LEUCOline

HIGHLIGHTS 2023

→ ENGINEERED BY NATURE

THE IDEAL ARRANGEMENT OF OUR TOOLS' CUTTING EDGES.

Fibonacci

LEUCO transfers principle from nature to tool design

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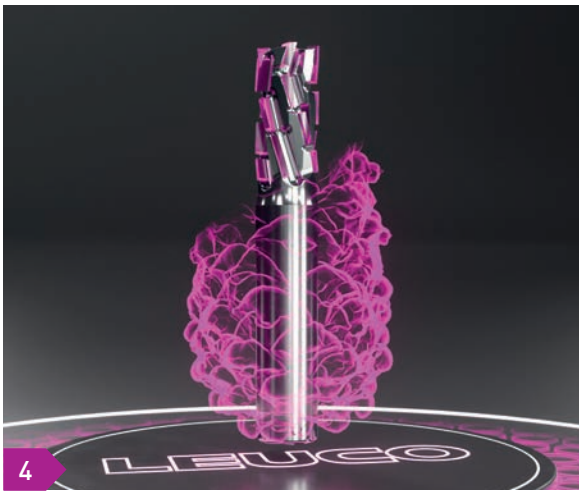

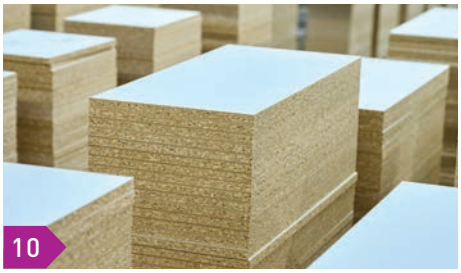

Our tools and services make production processes more efficient and improve the quality of the results.
Magentify Wood Processing.

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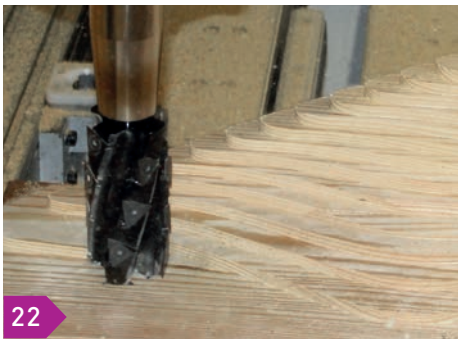
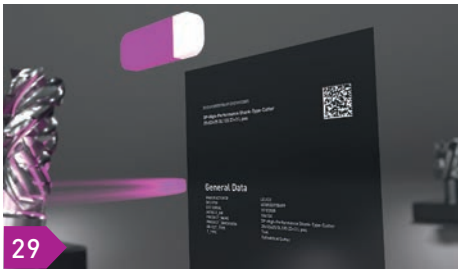




NEW DESIGN METHOD FROM LEUCO

NATURE'S PERFECTION IN TOOLS

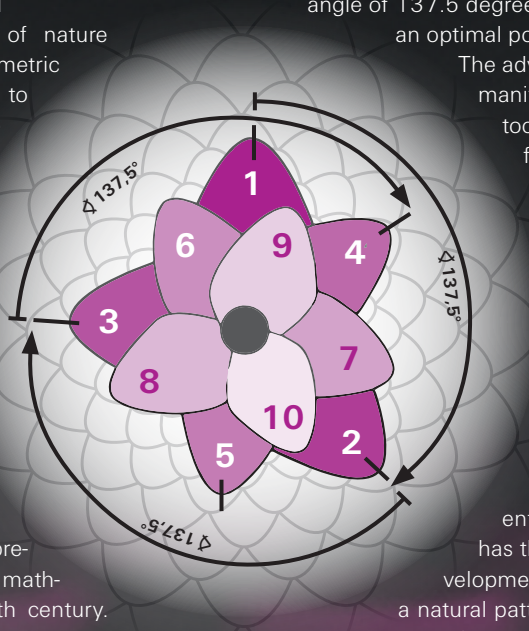
For millions of years, biological evolution has been a guarantor of efficiency – creating optimal conditions for life. With design principles that can be mapped mathematically. LEUCO has transferred one of these successful formulas to the geometry of some of its products, from shank-type cutters to boring tools. The patent-pending design method offers numerous advantages depending on how it is implemented in the tool.

Working with models from nature marks a new era in tool design. LEUCO uses the special shape found in the constellation of flowers, leaves or elsewhere in nature.

LEUCO AND FIBONACCI NUMBERS: AN IDEAL ARRANGEMENT

One significant characteristic of nature is the perfect interplay of geometric shapes and structures. This leads to a high level of functionality while making effective use of available resources. This recipe for success includes the principle of optimal distribution in the form of a spiral – a structure which makes perfect use of available space. In this way, a sunflower, for example, is able to accommodate the maximum number of seeds in its flower. Marguerites and pine cones also have this optimized arrangement.

Leonardo Fibonacci already presented this natural principle as a mathematical model back in the 12th century. Since then, we have spoken of the Fibonacci system. It consists of a sequence of numbers in which the next number is obtained by adding the two previous numbers. From these number ratios, it is possible to derive the extremely effective spiral shapes in nature. They follow the model of the golden section, which in the case of the sunflower or the pine cone means the maximum supply of light or the maximum number of seeds in the smallest space.

