30 m/s
- Electrics: CEE 32A
- Consumption: nominal power 10 kW, typically 7kW
- Atmosphere: nitrogen/argon (depending on the material)
- Compressor: min. 5 l/h, 7,500 hPa
- Dimensions: 12,000 x 2,500 x 2,500 mm
- Weight: 10,000 kg
- Data processing: 3DM AMPC
- CAD-interface: STL
- Operating system: WIN 10 Pro
- Network: Ethernet
- Certification: CE/UL

Integrated plate tower, powder transport, stripping and sieving station, stress-relief annealing, post-processing of components and repeatable surface blasting.

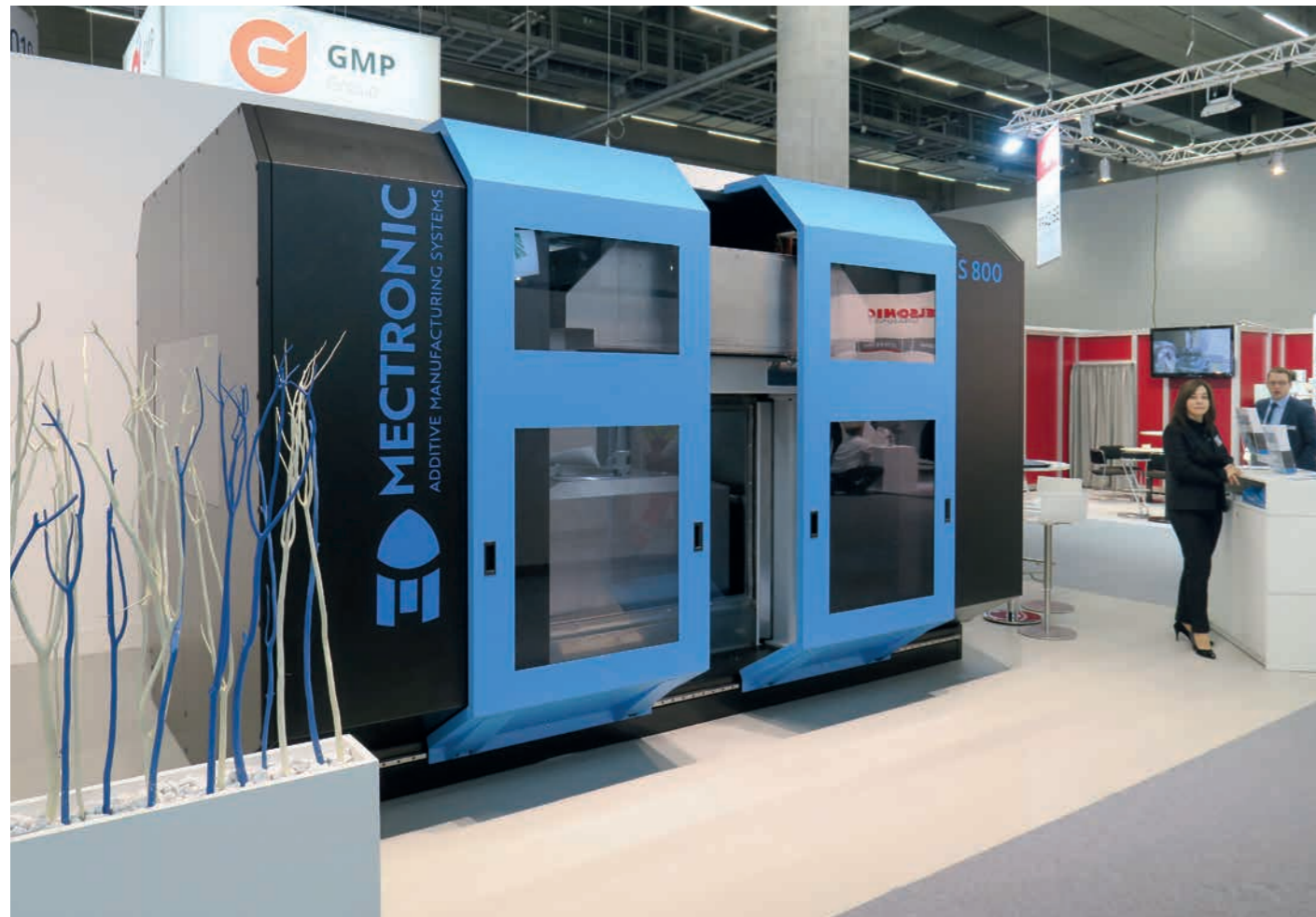
Applicable for plastic materials, metals and ceramic materials.

Thus, we had the SLS-technique in mind from the very beginning, a generative layer manufacturing method using laser beams to create complex three-dimensional shapes without support structures from a powdery initial material, which could not be obtained by a traditional mechanical manufacturing process. Our vision: to cover the entire process chain, including all of the handling, and all this from one source. We are aiming in particular at the manufacture of components with cube dimensions of 800 x 800 x 500 mm at the moment – and even more in the future.

