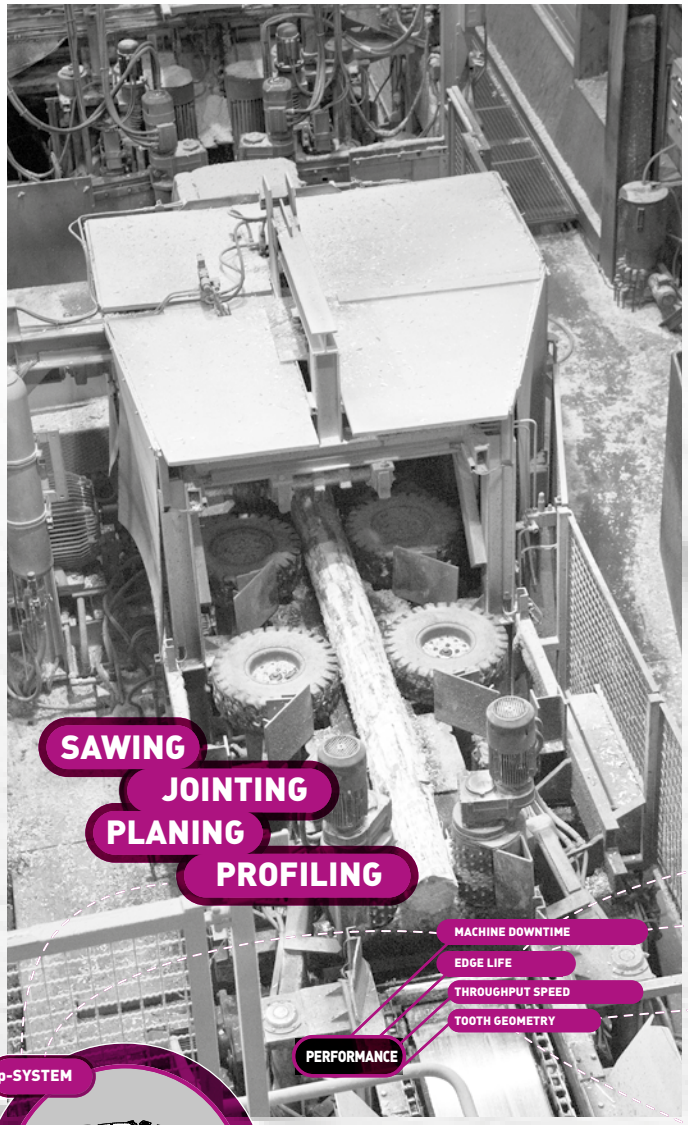
LEUCOline

SOLID WOOD 2022/23

Innovative tooling solutions for saw mills, planing and finger jointing mills, joinery

SOLID WOOD

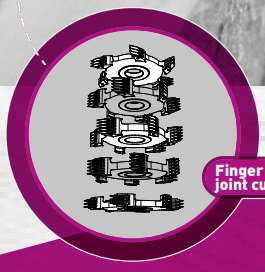

SAWING
JOINTING
PLANING
PROFILING
MACHINE DOWNTIME
EDGE LIFE
THROUGHPUT SPEED
TOOTH GEOMETRY
PERFORMANCE
p-SYSTEM
Cutting materials


COMPETENCE IN CUTTING MATERIALS
LEUCO SERVICE
REDUCTION OF DEPOSITS
COATING
QUALITY
RUNDLAUFGENAUIGKEIT
PRECISION
CUTTING QUALITY
NO KNIFE MARKS
SMOOTH SURFACES

Our measures for sawing, finger jointing, planing and profiling are high concentric accuracy, long edge lives, reduction of deposits. This is how you reach best quality, low machine downtimes, high through-feed speed and optimal "waste products".

SAWING
FINGER JOINTING
PLANING
PROFILING

POWER DIA PROFILER

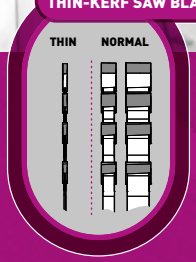


Finger joint cutters

RESOURCE EFFICIENCY

THIN KERFS
CHIP OPTIMIZATION
WASTE OPTIMIZATION

THIN-KERF SAW BLADES



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Our tools and services make production processes more efficient and improve the quality of the results.
Magentify Wood Processing.

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"PEELED" WOOD SHAVINGS PREVENT TEAR-OUTS AND FIT INTO THE PELLET PRESS

A FAREWELL TO THE WOOD CHIP DOGMA

Instead of hogged wood chips the Dold sawmill produces wood shavings for pelletizing when profiling during the recut. For this purpose, Leuco developed a new tool in cooperation with EWD. The p-system-profile cutter operates at an angle of 70° with a pulling cut. This makes for extremely long edge life and high quality sawn timber.

A raw material traded below value for a long time has now spurred demand in recent years. In the form of wood pellets, wood shavings and sawdust have wound up in a high value market, which has been booming for years. Prices for sawdust have tripled in the past decade. It comes as no surprise that the attitude of woodworking entrepreneurs towards sawmill by-products has changed. Quality hogged chips are increasingly used for pellet production when seasonal demand is high. However, the chips must be downsized for that purpose. Yet a new generation of tools makes this process obsolete. Leuco, Horb am Neckar/DE, has developed a profile cutter with 160 knives, which produces "granular particles" that can go directly onto the belt dryer of the pellet plant. The necessary saw line know-how comes from EWD, Altötting/DE. Together they have implement the "P-system" in Dold's sawmill in Buchenbach/DE.

NO TEAR-OFFS AT THE CENTER BOARDS

The chipper canter in Buchenbach was supplied by EWD. The resaw unit installed in 2002 was the ideal machine for the extensive testing. Milling unit FR15 – followed by milling and sawing unit FR16 – machines the center wood and cuts off the side boards. Such a system configuration is ideal for testing new tools. If the new product does not stand the test, the well-proven second unit can step in. But that was not necessary. The new tool fulfilled everybody's expectations.

The chipper canter is followed by a profile cutter which is to shape the center wood in such a way that it yields sharp-edged boards. This step involves a long unresolved problem: Conventional tools follow the paradigm of the TMP-chips and form large particles. However, the forces at play here cause damage to the center wood – especially at the fiber around knots. The Leucos P-system ("P" stands for "peel"), on the other hand, prevents tearing. The cutting edges of the tool system which was presented three years ago perform an extreme pulling cut. So far, this type of cutting edges are employed mainly with wood materials and in furniture making. Now the system makes its entry into the sawmills. However, the requirements placed on a tool there are completely different from those in particle board processing.

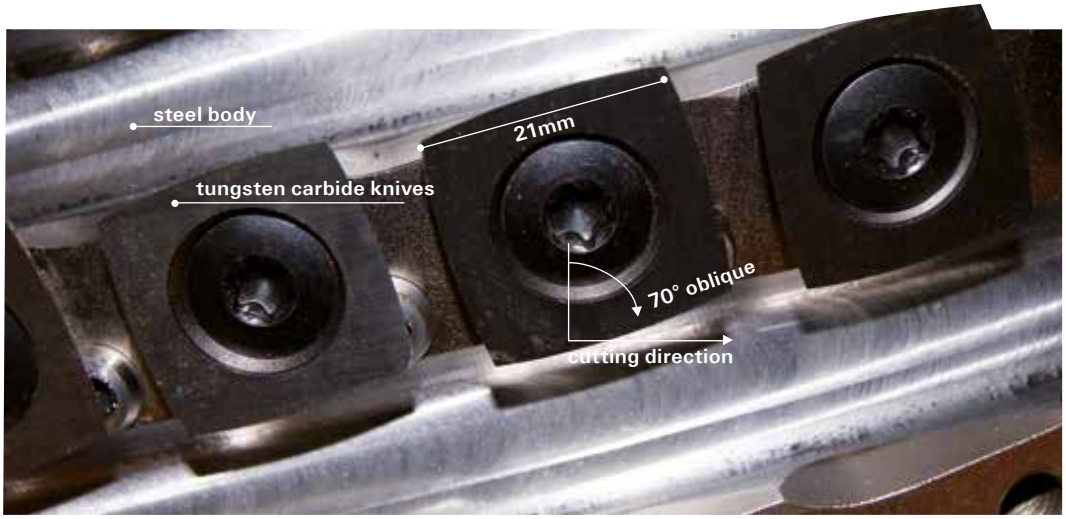
The challenging development work can be summed up in one sentence: Yes, it works, because Leuco built the largest tool that ever left the factory buildings.

160 CARBIDE CUTTING EDGES ON 36 CM-TOOL

The tools had to be compatible with Dold's system. This led to a tool with a diameter of 36 cm, 12 cm height and a weight of 100 kg. It sits on a vertical shaft with a diameter of 8 cm. The body of the prototype was still made of aluminum. For the final product, Leuco developed a steel body for its P-system profile cutter. In the case of vertical shafts, the tool has four segments which can be detached individually for easier handling. Tools for horizontal shafts can be removed individually and are therefore made in one piece. Eight rows of coin-sized, four-sided cutting edges sit along the periphery in spiral array – altogether 160 pieces. Unlike conventional P-system tools, the profile cutter edges do not consist of diamond material, but are made of hard metal. Because of its impact resistance, this material is much better suited for harsh sawmill everyday life than the material of pure carbon.