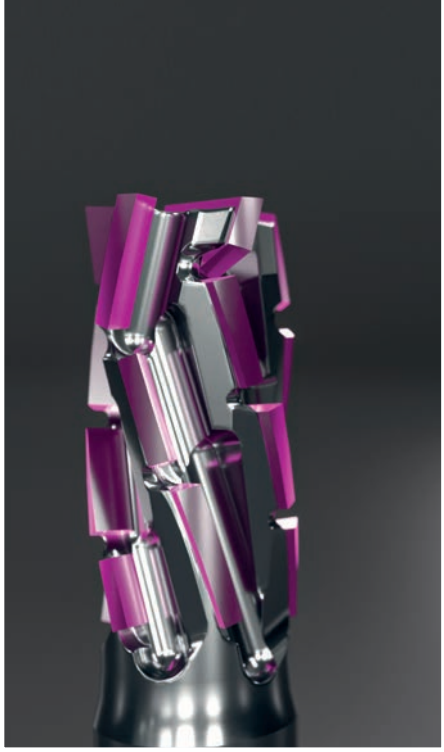


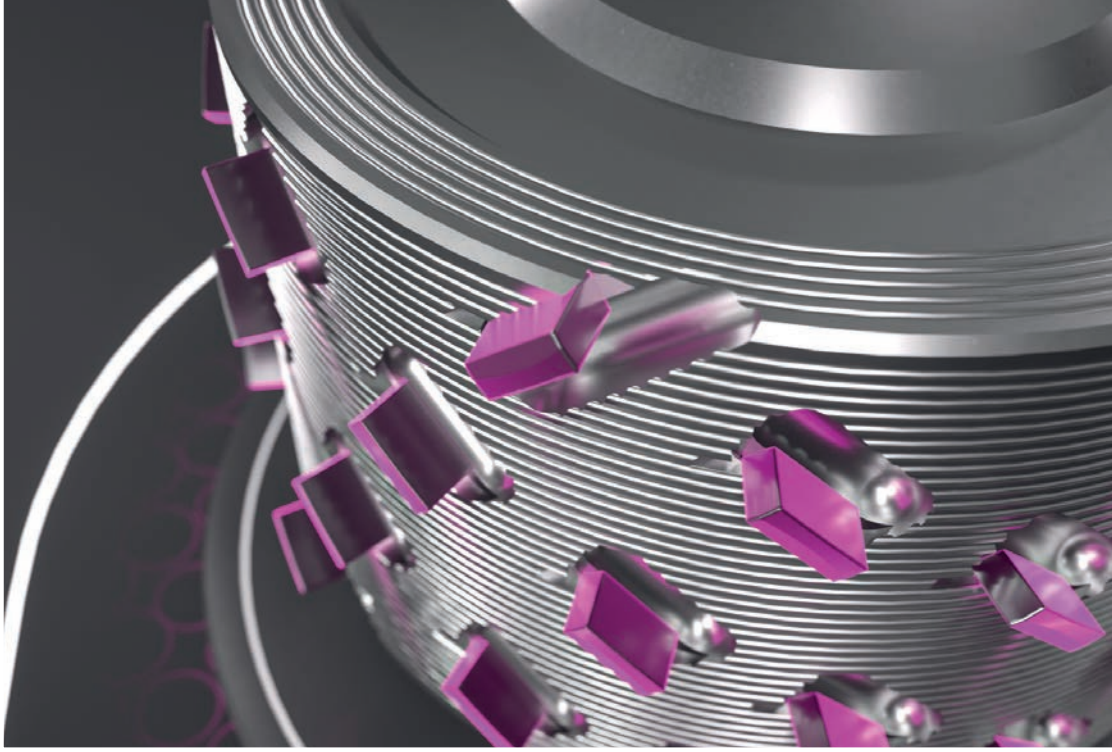
LEUCO AND DESIGN ACCORDING TO FIBONACCI: AN OPTIMIZED TOOL DESIGN

LEUCO uses the Fibonacci system from nature in the design of its products to further improve their performance. Thus, with the spiral-like arrangement, LEUCO is able to fit the highest possible number of cutting edges into the limited space of the body of a tool. Arranged at a golden angle of 137.5 degrees, the cutting edges are also in an optimal position in relation to each other.

The advantages of the new design are manifold: depending on the type of tool, the positive properties range from better cutting quality to smoother operation. A finer cutting pattern, higher feed rates and longer tool life are further benefits. In addition, the cutting edges enter the wood at an optimum angle, which reduces the cutting pressure and thus reduces the power requirement of the machine by up to 20 percent.

LEUCO has applied for a patent on the design principle and has thus enriched its portfolio of development possibilities. By transforming a natural pattern into an innovative technology, the manufacturer has achieved an evolutionary leap in the optimization of tool design.





