

Innovative wood and formwork construction

***FROM PLANNING
TO EXECUTION***

Review trade fair LIGNA
Five days full of innovation

A visionary partner
direkt cnc-systeme GmbH

Acquisition of a CNC opens up a new world
Interview with master joiner Benedikt Nos

HAMUEL
REICHENBACHER
Members of the SCHERDELGroup



Foreword by Johannes Reiser.

...never forget where you come from.

Dear customers, business partners and colleagues,

Undeniably, this issue is leaning heavily on the OPUS. A perfect opportunity to present the advantages and unique selling points of this machine series. Our roots are in wood-working and we will continue to cultivate these roots, even though we are now one of the most renowned manufacturers of highly specialised CNC equipment.

In talks with smaller woodworking companies, we had heard time and again that there was a desire for an affordable and compact milling machine. This is why we developed the OPUS with the aim of making high-quality machines built in Germany affordable again, even for crafts enterprises.

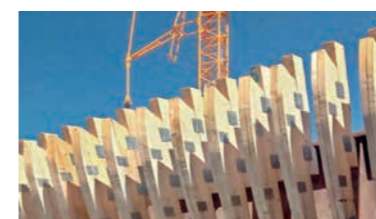
Three stories show that we have succeeded in doing so: on the one hand, the Nos joinery, where they are producing their staircases in a modern way after entering the CNC world; on the other hand, Holzbau Reichel, the specialists for bridge formwork. The essence here is intelligent software for error-free process control. Thirdly, to ensure that software and machine form a unit, direkt cnc-systeme also rely on the OPUS for their tests and functional checks.

The report from the door manufacturer Moralt provides us with further fascinating insights into CNC technology. The summary of LIGNA, which focused on automation and timber construction, builds a bridge to our third expert meeting, which will take place at the end of October and feature top-class speakers on the topic of "industrial timber construction".

Finally, the Formnext trade fair, the hub for Additive Manufacturing and industrial 3D printing: in Frankfurt, we will be presenting the enhanced ECO HybridDX-LT while pointing out that we will make seamless process flows the reality in Additive Manufacturing.

I hope you will enjoy reading this issue.

Johannes Reiser
Sales Manager
Reichenbacher Hamuel GmbH



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Review trade fair LIGNA

LIGNA

Five days full of innovation.

LIGNA 2023 – five days full of innovation, inspiration and networking. 1,300 companies from 50 countries presented their solutions for the wood and furniture industry, the woodworking trades and the primary sector. The focus was on the megatrends of sustainability and digitisation. Consequently, the response was an excellent one, as 80,000 visitors from 160 countries took advantage of the opportunity of acquiring information about smart machines and resource-saving production processes.

Our trade fair appearance was themed "Trend towards automation". Volker Budzinski sums up the event for us.

Has Reichenbacher been able to score with this motto?

Absolutely, we had many discussions, and not only industrial customers but also craft businesses showed great interest. For they all have one thing in common – the shortage of skilled workers. However, I am not in a position to judge whether craftsmen can afford this, although it always depends on the extent of automation, too. In fact, the industry has been at it for a long time; and the woodworking trade is following suit with the use of robots.

Then the topic was a subject of discussion?

I can affirm that as well. At our stand, a Kuka robot fed the VISION-III-ST CNC system on display, which magically attracted the audience. After all, almost all the conversations were also about automation. We are very satisfied with the number of visitors and were able to initiate many projects in timber construction or deepen existing contacts during these five days. LIGNA is an industrial trade fair, and our systems are primarily suitable for this sector. This was also apparent from the fact that holistic concepts, which offer perfectly interlocking processes, were in demand.

What reasons for investments do users give?

Top-rank is the shortage of skilled workers, followed by speed and cost efficiency. However, the whole industry is concerned about one important question: Where is timber construction heading in the next few years? There is a consensus that, due to changing demographics, the construction of single-family homes will decrease, while higher density construction, especially in villages and cities, will increase. For the companies, this means moving away from individually designed buildings and elements towards standardised components. This is precisely where the use of automation plays a major role.



Our Stand H40 in Hall 27.

Some have anticipated this trend and built up capacities in timber construction. There are many more companies dealing with the construction of timber houses today than there were a few years ago. Industrial-scale manufacturing capacities, as well as thinking in modules and modular construction, are entirely new in the market, bringing along important new considerations for house construction. The implementation process is just beginning.