Frank Heimbert Kulke, managing director of 3D-Mectronic, contacted us last year in order to ascertain the possible framework conditions for mutual business relations. He wanted to open up new fields of application for 3D-printing and was looking for a competent partner to develop and produce innovative printing systems for the AM-industry.



3D-Mectronic presented the 3DM-AMS 800 as a revolution in additive manufacturing at the Formnext 2019 in Frankfurt.



More than 30 years of experience in all sectors of additive manufacturing technologies have made him and his team specialists for laser- and 3D-printing processes, while we are the specialists for mechanical systems and automation. What would make more sense than to join forces?

When taking up the technical challenges involved in building such a printer, we had entered completely new territory, but in cooperation with the team around Kulke we developed and built the additive manufacturing system 3DM-AMS 800 last year, which will be available under the trademark 3D-Mectronic in the future and was presented to the public at the Formnext fair in 2019 for the first time. The system in question is a 3-component-system capable of processing plastic, metal and ceramic materials. The customisable 3DM-AMS-series is flexible regarding the size of its working area, the laser wavelength and the post-processes and combines all manufacturing processes in one fully-automatic production sequence.

This is a very important aspect, as powder printers use in part harmful materials, which, owing to their small particle size, can be respired and cause cancer. We print, transport and post-process the component in a closed system to eliminate any health hazards entirely. A preliminary cleaning already takes place in the printer, and the finished component will leave the manufacturing line thoroughly

cleaned after the milling process. This cleaning is done by special extraction devices, which are also responsible for returning excess powder, treating it and making it available again. We have applied for a patent on the semi-automatic cleaning in the printer, which is required for the manufacturing line.

We know that each sector has to deal with different challenges. Sometimes manufacturing time or material costs are to be reduced, while at other times it is about higher load-bearing capacity, less weight, or simply the achievement of sustainability objectives. We are keeping all these aspects in mind. Using the additive manufacturing technology, in addition to small components, such as dentures for medical technology applications, our system is to produce also bigger components, such as parts for engine blocks or supporting structures for the aircraft industry – starting from a batch size of one to serial production.

Apart from the SLS-technique, we have expanded our activities also to other additive manufacturing technologies. Together with a partner we are about to cross the finishing line in developing a hybrid machine, which can print and mill large-volume components, also fibre-reinforced ones, from plastic materials by applying the FDM-method (Fused-Deposition-Modelling). The next edition of Insight will provide you with more details on this topic.

Handicraft trade benefits from industrial solutions

Reichenbacher Hamuel in hall 10.0, stand 104

Exhibition postponed

The Corona virus has reached Bavaria and the general concern has caused the Management Board of Nürnberg Messe to postpone the Holz-Handwerk. A conscientious approach and responsible attitude towards this situation is equally important for both - exhibitors and visitors. In our capacity as exhibitors, however, we are faced with a certain dilemma, as we can't simply 'mothball' customer-specific units. This is why our demo machine will now directly be transported to the customer. We have to wait and see, as no new date has been scheduled as yet. You can be sure, however, that our focus will be on WOP-technology.

We uphold the view that it is the best decision for handicraft businesses to counter the shortage of skilled labour by using high-quality CNC-lines. We assist these businesses in their industrialisation efforts by adapting the experience gained from our innovative industrial machine solutions to handicraft applications and by making them appropriate for their requirements. Thus, these companies get also the opportunity of opening up new business sectors, as process stability and machining performance are inseparable in our machines.

Also at a later date, we want to familiarise the expert audience with one technical highlight in particular: with the simplicity of working with the symbols of the touch screen navigation available in our control system. It will make controlling a CNC-machining centre as intuitive as handling a smartphone or a tablet.

Our new control system with its modern WOP-surface and a CAD-CAM-system in the background has been conceived for interactive communication and predictive maintenance. .NET-technology makes the touch screen navigation with symbols, which permits the generation of CNC-programmes for all machines, safe and easy also for inexperienced users. We will give a live demonstration of the advantages offered by this innovative control system and will show that it has been designed for documentation and service purposes up to the purchasing of spare parts, and also provides for the possibility of prognostic maintenance. Visitors can experience its simple handling, and this is why we think that we can completely dispel possible reservations in this connection.

It will be our objective to present a 5-axes CNC-machining centre from the compact class, which particularly shows its strengths in staircase, window and door manufacturing, as well as in facade construction, and is ideally suited for the handicraft trade, as we supply lines in a lot of different executions, each one of them with the best configuration for the respective sector and requirements.



Touch screen control system convinces users.

Dynamics and drive - your power to succeed!

HOLZ-HANDWERK 2020

NürnbergMesse · Germany

FAIR DATE REDEFINED:

Tuesday June 16 to Friday 19, 2020!