TOOLS – ENGINEERED BY NATURE

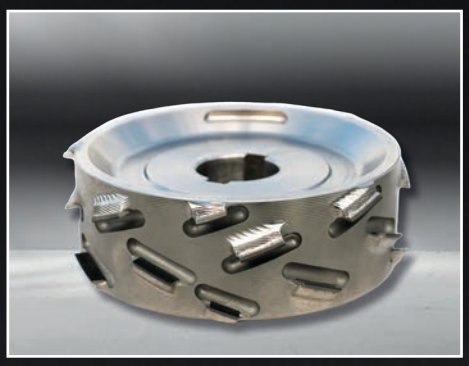
NESTING SHANK-TYPE CUTTER Z4+4

Higher feed rates, more stable tools and better qualities are possible in nesting with the Fibonacci nesting cutter. Thus, a "true Z4" is realized on a diameter of 12 mm, but the advantages also come into play in others.

FÜGEFRÄSER LEUCO SMARTJOINTER

LEUCO p-SYSTEM JOINTING CUTTER

Use of the Fibonacci model in the LEUCO p-System further improves the already brilliant cutting quality. This means that there are no visible overcuts to be seen anymore even in difficult materials.



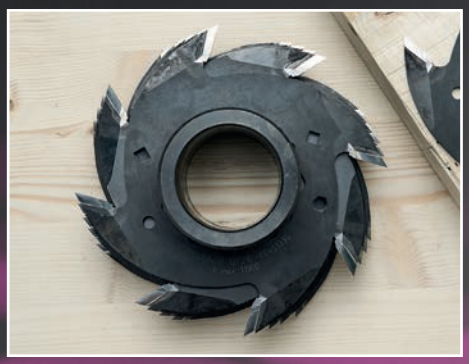
Fibonacci

LEUCO SMARTJOINTER airFace JOINTING CUTTER

In the SmartJointer airFace, the Fibonacci arrangement produces a particularly fine cut on the edges, even with varying panel thicknesses.

DISC-TYPE FINGER JOINT CUTTER FOR FINGER JOINTING LINES

If you want to save energy, you can reduce power consumption by up to 15% compared to a conventional spiral configuration with the Fibonacci disc-type finger joint cutter.



WATCH MORE ON YOUTUBE:

SCAN ME

DP CIRCULAR SAW BLADES FOR WOOD-BASED PANELS

A NEW DIMENSION FOR PANEL SIZING

The new diamond-tipped panel-sizing circular saw blades U-Cut with TR-F-FA and Q-Cut with G6 are on a par with the HW versions in terms of application and cutting quality, achieving up to 20 times the tool life.

LEUCO's new diamond-tipped panel-sizing circular saw blades achieve high cutting quality with extra long tool lives. With immediate effect, thanks to a bundle of innovations, they now perform even better and are more robust. These high-tech saw blades are therefore very capable of cutting all particle board and MDF panels.

LEUCO has further improved the DP panel cutting circular saw blades, also introducing the two cut lines U-Cut and Q-Cut to complement the HW version. The U-Cut variant is ideal for classic or universal cuts while the Q-Cut version is used for high-quality finish cuts.

A CAN-DO TOOL WITH ROBUST CREDENTIALS

The DP variants of both cut categories embody robustness. They have smaller gullets and this makes the tools more robust. Thicker teeth with a bigger wedge angle reduce the risk of tooth breakage. Also, with their new grade of diamond, these saw blades can tackle all standard wood materials. The strength achieved is a decisive advantage which protects the fragile diamond-tipped tool from foreign bodies.

MASTER OF MELLOW SOUNDS

The DP version of the Q-Cut line also has laser ornaments that are mounted in a specific sequence and are filled with a vibration-damping material. This means that the saw blade cuts more smoothly, delivering power and quality without a lot of noise. Not only that, it also does so consistently right across the service life of the saw blade, even after all sharpening operations.

THE TOOL EQUIVALENT OF THE MARATHON RUNNER

LEUCO's diamond-tipped panel sizing circular saw blades embody great performance and durability, enable to reach 20 times the tool service life of their HW counterpart. With their reinforced teeth, the use of a specific DP grade and the additional laser ornaments for noise reduction, they constitute a genuine innovation in this sector. Which neatly brings us back to the title: A new dimension for panel sizing.

Thicker teeth with a bigger wedge angle reduce the risk of breakage to DP teeth.

CARBIDE-TIPPED PANEL SIZING SAW BLADE "Q-CUT G6 EDITION"

SHARP AND DURABLE

LEUCO has further expanded its Q-Cut product family with the Q-Cut G6 Edition panel sizing saw blade. The latest addition boasts an exceptionally long edge life and sets new standards not only in this respect. We asked Leuco product manager Markus Erkenbrecher about the story behind the robust new development.

In one of our last newsletters, we briefly introduced your newly developed Q-Cut G6 Edition saw blade – Mr Erkenbrecher, please outline the special features and advantages once again.

// The special features include the reduced body thickness and the resultant larger tooth projection – both of which ensure optimized chip flow. The lighter base body also reduces the power consumption of the machine. Tighter axial and radial run-out properties, the optimized grinding quality of the TC teeth and the proven G6 tooth geometry guarantee a high quality of finish cut with previously unattained edge lives.