2 MILLION RUNNING METERS TOOL LIFE IS IMPRESSIVE

In September 2012, the P-system profile cutter was tested at Dold's premises in a week's trial session – but only on the left side, which facilitated a comparison between old and new tools. "After this week, they did not allow us to take off the new profile cutter anymore", says Dr. Martin Dressler, who headed the project for Leuco. The few days' trial has made



The tool works its way through the center wood at up to 75 m/min leaving a squeaky clean edge

Shavings come from the profile cutter this fine and are collected separately

In the adjacent pellet plant, the shavings achieve added value in the form of EN-Plus Pellets

it quite clear: The cutting quality is superior to the one produced by tools previously used.

Meanwhile, the P-system profile cutter has been in operation for more than a year. According to Herbert Dold, CEO of Dold Holzwerke, the time factor is important to evaluate a new product, as it must stand the test when processing summer warm spruce and frozen fir alike. **So now it is time to draw a conclusion: Depending on who you ask, responses vary – but they are always positive.**

Sawmiller Dold primarily emphasizes the cutting quality. "We use the center boards in the adjacent panel plant for producing solid wood panels. As with the new P-system cutter there are no more tear-outs, we have more immaculate boards suitable for the cover layers", he says.

Being all tools researcher, Dressler on the other hand stresses the stability factor. "We need to rotate the knives only every four months now. Sharpening is not necessary. In Dold's workshop we have reached cut lengths of more than 2 million running meters. This is far more than we had expected." Worn-out cutting edges do not produce a poorer cutting quality, but instead lead to an increased power consumption, says Dressler.

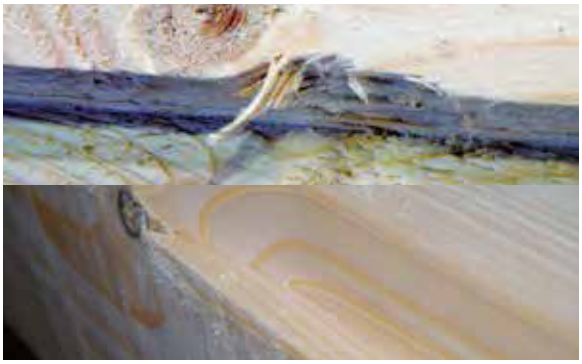
For the third advantage of the new tool, Christian Wangler is the best person to talk to. The manager of the integrated pellet plant says: "Sawdust and shavings coming from the profile cutter can go directly onto the belt dryer. Since they are finer than wood chips, drying takes less energy." Not only that, thanks to the Leuco profile cutter Dold has decided not to purchase a hammer mill for wet wood chips treatment. Nevertheless, the 40,000 t/yr-pelletizing plant has enough raw material coming out of the sawmill with a log consumption of 300,000 sqm.

CREDIT SIDE PREVAILS

The three advantages summarized: The pulling cut facilitates the production of higher quality side and center boards. Set-up times are significantly lower because the resharpening can be omitted and service life is several times higher. In the downstream pellet production, the energy requirement for drying and down-sizing is reduced.

Of course, there are also disadvantages. Compared with classical tools, a P-system profile cutter requires more energy. In addition, a tool with a 160 carbide knives is initially more expensive. But these two aspects are more than outweighed by the benefits, Dold is convinced.

Authorized translation of the Holzkurier-article: "Abkehr vom Hackschnitzel-Dogma", published in issue 4/2014 on January 23rd 2014



Significantly better cutting quality: typical tear-outs above, the p-System surface below

Weighs 100 kg and is subdivided into four segments – LEUCO's p-System-profile cutter at the Dold sawmill

The joint between two boards must be absolutely precise for manufacturing with products with the CE symbol.

COMPLETE PACKAGE FROM TOOL MANUFACTURER IMPRESSES WORDWORKERS

TRIPLE THE SERVICE LIFE

Rubner Holzindustrie places great value on precision. From round timber processing to planing, finger jointing and the finished product, the company relies on Oertli and LEUCO tools. In Austria, LEUCO is represented by Oertli. Use of coated high-performance high-speed steel for dovetailing cutters increased service life by a factor of 3.

Every year, Rubner Holzindustrie in Rohrbach, Austria, cuts about 250,000 fm and specializes in producing glue-laminated timbers. A hundred employees mainly process spruce and pine into sawn and glue-laminated timber. Of the latter, they produce about 32,000 m³ a year. They produce double and triple beams, as well as glue-laminated timbers for further processing at other Rubner sites.

SAWING, PLANING AND MILLING TECHNOLOGY

LEUCO tools are used in everything from sawing and planing technology to dovetail grinding. For profile chippers, the manufacturer's saw blades are used for scoring and post-cutting. At the same time, the scoring blades are turned back. In areas with less mechanical stress, the saw blade's base body is thinner than in other areas. This allows the chip reamer to move the chips out of the saw kerf more easily. During timber production, a one-sided NKT dovetailing cutter with a turning device takes care of the longitudinal joint. The tool's service life is measured by the number of milled tables. One cycle represents milling of a 600 mm wide table on which the timbers are clamped. A conventional dovetailing cutter lasted for about 5,000 tables before the quality of the milling was too poor for gluing.

FROM 5,000 TO 15,000 TABLES

When the collaboration started, the high-performance high-speed steel came into use for the first phase. This increased service life to 10,000 tables. In the second phase, the tool received an additional PVD coating. PVD stands for physical vapor deposition. The base body is covered with the coating in a vacuum. "Because the tools are sharpened before coating, the layer cannot be too thick. Otherwise, the cutting edge will round and dull," explains Roman Edelhofer, key account manager at Oertli-LEUCO. With this method, the tool life of the "HS Solid 34 topcoat" dovetailing cutter increased another 50 percent to 15,000 tables.

"USING THE 'HS SOLID 34' DOUBLED THE SERVICE LIFE. COMBINED WITH A PVD COATING, THE SERVICE LIFE INCREASED BY A TOTAL FACTOR OF 3."

Roman Edelhofer,
key account manager at Oertli-LEUCO

TIP BREAKAGE NO LONGER AN ISSUE

"Before, besides the short service life, we often had to deal with tip breakage on the tool. In 2013, we started using LEUCO dovetailing cutters. Since then, the problem is gone. The longer service life was part of the optimization and continues after multiple sharpenings," says Rene Karner, technical manager in production. "The tools' reliability is as good as at the beginning, right to the time we retire them, when the sharpening zone is used up. For the entire service life, we and the customer follow the tool and keep records. During all the sharpening processes, we make sure the profile is consistent," explains Edelhofer.

In addition to purchase advice, Karner also values LEUCO's service. The tool manufacturer doesn't just rely on application consulting, but also on repairs during the life of the tool. Once a week, an Oertli service employee comes to Rohrbach to pick up the tools that need to be sharpened. That is done in the company's own large sharpening facility.

SPECIFICATIONS MET

When the collaboration started, the specifications were clearly defined to Oertli. The longer service life and the process safety after service were the goals clarified. Process safety means that the service life remains constant after sharpening and doesn't fail," says Edelhofer. For the account manager, the tool supplier's responsibility is to deliver the customer a complete package. In addition to delivering tools, optimal on-site consulting is crucial. Here one concentrates on the right conditions of use and optimization of the environment to increase the service life. Sound knowledge of the adhesives used and adequate machine knowledge lead to satisfying results. At the Holz-Handwerk trade fair in Nuremberg, LEUCO provided information on its products and gave a look at future developments.

This article appeared in Holzkurier issue 08/2016

Once a week, dull tools are exchanged for sharp ones. Service technician Jürgen Grabner with Roman Edelhofer in front of the service truck (from left)

Even after two years of use and several sharpening cycles, records show that the milling cutter's performance has not decreased.

Anton Pausackl, sawing production manager at Rubner, and Roman Edelhofer of Oertli-LEUCO from right) with a LEUCO recutting circular saw blade.

The coated HS Solid 34 milling cutter is used on the NKT dovetailing machine.

The base bodies of the LEUCO circular scoring saws are turned back, which makes it easier for the reamer to clean out chips.

Rene Karner, technical manager of production, and Roman Edelhofer of Oertli-LEUCO (v. li.) are satisfied with the cutting results and the development of the tool.

EXTREMELY HIGH ROTATIONAL ACCURACY UP TO A 300 MM WORKING HEIGHT

PROFILED QUALITY PRODUCT

Markus Schindhelm from LEUCO and Dominik Strobel (from left to right).

Automatic moulders are a common machine, but a beam planer that can profile glulam beams up to 300 mm in impressive quality is not something you see every day. This "miracle" was made possible by extremely tight tool tolerances of a few thousandths of a millimeter, with which LEUCO pushed the limits of what was technically possible.