Hall 10.0 · Stand 104



A perfect fit

Fast with first-class processing quality.

Ammann staircase manufactory had bought one of our CNC-machining centres with a weight of about 9 metric tons without packaging and a length of 9.5 metres; but its route into the production facilities was barred by a storage building. How to resolve this situation? Seven hours later – a truck-mounted crane of 150 metric tons with 50 metric tons of ballast to provide a counterbalance, and the unit's being lifted through the air for 22 metres – the machine had arrived in its future position.

Not just the investment had been a challenge. With this unit about 45 employees realise staircases that combine aesthetics and functionality and have been planned and constructed with such individualism that all of them are a perfect fit. Up to the beginning of 2018 staircases had been made by traditional wood processing machinery. As their focus had always been on individual staircases, all components have to be designed anew or again and again adapted accordingly. For not only each house is different, but also the architecture, the space situation, the materials used and, last but not least, personal preferences, make the demands for each staircase project very individual ones.

Thus, over the years ever more complicated geometries and constructions had formed, and in addition they had become more dependent on milled parts acquired from sub-suppliers. Ergo: they have invested into modern machines themselves. "Today's staircases are designed on the PC, and for younger employees working at a CNC workplace is considerably more attractive than a traditional occupation," says entrepreneur Ammann.

Andreas Bauer, who has been the technical workshop manager at Schwabmünchen since 1999, is responsible for the company's entire machine maintenance and it therefore stood to reason to entrust him with the task of gathering and processing information for the final investment decision. The profile of requirements didn't leave many machine manufacturers to choose from. Those had to explain the advantages and disadvantages of certain technical features in great detail, but in the end we were the decisive step ahead. One discussed the height of the suction cups, underfloor units and space requirements, and thus gradually found the optimum equipment for the line.



Ammann's product range comprises everything from stringer stairs with housings or open strings up to bolt, folded, cantilever, double-beam and spiral staircases.

It was a fact that Ammann wanted to produce everything in-house in the future: i.e. all the components of a staircase, starting from strings, steps, newel posts, landing slabs, landing substructures, up to handrails and risers. At the end of 2017 they decided on buying a VISION-III-ST, as the conception of this staircase-manufacturing unit convinces by a special feature. Apart from the 5-axes main milling motor for horizontal processes, free-form milling or sawing work, the unit is equipped with three additional vertical milling motors. This assigns the working processes to several milling spindles and, thus, considerably reduces tool changing times. One motor machines the outer contours for the strings and steps, another one the string housings and the grooves for the risers, the third one with its integrated height scanning device the precision profiles. Other technical details, such as the clamping devices for the string wreaths and newel posts, have also been incorporated. Likewise convincing is the automated table, above all its length: now strings up to 6.50 m in length can be processed including face machining.

The CNC-unit has significantly increased their flexibility and Ammann can supply their customers with the perfect staircase for their application on schedule. The advantages arising from the use of the VISION-III-ST are obvious. "The production of the elaborately decorated capital posts, the traditionally manual manufacture of which took five hours, requires only 30 minutes by CNC. Depending on the component, we are 2 to 8 times faster, for example in the case of strings with housings or open strings," Andreas Bauer emphasises appreciatively. And Stefan Ammann adds: "We are quick, but, above all, we get first-class machining quality, which is most important after all."



They have thought of everything: Alexander Stöhr, Stefan Ammann and Andreas Bauer.



Now, strings of up to 6.50 m in length including face machining can be manufactured.



The unit is used to capacity and Ammann produce components for 30-35 stairs a week.

Highest demands on technology

Resilience versus aerodynamics.

In an era dominated by jet planes, propeller aircraft seem somewhat nostalgic. Aerobatics, such as Martin Albrecht, member of the national aerobatics team, however, give impressive proof with their flights that there is certainly nothing nostalgic to their activities.

The production site of MT-Propeller Entwicklung GmbH, which comprises about 10,000 square metres, is located at the Bavarian village of Atting near Straubing. Here, on average they produce 5,500 blades and 1,500 propellers a year, which are certified by European, American and other aviation authorities. The family-run business employs a total of 120 people at Atting, who contribute to the further development of most modern propellers. Since the company's foundation in 1981, ten thousands of composite blades for single- and multi-engine aircraft, hovercraft, airships, as well as wind tunnels, have left the plant. More than 70,000 blades are currently in use and account for more than 130 million flying hours. MT-Propeller has become the supplier of more than 90 percent of the European and 30 percent of the US aircraft industry.

The propeller blades are designed and developed at the computer and calculated using the finite element method. Then the blades are milled from wooden blocks on our high-quality CNC-machines according to CAD/CAM specifications. The propeller blades are reinforced and protected by subsequently applied layers from glass- or carbon fibre and by metal leading edges. Not only hobby pilots appreciate their reliability, reduced vibration and longevity.