Two further features that can be seen with the eye are, one, our easyFix bore for easier mounting despite the tight fit between the saw blade and the shaft and, two, a new irregular gullet geometry that reduces noise when idling. In contrast to all other Leuco saw blades, the teeth are not matt, but shiny – which means the high grinding quality is apparent to the viewer at first glance.

The Q-Cut product family already has a broad base with its four models; what was the reason for the new model? Was it the customers' wish for even longer edge lives – after all, they were already impressive before?

// The Q-Cut G6 is a further development of our former FinishCut family, where the focus lay solely on cutting quality. By changing the tooth geometry to G6 and using an improved cutting material, edge life increased noticeably without any loss in cutting quality. Nevertheless, demands are growing continuously and our development goal was to double the edge life – and we have achieved this, as countless tests have shown.

Please briefly describe the outstanding features of the new blade?

// The outstanding feature is the extraordinarily high quality of cut that is achieved with this blade over an extremely long edge life, previously only achieved in exceptional cases. These results are not only attained in one edge life, but also after premium service in our service stations.

Which diameters are available to users of the new Q-Cut?

// We are starting with the most common dimensions first. The Q-Cut G6 Edition will initially be available in diameters of 350, 360, 380 and 450 mm. Other dimensions will follow shortly, so that in future all users, regardless of which machines they use for cutting, will be able to enjoy the advantages of the new Q-Cut.

Have you already received feedback from customers?

// Yes, the very positive results we achieved with our test partners during the development phase have also been confirmed in the field. We received consistently positive feedback regarding the very long-lasting quality of finished cut.

In one of our spring issues we presented your patented Easyfix bore in detail; it is also a striking feature of the newly developed Q-Cut G6 Edition saw blade – did the Leuco development department also develop the innovative Edition blade with a view to the cant-free tool or did this happen more by chance almost at the same time?

// The test phase of the patented easyFix bore geometry ran for many months and it was then introduced on a new family for cutting of aluminum profiles. The development of the new Q-Cut G6 began at the same time. After the consistently positive feedback on easyFix, it was then a matter of course that we put the advantages of the easyFix bore on these new saws.

Excerpt from an interview with the trade magazine HOB, published 01/2023

„OUR DEVELOPMENT GOAL WAS TO DOUBLE THE EDGE LIFE OF THE SAW BLADE WITH A HIGH GRINDING QUALITY – WE ACHIEVED THAT."

Markus Erkenbrecher, product manager, LEUCO

UPDATE FOR DP CIRCULAR SCORING SAW BLADES KO-HR

HIGH FIVE THANKS TO LARGER TOOTH

While retaining the proven cutting geometry, LEUCO has lengthened the raw teeth of its diamond-tipped, conical scoring saw blade. The effect: The tool can be resharpened up to five times more often and thus be used longer – with the same performance and cutting quality.

The diamond-tipped, conical scoring saw blades are sought-after auxiliaries for precise cuts with horizontal panel sizing saws. In addition to the existing advantages, reworking of the scoring saw blades increases their service life.

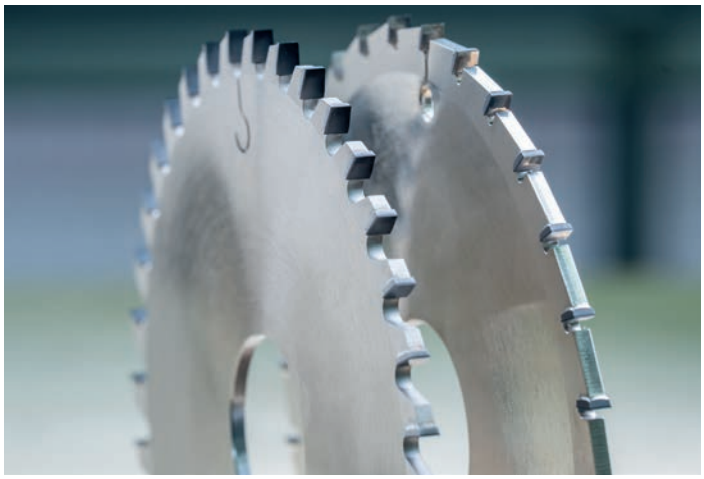
SUCCESSFUL OPTIMIZATION OF TOOTH SIZE

Extended by 1.5 millimeters, the longer raw tooth is an innovative further development of the much-prized scoring saw blade. With up to five more resharpenings, the tool offers a longer service life in constant quality.

„THE LARGE TOOTH OF OUR SCORING SAW BLADE IS OUR UNIQUE SELLING POINT,"...

...emphasizes Markus Erkenbrecher, product manager for saw blades at LEUCO. With the new tooth configuration, the tooth base was also changed at the same time, thereby shortening the processing length of the outer contour. This reduces the distance for resharpening, which makes the process cheaper for the customer.

The diamond-tipped circular scoring saw blade from LEUCO is of high quality, extremely stable and, with its conical hollow back, offers excellent cutting quality with long edge life and high economic efficiency. The dimensions of this new product family fit all standard horizontal panel sizing machines. With the revised tooth configuration, LEUCO has once again underlined its innovative strength in the design of high-quality machine tools.