Of course, glulam beams are profiled elsewhere in one go. But what father and son Strobel get out of their recently built beam planer is quite remarkable and could already inspire one to use adjectives like "extreme". Hördener Holzwerke in Gaggenau, founded in 1985, specializes in the production of construction timber, quality laminated timber, glulam construction timber, cross laminated timber, blockboard and glulam beams, and has gained a good reputation.

Not only can you finish plane on four sides, with chamfering or separation in the finishing planer, explains Dominik Strobel, Managing Director, but you can also "add log home profiling directly in the planer." Sounds simple, but it's not necessarily so given the dimensions the plant can handle: Up to 300 mm working height is possible. And the length of these vertical change shafts is also the point, says Strobel: "The line can run up to 120 m/min, imagine the effect on quality from an imbalance of the profile tools? After all, these are not planing shafts turned from solid stock, but throat tools on an axis." However, we wanted a precise fit of the glulam beams, as well as the most attractive surface possible, continues Strobel: "We asked several tool manufacturers, but only LEUCO had the confidence to meet our tolerance specification of 2/100 mm for a log home profile."

TOOL WITH ONLY 5 µ TOLERANCE

In order to meet the customer's specification of 2/100 mm, a tool was developed for Hördener "whose properties outshine everything we have developed and manufactured to date," says Markus Schindhelm, LEUCO Segment Manager with obvious pride. "In order to manufacture a tool to the tolerance required by the customer, it is necessary for everything to be made with high precision. That means both the pockets and the cutters have to be manufactured within a range of less than 5/1000 mm." And five thousandths is a high level of accuracy, he adds.

MAGENTIFY YOUR RESULTS

The pocket and cutter tolerances are extremely tight.

Hördener Holzwerke achieve an excellent surface quality of the milled logs thanks to the tools from LEUCO.

Good fit and virtually no chipping are the result of LEUCO's efforts.

More on YouTube:

TOOL SET WITH VARIABLE PROFILE HEIGHT

Using a Vario 100 tool set as an example, Schindhelm explains the design: "The Vario 100 is adjustable over a range of 90 - 270 mm block height." In addition, he says, it is also still possible to "switch on and off" details such as the chamfering, which means "I have the option of customizing the profile between 90 and 270 mm, depending on what is to be manufactured."

This is achieved with a combined tool set, in which individual tools are assembled according to a diagram to form various profile configurations and block heights (- the machining height of the tool). The shaft has a total length of 500 mm: "up to the largest profile, these shafts are utilized almost completely."

TIGHT TOLERANCES FOR HIGH ROTATIONAL ACCURACY

The specifications - profile production tolerance, cumulative tolerance of the individual tools - would therefore require an extremely precisely manufactured tool, Schindhelm explains, "but the very tight tolerances also promote very high rotational accuracy at the same time." And that, in turn, is the key to virtually vibration-free operation of the long vertical shafts "and thus fine planing quality." Such precision, he says, is "very difficult to implement technologically and for the machine tools used to produce these tools, and it took a lot out of us." But the above-average rotational accuracy has an additional "side effect," Schindhelm says: "Extremely long tool life can be achieved." Which was a good thing, because that, along with the surface quality of the beams produced, was one of the main requirements of the Hördener Holzwerke lumber mill, smiles Schindhelm.

REQUIREMENTS FULFILLED COMPLETELY

In order to produce marketable glulam beams, attention must be paid to the tolerances of the product, says Managing Director Strobel: "We currently produce glulam beams up to 13 m long. When you make beams of this length, you have to pay very close attention to the tolerances. In other words, our main focus was on: 'Can the tool manufacturer meet our requirements?' And we were really highly satisfied with LEUCO. They accepted the challenge and were actually able to meet our needs 100%."

Strobel points out that the company had already worked successfully with LEUCO in the past: "For example, in optimizing our finger jointing line. In that case, LEUCO was able to achieve a noticeable improvement in tine fit and quality, while also increasing plant performance."

The finished planed profiles have a tolerance of 2/100 mm over lengths of up to 15 m.

Change shafts of the planer fitted with Vario 100 tool sets. A block height of up to 300 mm can be machined.

In the new finish planing hall of Hördener Holzwerke.

The line dresses the sides, then profiles and planes the top and bottom.

With two vertical shafts, the planer can process profiles in one go.

TOOTH GEOMETRY IS EVERYTHING WITH A FINGER JOINT

LEUCO Segment Manager Schindhelm explains how it was possible to achieve better finger quality and more output: "We were able to make some optimizations for Hördener. By using different angle geometries - for clearance angle as well as for flank and effective cutting angle - we were able to achieve lighter cutting pressure in the line, lower noise emissions and, accordingly, improved tear-out quality in the finger joints."

Here, he says, the lamella width is of particular interest: "The higher the lamella in the line, the more decisive the cutting pressure becomes for the performance of the line. And the performance of the system, the performance of the motors, is then again decisive for the feed rate that can be run." That means, he says, LEUCO has also been able to "stabilize the tool life and make some gains in the tear-out behavior of the cutter through the individual optimizations of the milling tool, for example through different cutting times." You can hear whether a finger jointing cutter has to work hard, says Schindhelm: "And it can also be measured by the power consumption of the motors and the achievable feed rates. Optimizations to the tooth geometry can therefore influence system performance in a positive way."

"VERY GOOD COOPERATION"

Dominik Strobel values good relationships with customers and suppliers: "This is important to us, and with LEUCO in particular we have a very good working relationship. Short distances, quick contact with our contact persons, in addition to the quality of the tools, it is also important to us that this works as we actually imagine it."

Tolerances of a few thousandths allow the high rotational accuracy, which results in a very nice surface quality of the milled logs produced.

The details of a finger jointing cutter can make or break finger quality and performance.

The wider the individual lamella, the higher the cutting pressure.

Reduced cutting pressure means less motor power, a higher feed rate, and it's quieter, too.

PLANING KNIVES WITH "LEUCO TOPCOAT" COATING FOR 6-FOLD HIGHER EDGE LIFE!

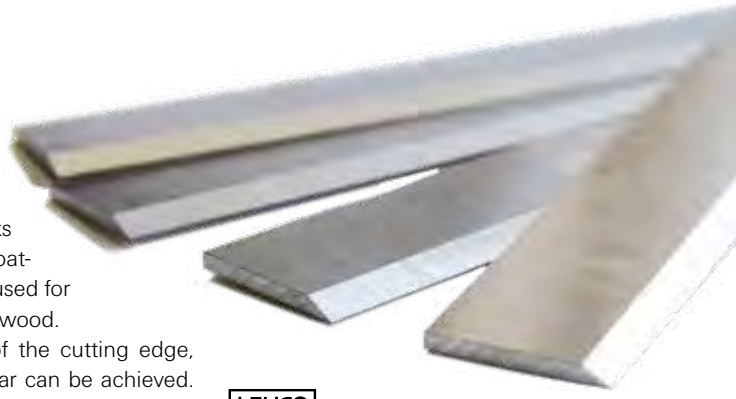
With the newly redesigned "LEUCO TopCoat" coating, the LEUCO planing knives achieve 6-times higher edge lives compared to uncoated knives and convinced the users. Thanks to the new "LEUCO TopCoat" coating which also increases the hardness of the cutting edge, the planing knives have anti-adhesion properties and therefore also the undesired heating is avoided.

The coated knives can be used on all common planing cutterheads. They can be resharpened without problems and without damaging the coating. After having resharpened, the knives have again the 6 times higher edge life.

Proven coating

For some years, the "LEUCO TopCoat coatings" on finger joint cutters has convinced thanks to its high edge life. The coated finger joint cutters are used for deciduous and coniferous wood.

Thanks to the coating of the cutting edge, a general reduction of wear can be achieved. The LEUCO TopCoat coatings form an integral part when offering LEUCO tools for solid wood processing.