The fascinating production process reflects utmost specialisation. It starts with the area of a propeller subject to the highest loads, the so-called blade root. Here, pressed laminated wood from beech veneer is used, the processing of which is similar to metal processing. A scarf joint ensures a smooth transition from the blade root to the area made from spruce. This section of the propeller blade is no longer subject to such high loads, but rather requires good aerodynamics.

The process starts by the turning of the blade root from the basic block by means of a CNC-lathe – of course in accordance with the blade type, of which there exist 250 different ones at present. "We generate a CNC-programme for the respective project, send it to the machine and mill the required blade from a block," explains design manager Frank Grum.



The company offers about 250 different propellers from composites for single- and multi-engined aircraft, hovercrafts, airships and wind tunnels.



Grinding of the propeller blade subsequent to the application/drying of the primer. This must be done manually.



A total of six Reichenbacher machines are in use, which is due to the fact that the company is continually expanding.

Normally, our three units of type VISION Inline are loaded with three blocks side by side, for all of which separate machining is possible. If its dimensions are too big, the block is clamped lengthwise and machining takes place individually or in pairs. This kind of flexibility is necessary if one considers that the blade of a short fixed pitch propeller is about 0.98 m in length, while that of a hovercraft propeller measures 3.50 m. Diameters are even up to 4.96 m in the case of a 5-bladed wind tunnel propeller. One can easily imagine that these blocks can't be placed onto the machines side by side. There are also considerable differences between the machining times required for the individual milling processes. For example, fine milling one side of a small propeller blade takes 25 minutes and that of a big wind tunnel blade about 3.5 hours.

The subsequent production steps are based on the stipulations of a test report. First, the propeller is 'sheathed' in glass- and/or carbon fibres, then excessive material is removed by grinding and the aerodynamic properties are adapted and checked. Afterwards the VA- or nickel leading edges are glued on. Then the primer and the top coat are applied and, finally, in the case of leading edges made from nickel, follows the polishing of the leading edge. On the whole, they are working with six machines produced by us, three of which are milling machines of type Vision Inline, which are perfectly tuned to similar repetitive production processes, as they occur in the manufacture of propeller blades.



Alois Kermer at a CNC-machining centre type VISION Inline. The propeller blades are turned around in special fixtures to permit the milling of the blade's bottom side.



Rough milling is followed by fine milling operations, which take about 25 minutes per side for a small propeller blade.

ZARIAN certified system integrator for Cobots

SCHERDEL subsidiary develops innovative solutions for the cooperation between man and machine.

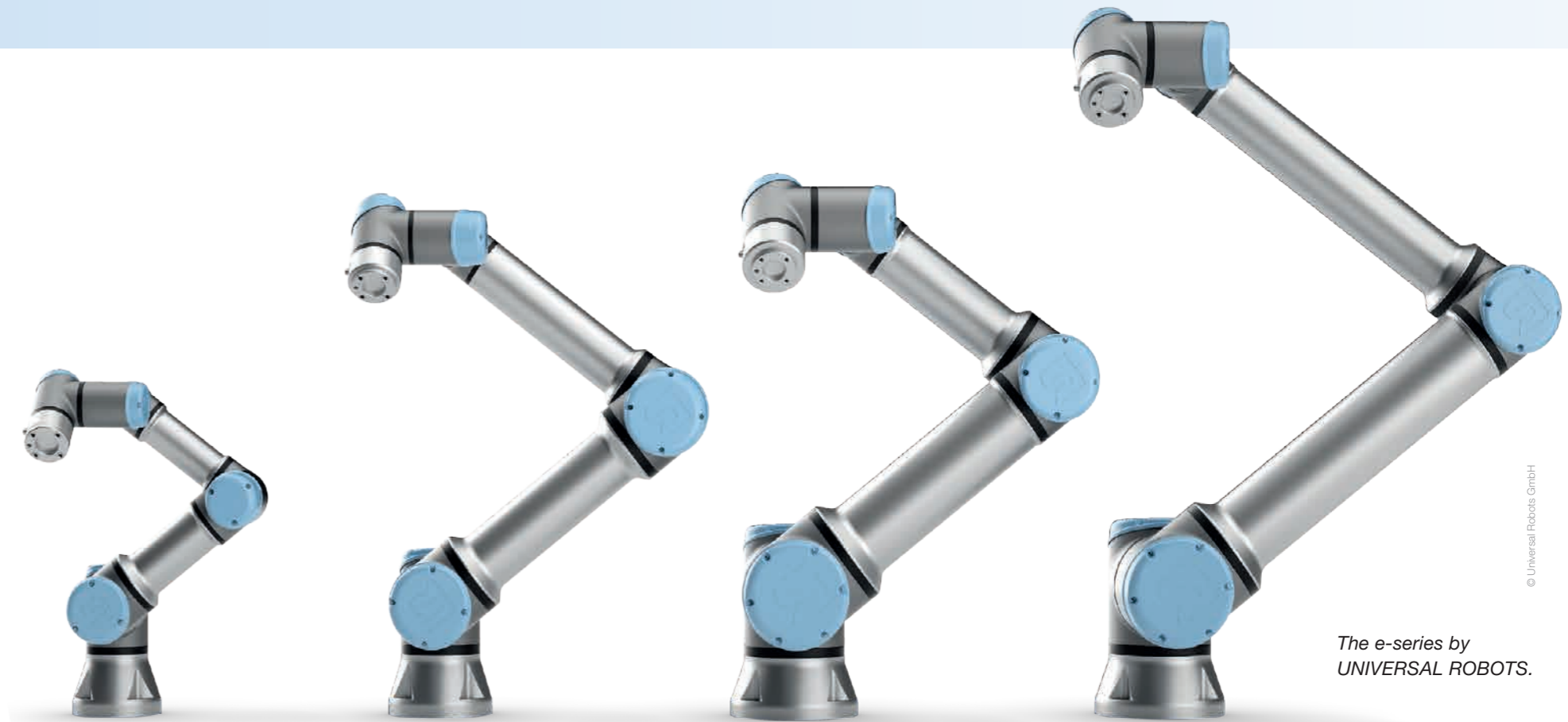
According to Marcus Bach (Managing Director SCHERDEL), one decisive factor accounts for the success of the companies forming the SCHERDEL Group. His statement 'together the parts make a giant' gets to the very heart of it. Namely, the synergy effects obtained when all members of the group have access to the various process technologies of the highly specialised subsidiaries and everyone benefits from this situation.