The effective update of the circular scoring saw blade is clear to see. The new version (left) with enlarged raw teeth can be resharpened 5 times more often. At the same time, the teeth have a shorter outer contour than their predecessors (right) and are cheaper to service.

LEUCO nn-SYSTEM DP FLEX

NOW WITH NEW TOPCOAT COATING

LEUCO nn-system [no noise] DP flex circular saw blades are known on the market for long tool life and tear-free cutting quality in a very wide mix of materials. In addition, the diamond-tipped saw blade, with a graceful cutting width of 2.5 mm is particularly quiet in use and when idling.

LEUCO nn-system on the CNC: a cleaner miter cut in future without the tendency for resin to harden

Especially with very resinous materials or with miter cuts, resin tends to form on the flanks of saws in the nn-system DP flex. This is because the teeth do not protrude far. To retain a good average cutting result over extensive service lives, LEUCO has recommended cleaning the blades as cut quality declines.

With immediate effect, to make these blades even easier for operators to use, LEUCO is supplying its nn-system DP flex with a newly developed coating called 'LEUCO topcoat'. This combination of corrosion inhibitor and non-stick coating substantially reduces the formation of resin on the flanks, minimizing the amount of cleaning required.

Saw blades are available in different diameters and are suitable for many types of machine. This includes sizing saws, vertical panel sizing saws or CNC systems. The nn-system DP flex blades are remarkably thin, with a cutting width of just 2.5 mm.

LEUCO nn-system old and new: front now new with LEUCO topcoat coating

To cut plastics, the standard products available are the format circular saw blades 'g5 system', 'plastics TR-F-FA' and 'Solid Surface'.

NEW SAW BLADE FOR THICKER PLASTIC BOARDS

EXTENDED SOLUTION

To achieve the best results in the machining of plastic, LEUCO now supplies specially adapted circular saw blades to suit each grade of this material. In response to the growing volume of plastic used in the carpentry and joinery sector, the manufacturer now offers a fourth tool in addition to its three previous tools - the WS-FA format circular saw blade. Thinner and with a new coating, it is ideal for cutting thicker plastic boards.

To an increasing extent, plastic components are getting used in conjunction with wooden elements. Examples being items of furniture and kitchens. A challenge for woodworking companies that need to have appropriate tools. Of course, plastics come in many different forms, in terms of their material properties as well as their practical applications. That has implications for cutting items to size: Thermoplastics such as polycarbonate or polystyrene heat up and melt while being sawed while thermosets are very prone to tearing. LEUCO has developed appropriate saw blades for the various types of plastic – most recently one for greater plate thicknesses.

NEW SAW BLADE MASTERS GREATER THICKNESSES OF PLATE

In order to machine bulkier plastic plates, LEUCO has now devised the carbide-tipped WS-FA format of circular saw blade. Slimmer and with a special coating, this tool is the new specialist for PMMA boards with a thickness of more than 15 millimeters as well as for polystyrene boards measuring more than 20 mm in height.

Users obtain their best results with this new tool when cutting PMMA boards on a format circular saw on which the saw blade protrudes by 25 millimeters and operates at a rotational speed of 4,500 rpm. For polystyrene boards, it is advisable to cut them on a format circular saw with the saw blade protruding above the material by 40 millimeters, operating at a rotational speed of 5,000 rpm.

THREE SAW BLADES ARE ALREADY IN OPERATION

With this new tool, LEUCO is extending its range of specialist circular saw blades, already available for cutting various plastics to size:

- The 'g5' format circular saw blade achieves the best results on boards made of thermoplastics such as polycarbonate (PC) with a hard and brittle consistency. This blade is also well suited for use on thin-walled twin-wall sheets. Products such as these are marketed under the brand names of LEXAN® or Makrolon®.
- With the 'Plastics TR-F-FA saw blade', transparent PMMA plastic boards made of thermoplastics, e.g. Plexiglas®, can be machined to excellent levels of cutting quality. This saw blade also copes supremely well when cutting the hard, rigid and brittle material of light-proof polystyrene panels (Wattoleine®).
- This 'Solid Surface' saw blade is used for cutting exceptionally hard, compact and abrasive boards made of thermoset plastic. These include high-pressure laminates (HPL) and also branded products such as CORIAN®, AVONITE®, VARICOR® or HI-MACS®.