The building industry must grow, as we need more housing. Otherwise, the price situation will get worse and worse, because there are hardly any affordable flats available. This particularly affects the older members of the population, who cannot cope.

Where are the limits for the companies?

Especially small and medium-sized enterprises have limited possibilities for investment. While automation makes sense, it must be financially manageable.

Were there any other highlights at the fair?

We were one of the six companies selected as a host for the Carpenters' Day organised by the fair management. I was actually surprised at how much interest these craftsmen showed in automation. The participants came very well informed, asked specific questions and essentially knew why this technology would also make sense for them. In my opinion, this is due to the change in generations, as younger people are more technophile.

Here, we see great potential, especially among those who want to expand their companies or modernize them to improve their competitiveness. These experts are also well aware of the great importance of working with a robust machine that remains stable even while carrying out the harshest movements.

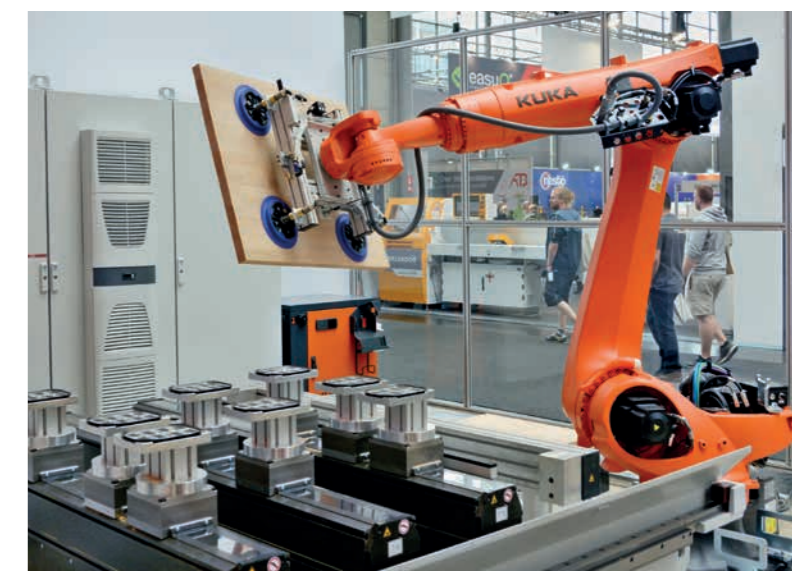
Taking up additive manufacturing, Reichenbacher has addressed an innovative topic. Your conclusion?

This was a recurring theme especially in view of the exhibits on display, as particularly the printed lounge chair often served as a seat. The most frequent remark was, "Oh, such a thing really exists." In general, I think that we can be very satisfied with the number of visitors and the prospective projects.

Here, you will find our LIGNA-video:



VISION-III-ST with automatic table and operator.



Loading and unloading the machine with the Kuka robot.



Our team worked together smoothly.

Preview Expert Meeting, October 2023

Expert meeting 3.0: Industrial manufacturing in timber construction.



Where are we heading in timber construction over the next few years? The construction industry must continue to grow, as we need affordable housing. Here, timber construction will play a decisive role in many respects.

Due to changing demographics, the construction of single-family homes will decrease, while higher density construction will increase. For the companies, this means moving away from individually designed buildings and elements towards standardised components.

For this reason, we will focus on "Industrial manufacturing in timber construction" at the third expert meeting on 26 October 2023. Thinking in modules and modular construction are becoming more and more important, especially with regard to higher density building. It is easy to explain the advantage: the entire design and prefabrication takes place in the factory and, depending on the size, the house is ready in just a few weeks. Thus, it is much faster than conventional building brick on brick. Hence, industrial construction using timber will play a very central role in the future.

The third expert meeting thus deals with the production of wooden components in an industrial context. The focus here is on interlinking different trades and different plant components, such as the fully automated storage and its connection to the production lines.

Renowned speakers will give exciting lectures on this diverse range of topics and answer the audience's questions in a panel discussion at the end of the meeting. During the event, we will show a machine that produces modules on an industrial scale and thus fits perfectly into the concept of ready-made components.