LEUCO TOP COAT

COUNTER PROFILE CUTTERHEADS – HIGH-QUALITY SOLID WOOD FURNITURE CONSTRUCTION WITH HARD AND SOFT WOODS

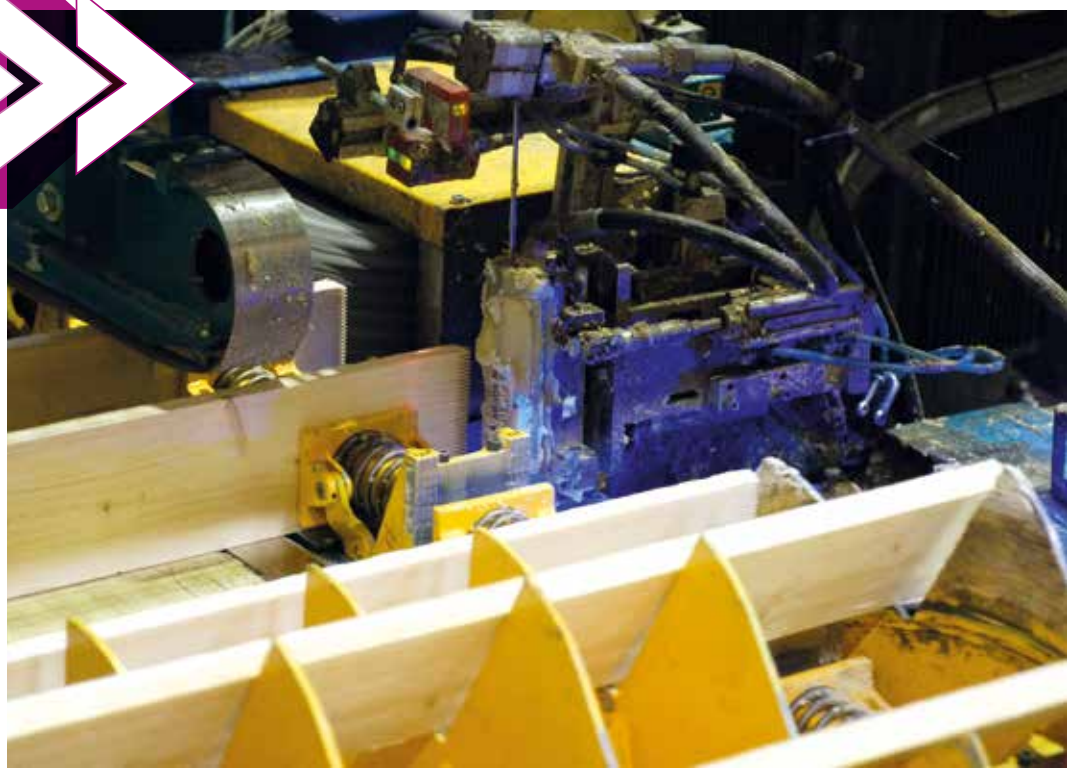
CUSTOMERS WILL ALWAYS GET THE BEST POSSIBLE SOLUTION WITH CUTTERHEADS DEVELOPED BY LEUCO

Using "LEUCO UltraProfiler plus," customer-specific profiles are milled at very high levels of precision. The special cutter clamp positions the cutter independently and free of clearance. The new UltraProfiler plus thus reaches a cutting speed of up to 80 m/min. With its aluminum base frame, the cutterhead is used in double end tenoners and molding machines as well as in spindle molders and machining centers to shape solid timber and wood materials.

When processing massive wooden door frames, the "counter-profile cutterheads" from LEUCO also produce outstanding profiling results. One tool can now be used to produce the length profile and the matching counter profile.

Furniture doors can be easily, quickly and precisely profiled, on both sides using the LEUCO counter profile set. The grooving cutters can be easily removed manually, thus switching from producing length profiles to the right cross profile. The general design of the milling cutter for manual feed allows the use of both a CNC machine as well as a spindle molder. The light aluminum base body is more comfortable for users and can be mounted on a CNC spindle. It can be selected from nine profiles that are part of a standard product line. It is possible to produce customer-specific profiles at any time. By using the high-performance cutting material "Board 06," which is particularly suitable for hard woods and wood-based materials, our customers have an outstanding solution for difficult woods.

MAGENTIFY YOUR POSSIBILITIES



Using a "custom" geometry, LEUCO was able to improve the finger jointing quality and the service life on the through-feed finger jointing system at best wood Schneider

QUALITY AND SERVICE LIFE IMPROVED

FINGER JOINTS PRODUCED IN THROUGH-FEED SYSTEM

When it comes to production of finger jointed lamellae for industrial manufacturing of glued laminated timber and solid wood panels, it is essential that the process be fast. However, it is not possible to "speed up" indefinitely – with increasing speed, the sources of trouble and problems also increase exponentially. For this reason, Best wood Schneider spoke with LEUCO and had its finger joint cutters optimized. With success: The interval between tool changes was extended from twice a week to once in nine weeks – with considerably better cutting quality at the same time.

The Schneider group of companies is a complete supplier for construction of modern wood homes, explained Lukas Bärsauter, who is responsible for quality management:

"From glued laminate timber to insulation, we produce everything, above all, ceiling elements in the form of glulam construction timber or cross laminated timber." The sawn wood required comes from our own cuts and is processed into finger-jointed lamellae. When finger jointing is involved, one really has to be prepared for anything, states Markus Schindhelm, LEUCO Segment Manager, fluctuating moisture levels in the wood above all:

"Drier wood behaves differently during finger jointing than wood with a higher moisture level." This can lead to differences between the fingers:

"It is thus necessary to observe the course of the tip. Since at Schneider a through-feed machine is involved, the boards are clamped, but there is still a certain tendency to deflect. As a result, the course of the tip can already differ from when the cutter enters and when it exits. This, in turn, can result in differences in basic clearance and problems with the fit."

FIRST STEP: FIT AND SELF-LOCKING EFFECT IMPROVED

The entire line is designed for high output, explains Bärsauter regarding the system. The lamellae are marked on two System TM saws with data from a Microtec strength scanner. A Ledinek Kontizink cuts the finger joints, followed by an Oest glueing station, before the wood coming from the Ledinek press proceeds

to a multi-level storage system that feeds the single-ply panel production. LEUCO made suggestions as to what could be improved with, states Bärsauter:

"At first, simple things. For instance, changing the angle of the cutters. Next, we had cutters with different flank angles produced." We tested these new cutters for a few weeks and proceeded slowly to a joint that had a small gap but also good self-locking that satisfied both our requirements and the requirements in standards for such a joint. In addition to this optimization, "that is, regrinding the flanks, which is very time-consuming, we also adjusted the geometry at the same time", explains Markus Schindhelm. "Normally, we use a 15/16.5 finger; we have now essentially increased to a 15/17 mm size. The longer finger improves the options available for adjusting the basic clearance." The clearance angle was also considered: "In this way, we can influence the wood quality and the cutting quality."

Clean fingers with a better fit were the result of the optimizations

The geometry of the fingers was redesigned to provide more options for adjustment

FINAL STEP: IMPROVING THE SERVICE LIFE

"Once we were sure that the cutter geometry functioned well and both the quality of the fingers and the throughput of the system had been improved noticeably, there was one further step", summarized Schindhelm:

"We said okay, the 'Schneider geometry' – which is what we called it on our drawings – functions, but the service life is not yet at our usual level." Which apparently did not appear to be a big problem for LEUCO:

"We then decided to apply a coating to the tool, which allowed us to improve the service life." Quite considerably, recalls Schindhelm:

"Originally, the cutters needed to be changed twice a week. Now we are at several weeks; I believe that currently the cutters only need to be changed every nine weeks."

RELIABLE PARTNERS ARE IMPORTANT

Tools are a very important subject, interjects Ferdinand Schneider, Managing Director: "It is extremely important to have reliable partners who treat us fairly and supply innovative products." From his team, he only hears good things about LEUCO: "I can thus say with a good conscience that we have a good relationship with LEUCO and can recommend them."

These statements appeared in Holzkurier, Issue 45/2020

Lukas Bärsauter (best wood Schneider)

Markus Schindhelm (LEUCO)

Ferdinand Schneider, Managing Director, is satisfied

In the through-feed equipment, the fingers are cut at high speed

New geometry for the finger joint cutters

FINGER JOINT CUTTERS FROM LEUCO

THE BENEFIT LIES IN THE DETAILS

Detail modifications on the finger joint cutters often bring about huge improvements. Frequently, a multiplication of the edge lives or the elimination of production errors can be achieved. This is the reason why LEUCO offers tools that are consequently tailored to the customers requirements.

Finger joint cutters are most often used in the form of standard tools - although modifications to these tools often enable enormous advances. Depending on how the tool is modified, significant improvements in tool life and finger quality can be achieved. That is why LEUCO offers customized tools that are adapted to the woods processed and the machine. For instance, the moisture content of the wood can differ significantly, depending on the suppliers of a sawmill. Some mills process a wider range of wood species, while in others the material is broadly similar in properties. The width of the fingers produced also differs, depending on the use, for example, in furniture or as construction timber. Torn fibers almost always occur during cutting of finger joints, but to varying degrees. These must be minimized in order to avoid reworking by planing. LEUCO addresses all of these special issues in the customized design of finger joint cutters.

Tool optimization always starts with a thorough analysis of the production situation. During this process, the LEUCO team inspects the machines used, the material stock and the fingers produced. What kind of wood material does the mill process? Is there room for improvement in the connections? This, together with the tool edge lives, shows the current status of the finger production. LEUCO then implements the improvements requested by the customer. The focus can be on greatly extended runs and better quality. For this purpose, the geometry of the tool is modified, often in combination with a wear-reducing coating.

Tool optimization always starts with a thorough analysis of the production situation. During this process, the LEUCO team inspects the machines used, the material stock and the fingers produced. (Photo: Dinah Urban)

LEUCO is also involved in the first use of the customized tool. Employees of the sawmill and the tool manufacturer assemble the cutter set in the machine, then production starts. If the fingers meet the desired quality standard, the development is complete. Longer tool edge life from optimization of the finger joint cutter pays off very quickly for the user. For example, a tool set useful life of six weeks instead of two weeks previously is often realistic. This eliminates two-thirds of the long tool changeover time and likewise two-thirds of the tool repairs. The investment in better tools thus pays for itself.