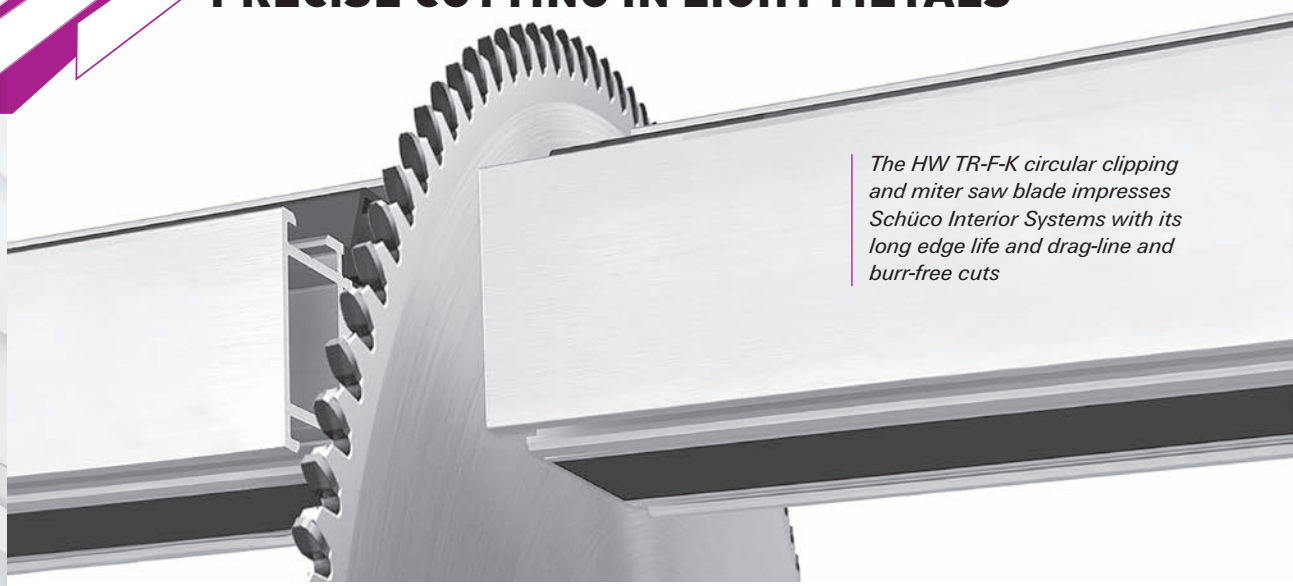
With a total of four highly specialized LEUCO saw blades, woodworking companies are equipped ideally to contend with the increasing unit of plastic.

Thinner and with a specialist coating, the WS-FA carbide-tipped format circular saw blade is the new specialist for PMMA plates with thicknesses of more than 15 millimeters, and for polystyrene boards with heights in excess of 20 millimeters.

MAGENTIFY YOUR CUT

LEUCO HW TR-F-K SAW BLADE AT SCHÜCO INTERIOR SYSTEMS KG

PRECISE CUTTING IN LIGHT METALS



The HW TR-F-K circular clipping and miter saw blade impresses Schüco Interior Systems with its long edge life and drag-line and burr-free cuts

A new clipping and miter saw blade from LEUCO has won over users in the metal working industry. Its properties make it the ideal tool for high-precision cutting applications in, for example, the furniture and electrical industries, for window and facade manufacturers, the automotive industry and other sectors where non-ferrous metals are processed with precision. At Schüco Interior Systems KG, specialists for aluminum machining and processing, it is successfully demonstrating its outstanding qualities.

The product name LEUCO HW TR-F-K describes the most important features of the innovative saw blade: cutting edges made of carbide (HW), trapezoidal shape (TR), flat tooth (F) and convex (K). Decisive for the endurance and precision of the saw blade is the geometry of the carbide cutting edges. One important field of application is the cutting of aluminum profiles, for example at Schüco Interior Systems KG, a subsidiary of the Bielefeld-based building envelope specialist Schüco International KG. As a partner for customers from trade and industry, Schüco Interior Systems KG produces high-quality furnishing systems made of aluminum, such as interior design and shelving systems, table frames, outdoor kitchens and handle bars based on aluminum profiles for the design of innovative home and work environments.

"We are impressed by various properties of the HW TR-F-K, such as its very long service life," explains Matthias Walkenhorst, Team Leader Cutting at the Borgholzhausen site of Schüco Interior Systems KG. Schüco uses the LEUCO tool on a crosscut saw and a miter saw for clipping and miter cuts. Each cuts around 5,000 metal profiles every day. Due to their hardness and endurance, the blades only need to be changed about every two weeks. This means that about 50,000 precision cuts are possible per tool. "We cut all kinds of aluminum profiles with the saw blade, whether panels, handle bars or rails – simply everything that is made of aluminum," says Walkenhorst.

The HW TR-F-K is part of LEUCO's topline range. This product line is the manufacturer's highest quality category with particularly tight tolerances. This is another reason why the new LEUCO precision saw blade is the tool of choice for Matthias Walkenhorst: "For us, Schüco Interior Systems KG, cutting quality has top priority. Our quality requirement is absolute precision, whether visible or not. The saw blade ensures the optimum cut and surface finish quality for us."

Last but not least, the HW TR-F-K also boasts economy. "From the cost-benefit aspect, the tool is very good for us," emphasizes the Schüco team leader. Part of the optimum overall package is the LEUCO service. "The particularly fast delivery of new saw blades and the very good service make our collaboration with our partner LEUCO special all round."

Schüco Interior Systems KG offers a wide range of interior systems with aluminum profiles. For this purpose, the profiles have to be cut with an excellent quality of finish.