Here, in the age of Industry 4.0 and digitisation, the use of robot technology for the improvement of manufacturing processes constitutes an excellent example. It made sense to entrust the experts of ZARIAN Bewegungs-Systeme GmbH, the specialists for automation systems within the group, with the task of determining the potential of trendsetting technologies in the automation sector and of developing innovative solutions for the collaboration between man and machine.

Their success is impressive: by entering a cooperation with the robot manufacturer UNIVERSAL ROBOTS (UR), which is based at Odense on the island of Funen in Denmark, ZARIAN have managed to become the system integrator and regional sales partner for UR products in Germany. Concepts and intelligent solutions for the application of 'collaborative robots' (so-called Cobots) are established within the framework of this partnership with the aim of perfecting the interaction between man and machine.

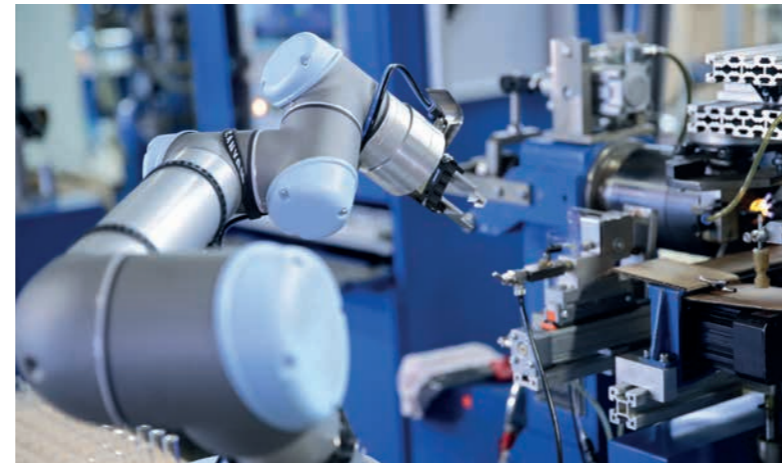
At the outset, ZARIAN simply wanted to buy two Cobots from UR to gather their own practical experience. During a first meeting with representatives from UR, however, the latter quickly discerned the know-how of the automation specialist and the potential of a partnership with ZARIAN acting as system integrator. Then things really got going: first, comprehensive training courses served to familiarise the employees with the opportunities of the Cobots. The Danish robot manufacturers mainly appreciated the great flexibility of ZARIAN, which resulted from flat hierarchies in the corporate structure, corroborated by the respectability provided by their belonging to a global group of companies. These were decisive factors for UR, a company which is also operating internationally and reaches a market penetration of about 60 percent for the Cobots.

Experts agree on the following: great expenses for software development and programming often are an impediment for the utilisation of robots for automation tasks. The collaborating robot arms from UR, however, can easily and intuitively be programmed also by employees not specialised in robot technology. A free-drive key permits the robot arm to be guided manually through the intended manufacturing process and to be controlled via predestined intermediate points. The robot arms work with great precision and can perform not only simple handling tasks, but also be used for complex technical manufacturing processes. Possessing six joints, they can copy each movement of a human arm.