LEUCO offers customized tools that are adapted to the woods processed and the machine.

Depending on how the tool is modified, significant improvements in tool life and finger quality can be achieved.

FLEXIBLE USE WITH HIGH PERFORMANCE

ONE INSTEAD OF TWO: NEW FINGER JOINT CUTTERS FOR ALL PU GLUE TYPES

With a new finger geometry, LEUCO is adding an innovative cutter to its program that can be used with both fiber-containing and fiberless PU glue. The cutter is ideal for companies that make joints with both PU glues, but also provides many advantages for all other companies.

Due to the universal application possibilities, the machine operator will no longer have to change the cutter in the future, i.e. machine downtimes will be reduced. On the other hand, there is no longer any danger of mixing up the previously different cutters, which reduces the reject rate.

In addition, the optimized geometry increases the stability of the fingers and significantly minimizes edge splits, increasing the output quality.

GREAT COST-EFFECTIVENESS

Compared to traditional HS finger joint cutters, the edge life of the new finger cutters is up to 5 times as long. LEUCO achieves this through the combination of the cutting material Solid 34 and the LEUCO topcoat coating. The high bending strength of the cutting material reduces the risk of tooth breakage while maintaining the same finger jointing quality compared to standard designs. This is true even at high feed rates thanks to double the number of teeth compared to the standard design. The benefits of the LEUCO topcoat coating are retained in full after resharpening.

The new version ZL 15/15 actually Z4 is available from stock. Other versions are available on request. To achieve optimum strength in finger joints, all influencing factors such as material, glue, machine or tool must be optimally matched. LEUCO tool experts always advise finger jointing operations after taking into account all influencing variables.

One cutter instead of two as previously: The new finger geometry is used for cutting joints for fiber-containing and fiberless PU glue in knotty softwood. The new cutting material of the cutters together with a coating as well provides up to 5 times the edge life.

TRENDING MICRO FINGER JOINT CUTTERS FROM 4/4,5 MM FINGER LENGTHS

HOW TO INCREASE OUTPUT AND MATERIAL YIELD WITH INNOVATIVE CUTTERS

For up to 3 times longer tool lives LEUCO offers the micro finger jointing cutters with "LEUCO TOPCOAT" coating.

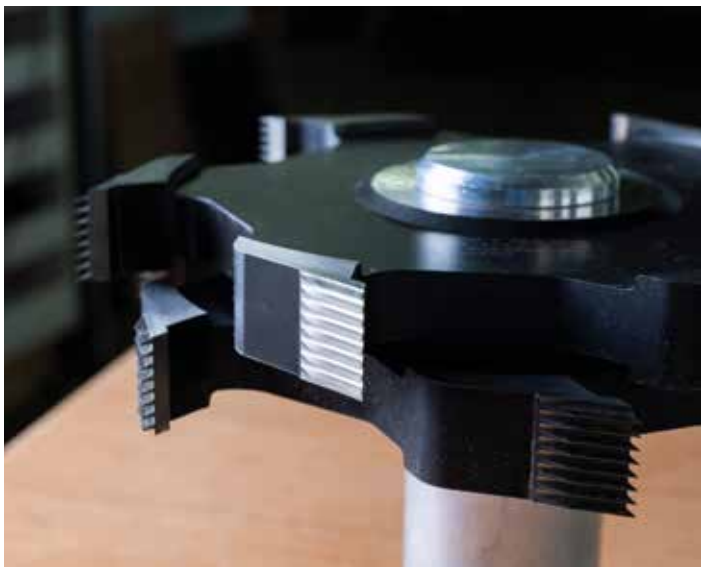
When it comes to producing finger joint laminated boards (FJLB) for partitions & tabletops and slats for furniture and windows, the perfect material yield is always the basis for innovation. Micro finger jointing cutters became more and more popular in recent years, because it looks much better and holds about the same bending strength as the standard 10/11mm finger joints. The producers can achieve a much higher yield and as well use their short pieces of woods for more profits. At the same time not creating much wastage that will be detrimental to the environment.

LEUCO tools support the producers with optimizing the productions by offering micro finger joint cutters with lengths of 4/4.5 mm or 6/7 mm. LEUCO offers micro finger joint cutters version from the catalogue with high-end high-alloy steel "HS Solid 24" cutting edges, that guarantees a maximum of resistance against tooth breaks. From this basis the customers have the option to upgrade to our premium range of cutters with "TOPCOAT" to extend tool life of up to 3 times against the standard "HS Solid 24" cutting edges. That enables even longer machine running times and less grinding per month. This is the ultimate requirement of every producer in this industry.

Apart from longer edge lives, a runout accuracy of 5µm of the LEUCO micro finger jointing cutters thanks to high-precision manufacturing of the tool body and the high number of teeth allow double feed speed compared to standard finger jointing cutters available on the market.

To maximize output as mentioned, utilizing the very short slats starting from approx. 250 mm can be used and processed. Due to the low cutting pressure, it cuts broad cross joints, depending on the machine, without risking a lever-effect at feed speeds of up to 52 m/min. RPMs and finger jointing quality are the same as with milling cutters with less cutting edges.

LEUCO tool experts do consulting and economic efficiency calculation of the different tool designs and application parameters together with the customer's requirements for the best price-performance-ratio.



The standard LEUCO High-Performance Finger Joint Cutter featuring short fingers and high feed rates

WEAR REDUCTION AND THE NON-STICK EFFECT – EACH MATCHING THE RELEVANT APPLICATION

LEUCO TOOL COATING SYSTEMS

Coating the tools makes sense if it increases their usefulness. To decide whether to do this, you have to understand the tool, the material and the expectations of the customer. To cover the most diverse areas of application in the woodworking and furniture industry, LEUCO has different "LEUCO topCoat" coatings in its product portfolio. The different features of these special coatings represent the ideal solution for the respective customer needs.

Selection criteria

- **Tool type:** Whether circular saw blade, shank-type cutter, planing knives, etc., the tool type plays an essential role in deciding what coating to opt for.
- **Tool material:** The material the tool is made of also defines the type of coating, e.g. whether tungsten carbide or diamond-tipped
- **Workpiece:** The material to be machined defines the type of coating, e.g. solid wood or panel materials. - Performance improvement: The more systematically the coating was selected for the particular scenario, the better the coating delays wear and dirt, thus increasing its use.

How the coatings work

"Non-stick effect" for the cutting edge: This prevents dirt from sticking, especially when milling or profiling solid wood, e.g. using finger jointing tools, turnover knives, or cutters. Except for scrapers, LEUCO does not necessarily recommend coatings for machining plastics. For plastic materials, it is better to focus on the quality and sharpness of the tungsten carbide than working with coatings.

"Wear reduction" is definitely the most frequent reason why customers turn to coating technology. The increased surface hardness provided by the coating delays wear on the cutting edges. This applies to HW and DP saw blades, cutters, finger jointing tools, planing knives, turnover knives and scrapers.

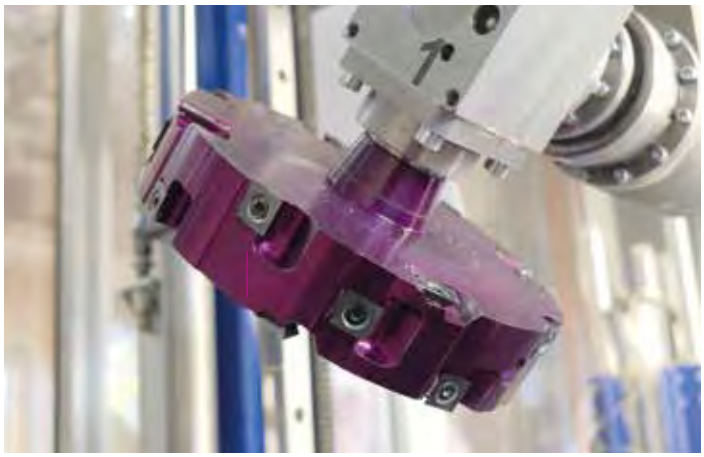
The coatings will improve the performance of your LEUCO tools. LEUCO has coated tools in stock. However, as a rule, the coating is applied to a tool based on the customer's need and after consulting with a LEUCO customer service representative. This allows the customer's needs and the intended purpose of the tool to be ideally taken into consideration.

MAGENTIFY YOUR QUALITY

PLANT CAPABILITY BETTER UTILIZED WITH LEUCO TOOLS

DYNAMIC DUO

Space-saving: The Krüsi MC 15 was installed "in the wall" and the control cabinets above the machine.



Swiss made: Joinery machines from the Swiss company Krüsi AG come equipped from the factory with Swiss LEUCO tools, because both products are matched to each other.

Over the decades, the recently installed MC 15 is by no means the first Krüsi joinery machine at Nägeli. For the Appenzell-based woodworking shop, this is now the third "Krüsimatic" - pardon - this time it is an MC 15. It can process beams from six sides without turning. Krüsi joinery machines come from the factory equipped with tools from LEUCO - not without reason.