Quelle: Schüco Interior Systems KG

HOGGER PERFORMANCE LEVEL IMPROVED

TWO VERSIONS OF THE NEW POWERTEC 5 AIRFACE

The main thing furniture makers expect from hogging tools are long service lives. The LEUCO PowerTec hogger is one of the most widely used hogging tools on the market. Now the new generation, by the name of Powertec 5 airFace, with new cutting blade geometry, is demonstrably opening up a new performance class in terms of tool life. The first customers for this new generation report tool life increases of up to 25% compared to their previous hoggers, and even more than that in some cases.

WONDERFULLY EASY HANDLING

The unique diametric consistency of the LEUCO PowerTecs also provides users with remarkable ease of use. Having a constant diameter means that the cutting circle diameter of the PowerTec hogger does not change after a sharpening operation. So after resharpening, it's 'plug & play': Just place the PowerTec hogger on the unit and, thanks to this feature, the machine is able to continue operating with the same machine parameter settings. This minimizes machine downtime.

Like its predecessors, the new PowerTec 5 airFace generation of hoggers is used for tear-free and low-noise formatting of wood-based materials from 8 mm panel thickness, regardless of whether they are unfinished, coated with melamine resin or paper, HPL, foil or veneer. By virtue of its tremendous tool life, the hogger can be used for longer, and its diametric constant simplifies handling. Both of these benefits shorten setup times which in turn reduces machine downtime very significantly.

In future, machine operators will be able to make a note on the label provided of machine parameter settings when using a PowerTec for the first time. The constant diameter means that precisely this same value can then be used throughout the tool life of the hogger.

POWERTEC 5S AIRFACE

For the first time, LEUCO provided users with the reinforced 'S' version in the previous PowerTec generation and this was very well received on the market. LEUCO adds a plus to the two typical strengths of this hogger with the PowerTec 5S airFace version: Length of tool life, even at high feed rates. The new PowerTec 5S airFace hogger is equipped with more cutting edges than before. By this, it achieves a higher material removal rate compared with the already powerful basic model. Reinforced DP cutting blades also makes them more robust and less prone to abrasive wear. That extends their tool life. The LEUCO-specific 'airFace' design of the base body reduces noise emissions when running without load and while machining to the lowest level that can be achieved with a hogger.

The new generation of PowerTec 5 airFace and PowerTec 5S Generation will be rolled out one after the other during the second half of 2023.

The improved cutter geometry improves the edge lives of the tried-and-tested PowerTec hoggers with their distinctive airFace design. PowerTec 5 on the left, PowerTec 5S on the right, with more hogging cutters

MAGENTIFY YOUR EFFICIENCY

Minimal machine down-time, maximum cutting edge utilization: a sharp cutting edge area is set with a small turn

SYNCHRONOUSLY ADJUSTABLE JOINTING CUTTER AT HOLTKAMP MÖBELTEILE GMBH & CO. KG

NON-STOP PERFECTION

The company Holtkamp Möbelteile GmbH & Co. KG places immense importance on the highest quality standards in its production. This aspiration is supported by a synchronously adjustable jointing cutter from LEUCO. It guarantees Holtkamp a high standard of production and simultaneously reduces setup times to a minimum.

Holtkamp is a successful supplier to the kitchen and office furniture industry based in Melle, near Osnabrück, Germany. There, the company employs over 50 people and has 20,000 m2 of production and storage space. Its operations comprise, on the one hand, the large-scale production of several thousand parts per batch and, on the other, the manufacture of subcontracted parts in lots of one with just-in-time delivery.

"One of Holtkamp's strengths is its unconditional delivery reliability. Our customers can rely on on-time production and delivery. At the same time, we guarantee a high standard of product and the implementation of all customer requirements," says Ali Parlak, production manager. He has worked for the furniture supplier since 2018 and has 25 years of experience in the kitchen industry. The high standard at Holtkamp is reflected directly in the demands placed on the tools. "Since our customers have very high quality standards, we routinely change the jointing cutters at defined intervals," says Parlak. All this together makes setup time and tool costs important criteria in the supplier's decision.

BEST SUITED FOR IDENTICAL PANEL HEIGHTS

This was also the reason why Ali Parlak immediately showed interest when LEUCO's sales department informed him about the new synchronously adjustable jointing cutter "DIAREX airFace" and its advantages. The milling cutter is ideal when machining large quantities with a constant panel height, where the same point of the cutting edges is stressed all the time. This is because the synchronously adjustable jointing cutter consists of two tool parts whose distance from each other is set by an adjustment function. In this way, new, sharp cutting edge sections are always used and the cutting edge width is utilized to the full. Their diamond tips guarantee a maximum of long edge life.

At Holtkamp, the synchronously adjustable DIAREX airFace jointing cutter with a diameter of 200 mm is primarily used for the production of large series on a four-sided IMA Combima sizing and edge processing line on a unit with a 40 mm shaft. Holtkamp mainly uses it to produce cabinet components made of 16 mm particle board with a precise narrow-face coating of PUR. Ali Parlak: "The synchronously adjustable jointing cutter is excellent for use when working with identical panel thickness because you have a sharp cutting edge in the area of the panel surface."