The e-series by UNIVERSAL ROBOTS.

© Universal Robots GmbH



A partnership with future potential is the appointment of ZARIAN as a system integrator for the company UNIVERSAL ROBOTS.

Their activities reach from handling- and assembly tasks, via gluing, screwing, tool operation, soldering and painting, up to pick & place or quality control operations. Cobots can also reliably carry out repetitive tasks, hence work ergonomically detrimental for a human being, even in a dangerous environment and thus considerably increase productivity.

Cobots can easily be integrated into almost any existing manufacturing environment. They can draw electricity from any regular socket without the need for a special electric installation. Integration into a production line is by the simple 'Plug-and-produce-principle' and takes only a few hours.

Owing to their intense cooperation with UR, ZARIAN provide all customers with the possibility of automating their manufacturing processes to the latest state-of-the-art. Avoidance of the usually high cost of programming and putting into operation gives the customer the benefit of a relatively short amortisation period. This makes the system solutions from ZARIAN a real option for SMEs where the production of small series is concerned, but also where conventional methods would be too expensive. At the company headquarters in Marktredwitz various robot systems are available for demonstration purposes, amongst them also a mobile unit to be shown in operation at the customer's site upon request.



Picture: left Timmy Schmidt (ZARIAN, sales and projecting) right Robin Kern (ZARIAN, sales)

Passionate about the extraordinary

A technical adventure.

Why wood of all materials, when we are dealing with fire protection? A good question answered by Claus Schmid, owner and managing director of Hoba, as follows: "Nature knows the ways – wood, above all slowly grown wood with close annual growth rings, is very stable and hardly inflammable."

Over the last 25 years the family-owned medium-sized enterprise, which is located at Adelberg in Baden-Württemberg, has revolutionised the market for fire protection elements. "We are more flexible than the big companies and are constantly adapting our development efforts to the needs of our customers. Our 242 industrial property rights and the prestigious design awards we received speak for themselves. Innovations have made us what we are today: the market leader - or rather the manufacturer copied most frequently." This is a statement by Claus Schmid, who is in charge together with his two siblings and three sons. Since the company was founded in 1968, they repeatedly had to get used to new situations: at the moment they are dealing with the EU-standards, a few years ago they had to handle the transition to a CNC-unit featuring 5-axes technology for the production of panel-shaped components, by which they wanted to stay competitive and to make up for the lack of skilled labour.



CEO Claus Schmid (right) and his son Martin Schmid, who is responsible for the new CNC-machining centre.



The Reichenbacher engineers have specifically customised the 5-axes machining centre VISION-III-T-U for Hoba's particular requirements.

It takes one single operator about 25 minutes to perform all manufacturing steps necessary for the frame of a fire protection door.

And this decision-making process was a difficult one. The undertaking had started with the desire to bring technical progress to a new level. The three sons, in particular, voted for the acquisition of a high-tech unit. Initially, however, the scepticism of the company boss was to prove true, as the project had to overcome quite a few obstacles to reach its present state.

But let's start at the beginning: a long-standing machine supplier of Hoba had thoroughly dealt with the requirements of the intended unit. It took two years until this supplier finally rejected the project, but made a recommendation in our favour. We took up the challenge although some of us suspected it to become a mammoth task. Basically speaking, this machine should be capable of performing tasks that would otherwise have required three machines. Everyone who sees the VISION-III-T-U in action now will be bound to acknowledge its top-notch engineering – but the road there has been a long one.

Hoba is a technological forerunner for object-related fire and smoke protection doors and glazing, sliding elements or customer-specific constructions, such as glazing with individual radii or shaft wall cladding solutions from wood, glass or stainless steel. Decades of experience gathered in countless fire tests and functional checks become obvious in their product development activities. This is why they predominantly use oak and pinewood, as these have shown the best results. Their raw materials come from suppliers in the South of Germany. There you find good growing areas, where the wood grows slowly and thus the growth rings are closer and therefore more stable, which is an important aspect in fire protection.



The fully automated beam table is comprehensively equipped for all the complete machining operations that can be imagined. Even clamps for the posts have been included.

The 5-axes unit is ideally suited e.g. for the horizontal millings for locks, as it saves an extra unit for lock cases.

Hoba offer a very wide range of products. All projects have in common that, apart from high demands to design, always maximum functionality is ensured. Company boss Claus Schmid: "We do what others aren't capable of. The detail makes the difference."