Highlights of the expert meeting 3.0:

- **Digitally integrated series production – more than the sum of your individual parts**
Philipp Ehrenfried, Head of Engineering templa by Renggli
- **Automatic handling of solid wood and panels – efficient and fast**
Stefan Barbaric, Managing Director Barbaric GmbH
- **Business intelligence thanks to interlinkage**
Stefan Jack, Professor for Mechanical, Process and Production Engineering, Bern University of Applied Sciences
- **Flexibly automated production in sophisticated object and module construction**
Franz Xaver Völkl, Managing Partner direkt cnc-systeme GmbH
- **Panel Discussion**
Andreas Leopold Schadt (moderator),
Thomas Czwiolong, Philipp Ehrenfried, Stefan Barbaric,
Stefan Jack, Franz Xaver Völkl

Experts from the timber construction industry, planners and architects will discuss the latest aspects of "Where is timber construction heading?" on 26.10.2023 from 12:30-16:30

Register now!



Preview Formnext Fair, November 2023

Seamless process flows.

Control system
Sinumerik ONE

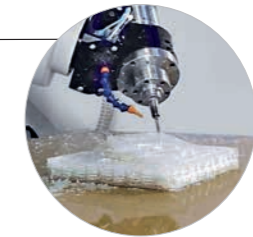


Tool changer
7 or 12 places

Extruder
Temperatures up to 450 °C
Max. material output
up to 30 kg/h



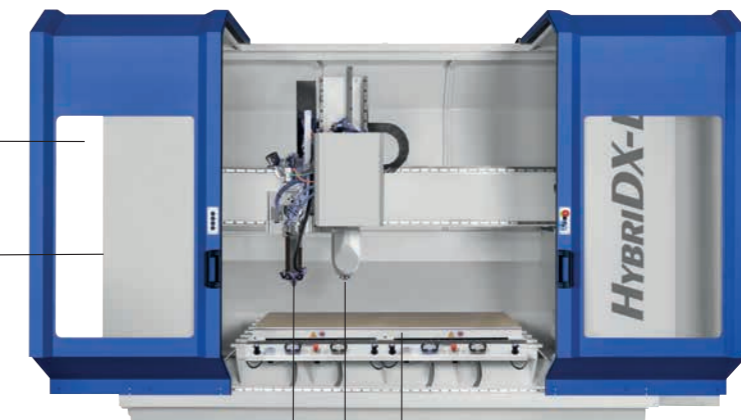
Milling unit
Cardanic 5-axis
milling head



Material (Granulate)
Feeding / handling
- automatic
- hot air dryer
(25 l / 50 l)



Printing plate
up to 200 °C



As a hub for Additive Manufacturing, Formnext Expo 2023 in Frankfurt is the international meeting point for experts in industrial 3D printing from a multitude of application sectors. The trade fair provides the opportunity of pooling expertise, as the participants focus on an intensive, professional exchange and access to the latest AM solutions. From 07 – 10 November 2023, more than 800 exhibitors and tens of thousands of trade visitors from all over the world will meet and – from an industrial point of view – will transform Frankfurt a.M. into the capital of Additive Manufacturing.

What kind of objective is Reichenbacher pursuing with its presence at the fair?

It remains our objective to establish and continuously expand our reputation as a supplier of systems and machines for Additive Manufacturing. With this in mind, we will be presenting the current state of our technology in Hall 11.0 / Stand F07. Our priority is to encourage the professional audience to engage into conversation with us in order to get detailed expert feedback.

What is the machine to demonstrate to the experts?

This year we have our own stand, where we will be presenting the enhanced ECO HybridDX-LT. We want to emphasise three points: as an established machine manufacturer, we specialise in the construction of customised systems and focus on "seamless process flows". This system perfectly combines large-format 3D printing with post-processing in that the integrated high-grade milling unit directly machines the printed parts in the same working space.

"We are ever more present," emphasises our interview partner Dr. Alexander Kawalla-Nam, Head of Additive Manufacturing Technology at Reichenbacher.



What is Reichenbacher's position with regard to the industrial production of large components?

Our presence in the market has increased significantly over the last three years, also thanks to our partners Weber Additive and Siemens. Above all, we are filling the niche of "special solutions" in Additive Manufacturing better and better. The L-PBF system AMS 400 impresses with its integrated software and hardware solution from Siemens, and the latest partnership with Solukon will further expand our knowhow in the area of post-processing and de-powdering after printing.

Conclusion: When it comes to the set-up of the overall process plus the industrial production of large-format and durable components, we are not only in no way inferior to our competitors but even a bit ahead in terms of hybrid production.

Impressive speed

Recent CNC acquisition increases value creation.