Even today, Stefan Nägeli still raves about the particularly simple operation of the first Krüsimatic: "The control system was sensationally simple, and after a short introduction, practically anyone could work with it. In the timber construction company taken over from his father Hannes Nägeli in 1988, beams or stud walls were initially still joined by hand: "In 1998, he purchased the first joinery machine, and at the beginning of 2021, we were able to put our third "Krüsimatic" - pardon, it's now an MC 15 - into operation," with which, Nägeli adds, they are "once again very satisfied.

SWISS SUCCESS STORY

The success story of Krüsi Maschinenbau AG began in 1961 with a mechanical workshop founded by Fritz Krüsi. In the mid-1980s, they designed the world's first CNC joinery machine with a tool changer, and the current MC 15 model is a very powerful modular system "that can be equipped with different units, loading and unloading stations according to customer requirements," explains Krüsi project manager Pascal Stehli. According to Stehli, the MC 15 is a special machine concept: "The workpiece is moved, not the machine head. This has considerable advantages: "The unit carriers are therefore very stable and the tools can be guided very precisely. The individual units are permanently loaded and movable in five axes: "This makes the machine very fast even for complex machining operations, we don't need any tool changes, and we can achieve high feed rates and high machining quality due to above-average stability of the unit carriers." The Krüsi MC 15 Q2 installed at Nägeli Holzbau also has two such unit carrier beams: "This enables six-sided machining without having to turn the workpiece. The upper unit carrier machines five surfaces - top, the two longitudinal surfaces and the two end surfaces - except the bottom, while the lower unit carrier machines the five surfaces, except the top, from the bottom." Which apparently makes the unit very nimble - a shifter, no matter where and at what angle it is placed on the beam, is literally made in seconds, and to follow the milling of a dovetail with the naked eye, one would almost have to use slow motion.

The workpiece is moved, the unit carrier is stationary.

After a short introduction, practically every employee can work with the Krüsi, Holzbau Nägeli is satisfied.

Andreas Brunner (LEUCO)

Good cooperation: Stefan Nägeli

Pascal Stehli (Krüsi)

EFFICIENT LOADING AND UNLOADING, SPACE-SAVING

To put it bluntly, "shooting the workpieces through the machine" would be of little use, however, if loading and unloading were not at least as efficient, Stehli is convinced: "We therefore place particular emphasis on these areas; the customer can design working lengths, buffers, and the like precisely to his needs." For example, in Nägeli's system, residual pieces can be discharged again in the direction of the material feed, and placed in a buffer for later use.

To save space, the plant at Nägeli was virtually built into the wall: "This allows Nägeli to use almost all of the hall space for handling large parts and material quantities." Part of the machine width was pushed outward "through the wall," so the feed tables lie close to the hall wall. According to Stehli, how the auxiliary units are accommodated is very "special": "We have located the switchgear and hydraulic cabinet, as well as the pneumatics of the machine on the "upper floor" above the plant."

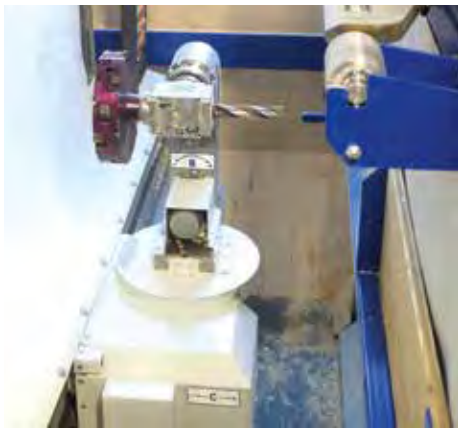
FIVE UNITS

With its five units, the Krüsi MC 15 Q2 can process beam cross-sections of up to 650 x 300 mm: "We have two two-spindle units, each with a rabbeting cutter head and a 40 mm roughing cutter, then two four-spindle units with various drills, finishers and dovetail cutters. In addition, a high-speed gearbox can be mounted to increase the speed from 7,000 to 15,000 rpm, as well as a saw unit."

More on YouTube:

The tools can be controlled in five axes.

From all sides, the workpieces can be processed from the top...



...and from the bottom unit carrier.

SWISS MADE

The cooperation between two Swiss quality brands is actually quite obvious, says Andreas Brunner, LEUCO Sales Manager in Switzerland: "Our LEUCO tools are designed for the highest possible cutting performance in the Krüsi systems, in order to cope with the high feed rates that can be run with these machines and, above all, to make full use of the available capability. After all, you don't mount the tires of a compact car on a Formula 1, Brunner laughs.

WEAR-RESISTANT AND HIGHLY PRECISE

The rabbeting and grooving cutter head, for example, is one such "Swiss made" quality product, he explains: "We have an aluminum base body here in a beautiful (LEUCO) color" he grins, "but this color is not just for looks, it has a purpose above all: the anodized layer gives us a denser and harder surface, which improves the wear resistance of the tool body." The pre-cutter plates were arranged in a spiral around the head: "This reduces the cutting pressure, even when we are cutting hard, and the tool life improves noticeably." At the same time, he says, the cutting edges of the turnover knives do not have rounded edges as usual: "as a result, they fit very precisely because they are optimally guided on three sides."

CUTTER WITH HIGH MILLING PERFORMANCE

The 40 mm HSS roughing cutter was developed in cooperation with Krüsi for a special fixture, Brunner explains: "The profile has good chip breaking and a high "feed rate," which we need to machine effectively at the high feed rate of the Krüsi."

For the dovetail cutter as well, the main development goal was high cutting performance: "This cutter is a two-flute cutter, which allows us to split chip removal and reduce the cutting pressure." It goes without saying that all the cutters are not only powerful, but also enable a particularly high machining quality, says Brunner: "In the case of the dovetail cutter, for example, the chamfers have already been integrated into the profile, which enables a fixed and finished joint with just one milling operation."

FIVE TEETH THAT CUT AND PLANE

One of LEUCO Product Manager Alexander Steinhart's specialties is the G5 joinery saws: "With the G5 saw blade, both longitudinal and cross-cutting are possible with good cutting quality - virtually as if planed. The special G5 tooth geometry has various advantages: for example, very low cutting pressure, resulting in a very light cut even with large material cross sections." It is therefore possible to run high feed rates with these saws, assures Steinhart: "With very low tear-out and a long service life of the saw." The principle is as simple as it is obvious: "We arrange one trapezoidal tooth as a "guide tooth", followed by four change-over teeth with special tooth angles. The leading tooth does the 'rough' cutting, the following teeth cut while pulling and planing the cut surfaces, as it were." In this way, two things can be achieved, he says: "On the one hand, a clean, 'planed' cut across the grain, and on the other hand, a high cutting speed along the grain without the saw getting hot." Another pleasant side effect is "that you don't need a longitudinal saw unit and another cross-cutting saw unit, as with conventional joinery machines, but the Krüsi can cut in any direction with just one saw unit."

Alexander Steinhart (LEUCO)

NEVER CHANGE A WINNING TEAM

The machine was supplied with LEUCO tools as original equipment, Nägeli says: "This works out very well. We are satisfied with the speed and the cut surfaces." When it comes to tools, Krüsi works closely with LEUCO, says Krüsi Project Manager Stehli: "If we need newly developed or special tools, LEUCO always helps us. We are very successful with each other, which is why we equip our machines with LEUCO from the factory."

Stefan Nägeli sums up accordingly: "Krüsi and LEUCO work well together, we won't interfere and change that."

The roughing tool was developed by LEUCO especially for Krüsi in order to utilize the high performance capability.

The G5 saw can cut "like planed", lengthwise and crosswise.

PRACTICAL G5 SAW BLADE FROM LEUCO FOR JOINERY CENTERS

EASIER SAWING IN EVERY DIRECTION

By using the G5 saw blade from LEUCO, joinery centers need only one tool when processing beams. The reason can be found in the innovative tooth geometry.

Thanks to LEUCO, joinery centers can eliminate downtime of their machining centers. This is because one saw blade with the G5 tooth geometry is suitable for ripping and cross cuts. After a quick change in direction, the same sawing equipment can continue its work.

Because of the G5 geometry, the saw blade has an extremely low cutting pressure. This has a positive impact. The quality in both cutting directions is very good and rapid feeding is possible with little force. In addition, the saw blade has an up to 30% longer service life.

The low cutting pressure results from the special geometry of the saw blade – a combination of a leading tooth and four consecutive key for fine machining.

The G5 saw blade is thus a very good alternative to conventional machining using two different saw blades. This requires a tool change. Previously, the user had to anticipate up to 15 minutes of downtime to swivel in another unit or change the saw blade.

The saw blade offers the benefit of a very low noise level and up to 30% longer service life.

The LEUCO g5-System chop saw blade can be used on joinery centers from all known manufacturers. Image: 550 mm diameter for Weinmann systems.