The decision to actually build this machining centre hasn't been an easy one. Thomas Czwiolong (Managing Director Reichenbacher Hamuel), whom Claus Schmid appreciatively calls a very experienced machine builder, had been involved from the very beginning and had clearly addressed the risks. The VISION-III-T-U surpasses all previous dimensions as to the size of the working area of 6,140 x 2,170 mm for single loading, the chain tool changer with 44 places and a separate pick-up place, the scraper and the cross conveyor, the powerful extraction device and many other features. The twin portal is equipped with a 5- and with a 4-axes unit, each, and intended for single-unit production. Our engineers proposed this configuration, as Hoba are milling a great share of solid wood and using a great number of profile tools; this causes high milling pressures. The 5-axes unit is not appropriate for this application, as it would cause vibrations and thus visible flaws in the material.

This is why the 4-axes unit is used for certain work processes, as it is more stable and possesses more rigid tool holders. The 5-axes unit is ideally suited for the milling of cut-outs for fittings, such as the horizontal millings for locks, and it saves an extra unit for lock cases. The 5-axes head also provides perfect arches and curves for outdoor applications, which require 15-degree-slants to allow for water drainage. Thus, the two units are used for very specific tasks and are completely independent of each other, while they can be coupled if required. In addition, special holders have been designed for the fully-automated beam table, as they wanted to have variable clamping for the posts.

The largest customer group are architects and their list reads like the 'who is who' of the sector: Libeskind, Hadi Teherani, Zaha Hadid, Aldinger, Staab, Petzinka Pink, and also the projects are similarly outstanding ones: Uzin Utz, Microsoft Munich, Herrenchiemsee New Palace, the Palace of Justice at Munich or the building of the European Central Bank at Frankfurt, as well as many banking houses, town halls and museums, owe their fire protection solutions to Hoba. More and more special constructions become necessary, as varying building control certifications are applicable in the individual Federal states and as German and European standards differ, too. But this isn't a problem, as Hoba is specialised in batch size 1 manufacturing.

In the past, many working steps were carried out manually or with simple machines. Even today their structure is a handicraft one, while the projects are implemented by modern machinery. "In the case of the CNC-unit we knew exactly what we wanted and it was a long list," recalls master joiner Martin Schmid. For one thing, there was the idea to replace the indexable inserts with the tool still inside the unit. For this purpose, access had to be provided via the sliding door and it had to be ensured that the brake at the unit opens. "It was another point that – for reasons of the high Z-axis – the existing loading crane collided with the unit's extraction system and that this situation necessitated a different solution. Other equipment requests, such as tools from Leitz, NC-Hops and HSK-63F interfaces, were less ambitious in comparison, neither was a machine table which can be 'infinitely' extended by e.g. placing conveyor chains/ belts in a sequence behind it to permit the pushing-on of components," he adds. All these demands were analysed by our professionals and new solutions were developed and implemented. However, sometimes reality catches up with even the most sophisticated project planning.



The twin portal is equipped with a 5- and with a 4-axes unit, each, and highly flexible for single-unit production. The machining centre can process components up to a size of 6,140 x 2,170 mm.



A scraper and a cross conveyor, as well as the powerful extraction unit, keep the machine clean.

"This machine permits staff savings of up to 8 people. In an era where a shortage of skilled labour exists this is a tremendous advantage," says Claus Schmid and his son adds: "We get top-quality planing cuts, as we can work at higher speeds and use better tools. Moreover, less manual routing is required and drilling during final installation is completely eliminated, as it has already been done by the drilling units. And all this with just one machine operator." In the past, eight people and a whole day were necessary to produce a regular fire protection door, today about 45 minutes are required to perform all production steps. The production of intricate round arches, however, which consist of several elements, can take four hours. The dimensions, too, are impressive: a static support for a glass construction weighing 1.5 metric tons at a size of 600 x 400 x 11,000 mm has been manufactured for a church. Oval-shaped arches can be up to 6 m in length, and doors weighing a maximum of 500 kg are processed.

"All things considered, this machine can really be called a universal machine," says Martin Schmid. Its performance convinces by enormous precision, speed and flexibility. Thus, today the company boss says that it has definitely been a good decision to acquire this machine. He expresses great praise for the work, but stresses also that only our common efforts have turned the project into a success after almost 14 months and have made this financial and technical adventure a pay-off.

Efficient CNC-joinery machines

Flexible 5-axes machining at Westerkappeln.

There are several reasons for woodworking companies to look for CNC-lines. On one hand there is the lack of skilled labour, which according to Markus Bröbkamp, member of the executive board, doesn't constitute a problem for them, as Derix is known to be an attractive employer. The crucial factor was the decision to place ecology and sustainability, but above all efficiency and performance, in the focus of their industrial production. The Derix group of companies has specialised in glued laminated timber for construction purposes. Their priority is on hall structures, which includes also highly complex shapes.

In 2018, the company wanted to break new ground for CNC-joinery in its new facility with about 100,000 m³ / year at Westerkappeln. Instead of the big special-purpose machines used so far, they wanted to employ several smaller compact universal CNC-units for the future production of the order-related prefabricated components from glued laminated timber. The requirements for the units were clear: they had to be powerful and automated, as up to 50,000 m³ of cross-laminated timber per year are to be processed here.