Pioneering a field is one thing, but achieving this in a technically and economically sensible way is another. Consequently, according to Klaus Feile, CEO of Moralt AG, the acquisition of a new 5-axis CNC system has been an investment in the future. His goal is to enable the traditional company to maintain its leading role as a manufacturer of door pre-products and supplier of system solutions for functional doors for interior and exterior use.

Since its founding in 1900, Moralt AG has repeatedly drawn attention to itself through extraordinary design and technical applications. Where once the invention of the block-board and the front door blank were pioneering achievements, today such achievements are front door blanks with CE system solutions and functional door systems with fire, smoke, sound and burglary protection.

The company with 40 employees specialises in the production of door blanks with application systems including CE marking and a 10-year warranty on warping. Great expertise is required to implement all international standards and certifications right in the kit consisting of door leaf, door case and accessories. This is a great obstacle for many craftsmen. Moralt comes to the rescue here as a partner by producing individual door kits at a high technical level for joineries, door specialists and the trade. Decades of experience from countless test series and functional inspections flow directly into product development and are the very foundation of the CE marking. Thus, the craftsman can concentrate on his core business and meet the increasingly elaborate demands of architects and property developers.

The production of these kits involves processing of the highest order, no matter whether concealed hinges, three-dimensional hinge systems, special dimensions, multi-point locks, facing shells or cross-veneered door leaves with frames and edges are concerned. It was clear that they had to become faster and more accurate in order to be able to realise everything efficiently in high-end quality.



The high-performance VISION-III-T 5-axis machine with automatic beam table has table dimensions of 7,000 x 2,080 mm.



20 % of the front door blanks are now machined to completion, and the share is increasing steadily.

When they initially contacted Reichenbacher in 2021, one of the specifications was a target processing time. To anticipate the outcome: the high-performance VISION-III-T system completely processes the specimen door from the top segment, which used to take more than 45 minutes, in a mere 17 minutes. This exceeded the target time by far. Machining of a standard blank with four light cutouts, complete rebate geometry, sealing grooves, three-point locking and hinge pockets takes 12-14 minutes in a single clamping operation. Complex blanks with many functions including surface milling, milled glazing strips, special cable ducts or stainless steel applications, can take up to 30 minutes.

This enormous success is primarily the result of the machine's design, as the realisation of the high demands on accuracy and performance is only possible thanks to the exceptionally solid portal construction. For passive doors with a thickness of 98 mm, which require the milling out of a double rebate made of oak plus sealing grooves and lock cases, the machining of a vast amount of material at high feed rates is necessary. Thanks to the stability of the unit, no discernible vibrations occur that would ultimately cause traces on the surfaces and result in reworking.



(from the left) Klaus Feile, CEO, Florian Mauch (Reichenbacher Area Sales Manager) and Production Manager Heiko Borries.



Area Sales Manager Florian Mauch, however, drew attention to other important points: numerous rebate formatting operations, complex work steps for locking mechanisms, different door types and thicknesses, small as well as large light cutouts – all these machining operations require different tools. Therefore, it makes sense that the tool magazine has 61 places. The VISION-III-T 5-axis with automatic beam table machines door blanks and frames. As doors get larger and larger due to design requirements, this system permits the processing of blanks with maximum dimensions of 6,940 x 2,170 mm and weights of up to 250 kg. The main feature, however, is the table size of 7,000 x 2,080 mm, which permits alternate machining and thus working without downtimes. "In spite of the large working area, however, the machine has a compact footprint," Florian Mauch emphasises and adds that this system has completely arrived in the digital world, as the machining centre features an OPC UA interface.

The automatic chain changer for 61 tools is mounted inside the portal enclosure behind the working unit.

Innovative wood and formwork construction

From planning to execution.

When passing below motorway bridges, most of which have large spans, one might see numerous joints in the concrete. The reason is that, unlike in the case of balconies, ceilings, walls or stairs, relatively small individual formwork elements are necessary to pour the concrete into shape. These connections cause the visible joints in the concrete, which, however, do not bother anyone when it comes to bridges.

Since 1983, the carpentry company Holzbau Reichel, located in the Saxon town of Callenberg, has been covering the entire range of classic timber construction. Once the general building boom had subsided at the turn of the millennium, according to Henrik Pilz, the Technical Managing Director, the company specialised in the construction of roof trusses and in formwork with a focus on bridge structures, with the latter now accounting for around 75 per cent of the order volume. For this, the company uses around 6,000 m³ of spruce wood per year. The planning and construction of bridges counts as the supreme discipline in the art of engineering. After each contract award, the first task for Reichel is to find the suitable formwork method for the concrete bridge in question, which requires a high level of specialist knowledge.