It is not necessary to rework the accurate cuts which can be used as visible edges. With this saw blade, customers can perform operations that previously required a milling cutter. In this way, they save machining time on the joinery center.

» It is not necessary to rework the accurate cuts which can be used as visible edges. With this saw blade, customers can perform operations that previously required a milling cutter. In this way, they save machining time on the joinery center.

The "surfCut" joining cutterhead was designed with a higher axis angle, the turnover knives are larger and more stable. Together with the slightly rounded cutting inserts, this considerably improves the quality of the cutting results, leads to longer edge lives with a simultaneously higher feed speed.

THINGS ARE MOVING AHEAD

TIMBER HOME BUILDER ROLF ROMBACH USES THE "LEUCO SURFCUT" JOINING CUTTERHEAD TO BUILD "NUR-HOLZ" PREMIUM TIMBER HOMES. AND FOR GOOD REASON.

It all really started nine years ago. Rolf Rombach began producing "Nur-Holz" elements for luxury home construction. What was new at the time was that all the prefabricated elements were produced from solid beech lumber using threaded rods and no glue. What follows is a success story. Rombach makes every effort to streamline his production processes which is why the inventive timber home builder uses the new high-performance "LEUCO surfCut" joining cutterhead.

It is anything but standard

When manufacturing the solid wood elements for "wood only" homes, planed tongue and groove planks are laid in cross and diagonal layers on the assembly tables. An internally configured machine subsequently drills blind holes on the surface in defined grid patterns and screws in the solid wood threaded screws. In the meantime, the machine's counter indicates over 1.7 million. This construction design is patented and delivers torsion-resistant components joined entirely without glue. The company Rombach Bauholz und Abbund GmbH has evolved into one of the leading builders of timber homes. It has been a long and intense road from a small workshop to one of the most innovative timber home construction companies with roughly 70 employees. Though the "threaded connection holds considerably better than the wooden dowels normally used for this purpose, they are not as easy to produce," explains Rombach. To produce the wood screws, Rombach himself has designed and built a machine to machine wood screws. "We have built a second one in the meantime which is three times as fast and is even more precise," says Rombach with a smile.

> »With the new joining cutterhead, we can work twice as fast compared to the conventional tools, thus reaching about 75% of the machine's potential feed speed, compared to 50% with other tools«
>
> Carpenter Frank Schmid

Uniqueness is key

After stiffly jointing the pieces on the customized production system, another decisive step follows. The elements measuring 2.90 x 8.60 m in size are milled flat and evenly on a Hundegger portal machining center. First of all, this step eliminates the projections on the threaded rods; secondly, the suface is calibrated so that the other side of the element can be evenly grinded later on. With such large sizes, it is a time-intensive process, not to mention the other working steps, such as sizing, folding, grooving, and machining the cut-outs for windows and doors. These cut-outs are already taken into account when laying the boards on the assembly table and only have to be milled to a finish at a later time. The rational manufacturing method for the elements also brings with it numerous problem spots when plain milling the walls. Because each time the plain milling cutter is moved back and forth and chipping occurs with the feed and against the feed, the tool not only goes in and out of the edges numerous times, it also goes through the cut-outs for doors and windows. The cutting quality of the plain milling cutter is therefore decisive, especially because it also functions as the router, grooving cutter and folding unit. "When machining such solid wood, chipping often occurs when the tool exits the wood if moving with the feed," adds Steffen Hampel, head of tool development at LEUCO. The company has addressed these challenges by designing the "LEUCO surfCut" joining cutterhead.

What is the difference

"Compared to conventional joining cutterheads, we have created the "surfCut" joining cutterhead with a larger axis angle and also designed the turnover knives to be bigger and more stable," explains Daniel Armbruster, product manager at LEUCO. Together with the slightly rounded cutting inserts, this leads to a considerable quality improvement in the milling results, longer edge lives with a simultaneously higher feed speed. It is no coincidence that Rombach was the first user who recognized the potential of an improved cutting head, especially since it doesn't matter who the manufacturer is when purchasing tool accessories. The company has been using the "surfCut" for roughly one and a half years and has saved time and money in the process. "With the new joining cutterhead, we can work twice as fast compared to the conventional tools, thus reaching about 75% of the machine's potential feed speed, compared to 50% with other tools," explains carpenter Frank Schmid, based on his experience. Expert Steffen Hampel can explain this phenomenon: "The tool geometry is optimized specifically for machining spruce and pine. In the process, a lot of branches are chipped, in other words, milled on the front. For this work to go smoothly, the cutting pressure is crucial. And it also depends on the functioning and rapid transfer of the chips out of the tool's gullet." With "surfCut," the gullet is larger and its shape developed and optimized based on these requirements. This prevents twigs and branches from getting jammed, which can increase the cutting pressure and would result in poorly produced surfaces. "In addition, the large gullets and the solid design of the cutting edges largely prevent an edge break," adds Hampel.

Customers take a close look

The use of the "surfCut" joining cutterhead has reduced the machine downtimes in the company. "Previously, when production was operating in two shifts, cutters had to be replaced every other day, but now, despite higher feed speeds, the cutters only have to be replaced every third or fourth day," explains Schmid. The reduced downtimes and smooth production processes naturally make company CEO Rolf Rombach very happy. Because the "quality demands of our customer base have increased substantially. It's not for nothing that we are always on the look out for better solutions for each working step and have invested heavily in equipping our machine fleet, which includes a grinding machine for machining the surfaces of the exposed ends. Roughly 95% of the elements will not be further planked later. Our customers want to see the wood, so the surface has to be perfect," says Rombach. That's why the surface quality produced using simple milling tools is becoming increasingly insufficient. For Rombach, it is no longer an issue. "Using the LEUCO tool, we can work faster, the edge lives are longer and, in the process, we achieve a cleanly machined surface that looks good," he adds.

Cut-outs for windows and doors are taken into account when laying the boards and only have to be milled to a finish later on. Because each time the plain milling cutter moves back and forth and chipping occurs with and against the feed, the tool goes in and out of the edges numerous times. With the LEUCO "surfCut", Rombach can operate the machine with 75% if its potential feed speed.

From the left: company owner Rolf Rombach, carpenter Frank Schmid and Reinhold Isenmann - more info under www.nur-holz.com

The work on the portal machining center from Hundegger was improved using the "LEUCO surfCut" by woodworker Rolf Rombach. His customers now demand an outstanding surface quality. Plain milling the elements is such a basic working step that now takes less time using the new tool, Tobias Wehrle shown here.

In Oberharmersbach, Germany, Rombach produces all prefabricated elements from solid beech wood using threaded rods and no glue. The design is patented and produces torsion resistant components without the use of glue.

AT A GLANCE – "LEUCO SURFCUT" JOINING CUTTERHEAD PRODUCES A QUALITY FINISH

Planing, hemming, tenoning or grooving: The new joining cutterhead "LEUCO surfCut" impresses lumber mills and carpentry shops

- Very smooth, chip-free surfaces – even with branches
- Long edge lives – can be operated up to four times longer than conventional ones
- Large gullets can handle high volumes of chips, branches do not get jammed in the gullet
- Reduced machine downtimes – new joining cutterhead comes with fewer cutters with improved performance
- Compatible on all cutting centers, regardless of the manufacturer

MAGENTIFY YOUR PERFORMANCE

SHARP AND NEAT

LEUCO t3 SYSTEM CUTTERS

With its newly devised 't3 system cutter', LEUCO enables jointing, hemming and sizing of solid wood and wood-based materials even in extremely confined spaces. At a high level of milling performance, the triangular turnover knives on these cutters can create chip-free surfaces and their compact construction equips them perfectly for the milling of freeforms, e.g. for staircase construction.

The time-consuming task of reworking irregular surfaces and edges after the milling process is not one of the most popular of wood processing tasks. The innovative t3 system cutter from LEUCO's comprehensive range of milling heads does more than simply provide a wide range of potential uses: its special arrangement of cutting edges, in contrast to conventional spiral cutterheads, can create chip-free jointing and hemming surfaces. This new system finds its field of use on CNC machines for solid wood processing and on joinery machinery in applications ranging from demanding craftsmanship to industrial applications with high output requirements.

This innovative arrangement of cutting edges on the t3 from the LEUCO thinktank has already been submitted by its manufacturer for patent protection.

It only has one incisive drawback...

The editor in chief of HOB magazine, Peter Schäfer, asked LEUCO product manager Alexander Steinhart some probing questions about how the t3 system milling cutter came into being.

Your t3 milling head cutter has established itself on the market within a short period of time. Did you anticipate this level of success?

I After the initial practical tests, we were convinced that it would be a success, but we did really expect our t3 to carve itself out a robust reputation quite so rapidly.

What prompted your development department to depart from the conventional miller path and to blaze entirely new trails in the arrangement of cutting edges?

I The initial spark actually came from a customer enquiry. On conventional millers, whether square or triangular, the outer cutting edge faces outwards and this creates ragged edges. On the t3, all cutters face the plate at all times, meaning that you can joint as well as mill, and it always delivers clean, high-quality surfaces and edges requiring absolutely no time-consuming rework.