Our intelligent and individualised machine concepts, which are a guarantor for dynamics, steadiness and stability – for decades the distinguishing characteristics of all our units – unite process stability and machining performance. This, and our long-standing experience in building heavy-duty CNC-units for industrial applications, predominantly for the automotive sector, were the decisive criteria in favour of Reichenbacher Hamuel. "We are real specialists for the integration of individual units into fully-automated production processes, and this convinced the people in charge at Derix", says Hubertus Hünker.

Today they are working with three identical lines of type VISION-III-TT 5-axes, each of which is equipped with a beam table 16,500 x 3,600 mm that consists of 23 steel traverses with wooden beam tops, as well as with a conveyor. Apart from their compact and stable structure, the Derix-lines, which Hubertus Hünker would like to see as an individual series and have designated 'VISION Holzbau', mainly impress by their powerful 55 kW-spindle. Our design engineers have enhanced the experience from numerous industrial solutions and adapted it to the required performance of the cross-laminated timber application. The result is a line with convincing details.

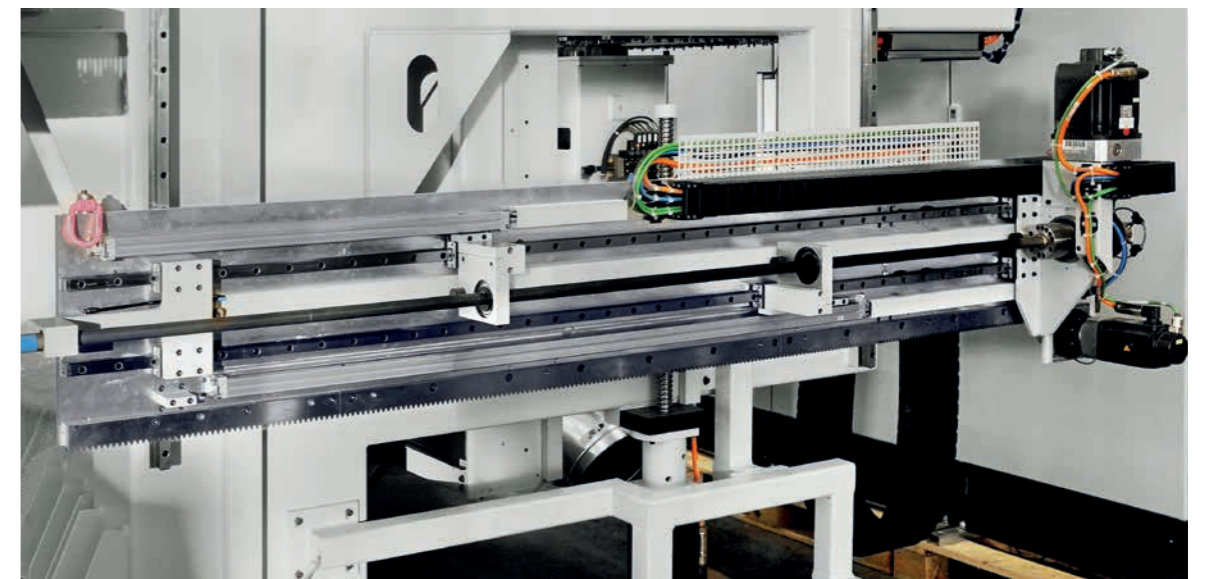
This applies to the table concept in the same way as to the pressure roller system for fixing the plates or to the extraction device with 14 blast gates, which ensure that the extraction power is available precisely where it is needed. Derix deliver the complete finished elements to the building site ready for installation.



The 55 kW-spindle has access to 30 different tools plus a pick-up place for 1 saw blade up to a max. Ø 800 mm.



Component transport inside the machine is ensured by a roller track and a cross conveyor.



A deep-drilling unit with a maximum drilling depth of 1,850 mm is installed at the rear-side milling portal. Drilling can be carried out in the Y-direction.



Derix at Westerkappeln are working with very compact and powerful 5-axes CNC-machining centres.

The elements leave the factory with cut-outs for windows, doors or electric lines – 'at millimetre precision', as Markus Derix, member of the executive board, assures. To meet these requirements, each of the three CNC-machining centres possesses for all processing steps a proven 5-axes unit with access to a tool changer with 30 places. This is rounded off by a deep-drilling unit for holes in the edge of up to 1,850 mm in depth.

Especially with respect to performance, all expectations of the Derix experts have been exceeded. The components are not merely manufactured at millimetre precision and with high repeat accuracy, but, in addition, the computer-aided control system offers unlimited machining possibilities. It permits the production of straight, as well as of round components. The potential our CNC-joinery machines offer, make glued laminated timber from Derix a high-tech material.



Discover new perspectives

Dynamics and drive - your power to succeed!



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