Industrial controller from Beckhoff, which is included as a standard with the OPUS.



Dormer window construction: 70 dormer windows were required for the roof truss of the Königshöfe Dresden building project.



Bridge construction: abutment formwork on site in Esslingen.



Due to its open design, the OPUS CNC machining centre is freely accessible for loading panels with dimensions of up to max. 2,500 x 1,250 mm.

“Formwork construction as such is no subject matter of a carpentry apprenticeship and it has taken us some time to bring our wealth of experience up to today’s high level,” Henrik Pilz explains. “This intriguing issue is completely separate from the usual civil engineering business. Our customers are medium-sized to large construction companies that no longer have this expertise themselves and therefore outsource the work to external service providers. What we build is actually a construction aid, a construction service, not a building. The formwork binders are to shape bridge formwork and other structural elements made of concrete. The formwork’s appearance or construction depends solely on our knowhow. The same applies to the support structures, some of which are freely spanned over 30 metres. Particularly in bridge construction, many things are involved and you have to have knowledge of girder deformation, structural deformation or settling. That is the exciting aspect of formwork construction.”

With the target of intensifying in-house production depth and of gaining independence from suppliers, the range of machinery has successively been expanded: the initial truss press, joinery system and nail plate trussing unit were complemented in 2021 by the Reichenbacher OPUS panel processing centre with HPL grid table. This investment aimed at increasing flexibility and speed, but above all accuracy, which is a prerequisite when assembling many small components on the construction site. This fragmentation into small parts has many advantages, in terms of both, materials

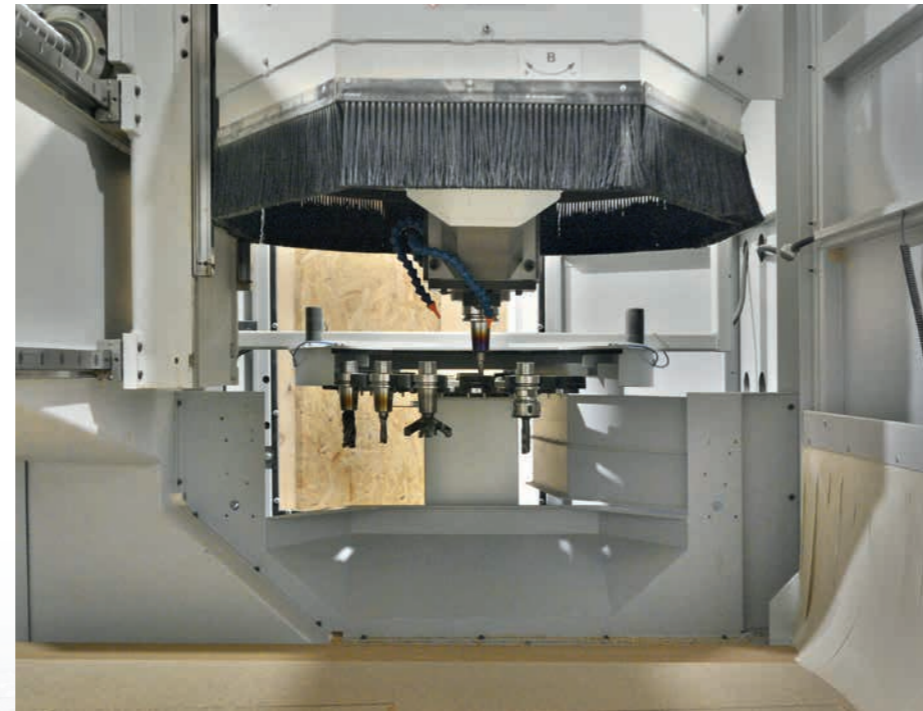
management and logistics routes, as well as improved ergonomics for employees in production and assembly. The production of the parts for the formwork bodies is a godsend for the company, as – with the OPUS – the processing of panels with dimensions of 2,500 mm x 1,250 mm is possible with little effort: recesses, notches, drillings, stop faces, cavities and the necessary connecting elements for very complex component geometries can be realised within short. “If a component fails on the construction site, it can now be replaced in the shortest possible time,” Henrik Pilz points out.