How long did it take to develop this milling head, from the idea to the launch of volume production?

I It all happened relatively fast. All in all, inside about six months.

For a new concept, that is a remarkably short time – were no difficulties encountered in the course of development?

I Not really. Our many years of experience and extensive expertise stood us in good stead in terms of the material, the knife arrangements, the angles and the forces involved – basically we knew what needed to be done to process wood, a wonderful but unpredictable natural product with properties very different from aluminum or plastic. The initial results confirmed this, whether working with hardwood or soft wood, including timber with many branch knots.

What distinguishes the t3 system milling cutter from conventional cutters with a square or triangular reversing plate? Which special features set it apart?

With an Allen key, all 18 knives can be removed, cleaned and replaced in about 10 to 15 minutes

Newly devised: the special arrangement of cutting edges and the rounded edges of the triangular turnover knives equip the t3 perfectly for the chip-free milling of freeforms

Alexander Steinhart, t3-System product manager at LEUCO

I As I mentioned before, the other milling cutters available on the market invariably have one side that faces away from the wood, whereas on our t3, all three cutting inserts always face the wood. This milling cutter can machine any kind of solid timber for furniture-making quickly and cleanly. There is almost never any need for rework because the specialist design of our slim shank-type cutter with its ingenious arrangement of knives and blades delivers very precise and accurate results, only leaving very filigree shavings...

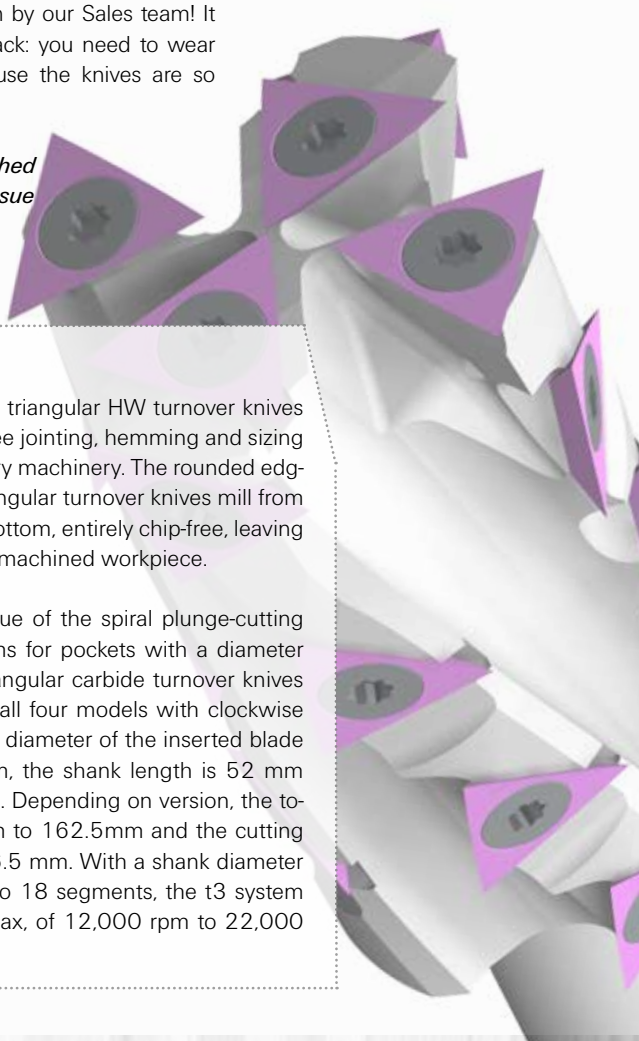
You have just mentioned furniture-making. What benefits does it deliver in other sectors, for example in staircase construction?
With its compact construction, it is predestined for the precise, fast processing of one-off workpieces and the milling of freeforms such as round arches or string wreaths.

How about tool life - is it durable?
I Based on our experience to date, tool life is about the same as conventional milling cutters, regardless of whether they are triangular or square.

That sounds very cost-effective, especially since there is no need for rework – how user-friendly are then, for example when tools need to be cleaned or replaced?
I Very simple with a standard hex-head Allen key. The knives centre themselves during installation, with the help of a two-sided guide. It only takes about 10 to 15 minutes to remove, clean and replace all the plates.

You developed the t3 in response to a customer enquiry. What has been the response to your new development up to this point?
I Positive, entirely positive. Not a single milling cutter has been returned to us – many customers wanted to hang on to them right after a demonstration by our Sales team! It really only has one incisive drawback: you need to wear gloves when you pick it up because the knives are so sharp...

Excerpt, original article was published in the HOB magazine, 10/2021 issue



THE t3 IN DETAIL

The end milling cutter with its triangular HW turnover knives is suitable for offset- and chip-free jointing, hemming and sizing of solid wood on CNC and joinery machinery. The rounded edges on the high-performance triangular turnover knives mill from bottom to top and from top to bottom, entirely chip-free, leaving absolutely no blemishes on the machined workpiece.

The same of course is also true of the spiral plunge-cutting of the t3 when milling freeforms for pockets with a diameter of more than 60 mm. Their triangular carbide turnover knives achieve three service lives. On all four models with clockwise cutting action, the cutting circle diameter of the inserted blade milling cutter measures 54 mm, the shank length is 52 mm and the number of teeth is 2+2. Depending on version, the total length ranges from 120 mm to 162.5mm and the cutting width measures 63 mm to 106.5 mm. With a shank diameter of 20 mm or 25 mm and 12 to 18 segments, the t3 system achieves maximum speeds, nmax, of 12,000 rpm to 22,000 rpm.

LEUCO
MAGENTIFY WOOD PROCESSING

A LOOK AT LEUCO

LEUCO ranks among the leading international suppliers of complex tools solutions and intelligent services for the wood-working industry.

Our goal is to improve the opportunities for our customers and partners through forward-looking innovations and to open up the potential of wood and related materials as a recyclable raw material to benefit people.

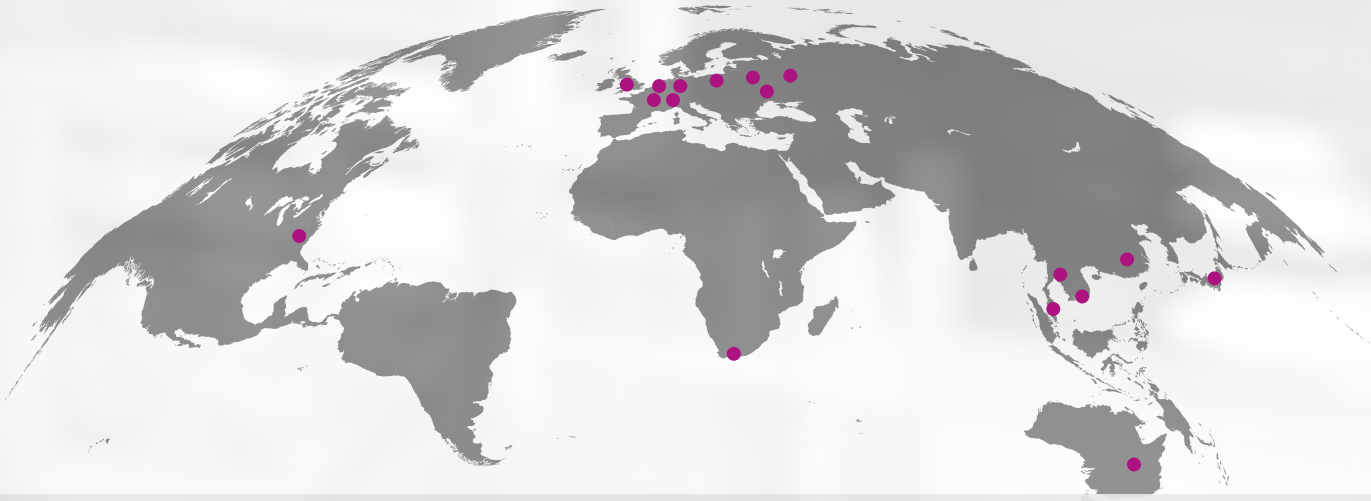
In close contact with our industry, we design and develop tungsten carbide and diamond-tipped circular saw blades, hoggers, boring and shank-type tools, drill bits, turnover knives and clamping devices. Our goal is to streamline the processes of our customers in the construction, furniture and panel industry, in lumber mills and interior design companies while also opening up new opportunities in working with the growing variety of materials.

Comprehensive consulting services, our sharpening service at manufacturer quality and future tool management solutions have made LEUCO a one-stop tool shop for our customers.

Today, around 1,200 employees work for LEUCO worldwide. With sales subsidiaries in Australia, Belarus, Belgium, England, Japan, Poland, Thailand, Ukraine and Belarus, as well as sales and production locations in China, France, Malaysia, Russia, Switzerland, South Africa, the USA and Vietnam, our company is represented on all five continents.

LEUCO
Magentify Wood Processing

64 Countries
20 Subsidiaries
1.200 Employees worldwide
93 Sales partners



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