The decisive criterion in deciding which CNC to choose was the footprint of the unit. “And this is where the OPUS scores, as it is probably by far the narrowest 5-axis machine on the market,” emphasises sales representative Johannes Reiser from Reichenbacher. Henrik Pilz adds, “A machine bed must be stable, the cable ducts must be closed, and a powerful unit offering the proper performance rounds off the package.” It is equally advantageous not to be bound to any in-house software. The OPUS comes with NC-HOPS 7.0 pre-installed, the icing on the cake being the industrial controller from Beckhoff, which is included as a standard.

For reasons of their geometric complexity, in particular architecturally demanding buildings usually require custom formwork for freeform construction. A three-dimensional model of the building serves as a basis for developing the concept for the computer-aided planning of formwork bodies, their prefabrication and mounting on loadbearing static base elements. Assembly and positioning of the individual elements on the construction site then takes place with the help of measuring points, auxiliary axes and positioning gauges. The demand for versatility of the formwork bodies is easily visible in the bridge caps, as these caps have to fulfil a wide variety of functions: apart from protecting the load-bearing bridge structure, they also serve to anchor passive safeguarding facilities such as cycle paths, pedestrian walkways and railings.

Holzbau Reichel not only supplies formwork girders, camber rails or formwork templates for cap formwork, but also ready-to-assemble installation boxes for system formwork with round or oval cross-sections. The construction of roof trusses is equally demanding, as in the Königshöfe Dresden building project, where the arches for 70 dormer windows were milled, which were actually the same in shape, but where the roof pitches were quite different. This expertise is also required for roof box cladding, for example, when you need panels for flashing to fix them in such a way as to fit sills underneath.

The managing director concludes, "We are fast and precise. Whereas it used to take us 36 hours with a sliding table saw to produce 400 templates for cap formwork, today we position one panel and the CNC produces the same number in 15 hours at the push of a button. The demand for bridges in Germany is enormous, because many are decades old and need to be renovated or newly built. Today we are involved in projects we would not have been able to realise even one year ago. And that applies to bridges just as much as to roof trusses."



5-axis working unit with automatic 15-fold plate changer of the OPUS-5R.



Table size 5,200 x 1,450 mm, equipped for working on two stations with 12 individual stops.



Dormer window construction: the arches, which were actually the same in shape but where the roof pitches were quite different, were milled.



Cutting of cap formwork: precise and quick milling of the templates from the panels.

direkt cnc-systeme GmbH

A visionary partner.

Companies from industry and trade encounter a major challenge when taking the step towards automation. Machines as such are only part of the story. The use of intelligent software is mandatory to guarantee high product quality, as it enables employees to control processes, operate machines and carry out programming without errors, even after a short training period.

The machine manufacturer Reichenbacher Hamuel attaches great importance to finding a balance here, which is why, for decades, the company has repeatedly been seeking the close collaboration with innovative, outcome-oriented partners. As early as in 1992, the founders of direkt cnc-systeme were certain that trend-setting software would play a decisive role in determining the decades to come. Thus, user-oriented NC and CAD/CAM solutions have become the brand essence of the company from Alfdorf in Southern Germany, and they convince technologically demanding users worldwide.

Reichenbacher believes that operating a CNC machining centre must be as intuitive as using a smartphone. Intricate programming procedures for machining on inclined planes, the support of 5-axis technology, the three-dimensional display of the workpiece – all this requires comprehensive expert knowledge. Given the current staff situation in many companies, however, the focus nowadays is on simple starter dialogues for new users, without losing sight of the high demands made by experienced users in terms of automation, performance and interfaces. Self-explanatory operator interfaces, component placing and positioning of traverses via touchscreen, simple symbols and visual guidance – all the above allow well-trained operators to make necessary adjustments to components themselves.

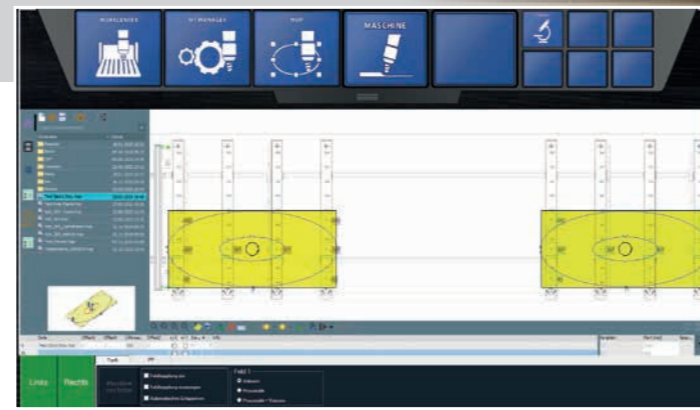
Customers need reliability and trust in the technology. Software and machine form an entity solely because the company direkt cnc-systeme immediately tests new content on the CNC machining centres. The benefit is obvious, as users get a consistently functioning system. Two years ago, Reichenbacher provided the OPUS CNC system for these tests and functional checks. No matter, whether toys or guitars are concerned, doors or stairs produced, or furniture for yacht, caravan and aircraft interiors manufactured – this system with its particularly high Z-stroke of 450 mm permits even the machining of unusual component sizes.



There are LED-positioning strips on the machine bed and on the individual beams to indicate the position of the beams and of the suction cups.



The console table with a length of 6,400 mm is equipped with eight beams with two pneumatic vacuum connections, each. The beams are manually adjustable.



The new user interface of NC-HOPS 8.0 recently presented at LIGNA.

The direkt cnc-systeme GmbH team next to the OPUS from Reichenbacher.



Managing Partner Franz Xaver Völkl (left) and Sales Manager Daniel Wacker (right).



REICHENBACHER HAMUEL
SOFTWARE PARTNER

“Our strengths,” explains Managing Partner Franz Xaver Völkl, „are machine mastery and interface competence. We cover everything from the joinery machine to the through-feed system and offer manufacturer-independent solutions. The highlight here is that the user always works in a uniform environment.“ With a staff of 20, the company develops sophisticated CAD/CAM solutions for 3-, 4- or 5-axis machines, for 5-axis simultaneous machining or 3D form milling, and shows customers a solid path to efficient machine programming and automated operation.

“Basically, NC-HOPS is like Excel – except that it is for the machine,” adds Völkl. “You can solve complicated things or work in a very simple way. The performance is not limited in any way.“ Interactive dynamic dialogues for milling, drilling and sawing make it possible in NC-HOPS to create even repetitive machining operations easily and without the need for programming loops. The possibility to rotate the components permits their machining from top and bottom. The user can switch flexibly between individual processing steps. The display is in high-quality 3D preview. Fast 3D material removal simulation is included, as is a collision check at the touch of a button. The simplification of programming operations for automating comprises efficient material management, which permits the easy material-specific adjustment of feed and infeed. The convenient creation or import of individual clamping elements, devices or templates from a CAD programme is possible. All this is tested on the OPUS hundreds of times.

“The OPUS-6K with its manual beam table and 2-circuit vacuum block suction cups is perfect for us because we are now working with state-of-the-art CNC technology,” adds Sales Manager Daniel Wacker. This series is equipped with NC-HOPS as a standard feature, and, thanks to the SOP-interface, the creation of programmes requires only one input mask. Due to the two PCs used, an update with Windows is possible at any time, ensuring an equally long service life as for the machines.

Franz Xaver Völkl points out that, for the customers, the focus is on the optimum integration of a CNC machine into their production processes. Here, the product in question and the production times required define the parameters of the machine and the software solution. High-performance production processes then provide for the opportunity of impressively demonstrating the benefits of a successful harmonisation.

Acquisition of a CNC opens up a new world

Interview with master joiner Benedikt Nos.

The Nos joinery from Hirzenhain-Glashütten in the Hessian Wetterau district has arrived in the modern CNC world. The company, founded in 1949 and now in its third and fourth generation under the management of Stefan and Benedikt Nos, respectively, took the well-considered step into this new world of machining a year ago.

Until then, the situation had been the following: apart from doors, windows and furniture, they made mainly all kinds of stairs from beech, oak, maple, ash and pine. All of them were handcrafted by master craftsmen in line with individual wishes, no matter whether classically elegant or modern, with posts or string wraths, with or without risers, or in a coloured lacquer finish. However, manufacturing with traditional woodworking machines was tedious, and so they drew the line and, along with the stringer-milling machine for the recesses for the steps, banned other machines, too, from the workshop.

"We had been flirting with the idea of CNC technology for several years, but this is a big investment for a classic joinery with five employees," Benedikt Nos emphasises. Two years ago, they took action anyway, after his father Stefan Nos had read a report about the OPUS from Reichenbacher in a trade journal, which described that precisely this machining centre offers an ideal entry for small joineries into the modern world of CNC technology.

It is the perfect solution, as most craft businesses have very limited space. At Nos, too, only the OPUS-5K with its compact dimensions eventually fitted into the hall, as the control and vacuum technology could be removed from the housing and placed in an adjoining room to save space. Thus, in the hall of a width of only 8 m and a height of 2.75 m, the installation of a 5.4 m version of this type of system was possible, which is necessary for the construction of stairs. However, there is no concealing one fact: the OPUS virtually moves along 5 mm under the hall ceiling. Nevertheless, the machining dimensions of 5.2 m x 1.45 m and the Z-stroke of 200 mm provide sufficient clearance to permit the machining of not only stringers but also other components of large dimensions.

Just to illustrate the difference between now and the past: with the old staircase software, work was simple but efficient; plotted 1:1 templates were glued onto the solid wood and then the machining took place. However, there were many individual steps and some components needed handling 10-30 times. Today, you start the programme, place the traverses and suction cups manually according to the instructions on the screen, position the blank and then completely machine the component in one clamping operation.



Benedikt Nos with his father Stefan Nos in front of the Reichenbacher OPUS-5K.



Benedikt Nos positions the blank for the short outer stringer at the first step of the staircase.



Until one year ago, the machining of stringers in particular was very time-consuming. Today, a large stringer of about 5 metres in length can be finished in about 15-20 minutes. The heavy machine is working fast and at a low vibration level. It produces workpieces with a particularly clean surface, so that hardly any reworking is required. The most convincing argument for Benedikt Nos is that the parts are easily reproducible. "This is an extraordinary advantage compared to the past. If something breaks on the construction site, or if we notice during production and further processing that the choice of wood is not the optimum one, we can now call up any component immediately on the PC and produce it again promptly. Thus, we can continue working on the construction site without long waiting times. In pure handcraft manufacturing, this was an enormous effort."



The tool magazine with its 15 places is sufficient for the majority of the machining operations.



No matter whether classically elegant or modern – with posts or string wraths, with or without risers, or in a coloured lacquer finish. Nos offers stairs in many different price ranges.

Every staircase at Nos is unique, as the company works exclusively for private customers. Since the joinery company also works a lot in old buildings with frequently tight space conditions and special requirements from the monument protection authorities, these framework conditions have to be accounted for in the designs and planning. Benedikt Nos' job environment has changed completely in the meantime: "My time in the workshop is limited; mostly I am sitting in my office at the computer creating the CAD/CAM programme with the Staircon staircase software. Using this software, I can design anything from simple to complex, individual stair layouts. I programme all the stair parts with all the work steps, including the drill holes we mill." The reason for this is that the pressure on the workpiece is high during drilling and so, regardless of the diameter, we mill all holes at Nos. The advantages are that the edges are clean and free of tears, the recess does not have a point from the centre tip of the drill and the workshop remains clean because extraction is easy when milling.

A Staircon service technician programmed the CAM interface for transferring production data to the OPUS a year ago during the machine set-up, but Benedikt Nos got the knack of it and is programming everything himself, now. Via the company network, he makes the generated production data available for production, where the team prepares everything and planes, glues and calibrates wood for the stringer or step blanks in advance, for example. They work almost exclusively with solid hardwood from the region, 90 % oak and beech.



Benedikt Nos at the control screen of the new CNC.



This stringer has required only one clamping operation. Now all that remains is edge breaking and light sanding.

Benedikt Nos does not hide the fact, however, that as a "newcomer" you have to reckon with at least a year of training until you are as familiar with this technology as you are with classic woodworking machines. "But after that it gets exciting, as the 5-axis world opens up completely new perspectives for being creative and economical at the same time," he emphasises. His almost playful approach to the limits of the machine shows how much this new technology fascinates him. "Recently, I machined for the first time an enormously long stringer of 5.45 m in five axes. After a bit of fiddling, we succeeded by placing the component diagonally on the machine bed and thus extending the X-length."

Moreover, the use of this equipment has opened up other sources of income for Nos, as they are the only ones in the region who work with a CNC with these machining dimensions. Word got around and so over the last year the company has increasingly become a supplier for other joineries that need components with lengths of over 3.2 metres.

With today's knowledge, he and his father might have tackled this investment earlier. After all, if you are located in a structurally weak region, as is the case in the Wetterau, the support provided by business development can be quite impressive. "Our quality standards were and are very high and with the OPUS we are now independent and flexible."

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