Sven Marschner (LEUCO sales engineer), CEO Jan Holtkamp and production manager Ali Parlak are delighted with the ideal jointing cutter solution.

HOLTKAMP: "THE SYNCHRONOUS MILLING CUTTER IS WORTH IT"

Compared to a conventional jointing cutter, LEUCO promised an extension in edge life ideally by a factor of 5: "We adjust the tool 4-5 times on average. As a result, the edge life of the synchronous jointing cutter is five times longer," notes Parlak.

Another advantage is the shortening and significant simplification of the setup process, which conventionally takes between 45 and 60 minutes. With the synchronously adjustable jointing cutter, this means a short machine stop, readjustment with an Allen key in the machine without removing the tool, and no readjustment of the motor as the reference point remains the same as the tool parts move towards each other. All in all, a maximum of 10 minutes for an experienced machine operator.

The production manager therefore underlines the good economic efficiency of the tool: "The synchronous milling cutter pays off for us from the moment the higher acquisition costs have been amortized by the reduced sharpening costs and saved machine down-times." This is clearly the case at Holtkamp. Based on these positive experiences, Holtkamp wants to stay with this tool: "The next synchronously adjustable jointers have already been ordered."

The high efficiency of the synchronously adjustable jointing cutter comes to full bear in series production with the same panel thicknesses

ADVICE FROM LEUCO ON SIZING CONCEPTS

EXPLOITING HIDDEN POTENTIALS

Product manager Christina Günther shows a comparison of three sizing concepts. At a glance, you can see whether the focus is on edge life, quality or flexibility.

With software-supported technical consultation, LEUCO advises users on the choice of the best sizing concept for throughfeed systems. The aim is to find the best combination of machine, tool and clamping element for each application. In this interview, Christina Günther, product manager for throughfeed machining at LEUCO, talks about how this advice enables improvements in economic efficiency and quality.

Ms Günther, why does LEUCO offer special expert advice on sizing concepts?

// We best help customers to exploit their potential if we are involved in the design of the process at an early stage, i.e. as early as the selection of the concept. In doing so, we compare the process sequence as well as the options for machine, tool and clamping element. Our technical consultants in direct sales then have the most levers available to them to optimize the sizing process – always geared to the user's goals.

What improvements can be achieved as a result?

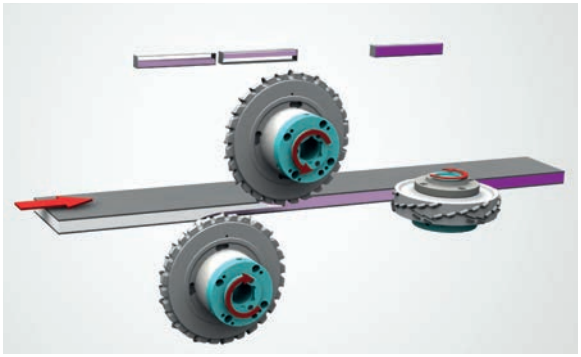
// As a rule, users are mainly looking for improved edge lives. Apart from lower costs for new tools, this also means fewer downtimes and reduced service work. In addition to longer edge life, it is often also possible to improve quality at the same time. In other words, it is possible to achieve a perfect transition from panel surface to edge in order to create the best basis for a zero-joint look. Another goal can be the processing of several different types of material and coating. Some shops have, in some cases, previously only used a machine to size melamine-coated particle board and are now, for example, also processing MDF or wood-based materials with a sophisticated anti-fingerprint coating on this machine. By optimizing the sizing concept appropriately, this can be achieved without having to change tools.

When should users take advantage of this consultation?

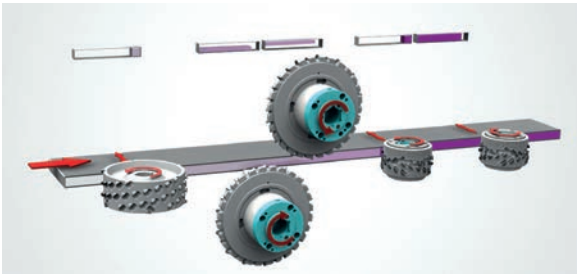
// The most far-reaching possibilities arise when buying a new machine. Here, it is not so much about the type of machine, but more about the configuration and the programming options for sizing. If the user already knows which concept he wants to use for sizing, he can tailor his order to this. However, there are usually also possibilities for the user to switch to a more suitable sizing concept with a machine he already owns.

What would these be, for example?

// The simplest option for users is to stay with their current sizing concept and improve it by changing the tool. One possibility would be to switch from a one-piece jointing cutter to a synchronously adjustable tool. Or a tool with higher shear angles, such as use of the LEUCO p-System instead of conventional geometries. Both



Example configuration for cutting along the grain: double hogging (PowerTec hogger) with additional jointing (p-System jointing cutter) – the priority here is high throughput, combined with long edge life and very good finish quality.



Example configuration for cutting across the grain: jump-milling, double hogging and an adjustable jointing cutter guarantee long edge lives at constant panel thicknesses, thus short setup times with very good finish quality.

can make sense if longer edge life is the primary goal.

Further possibilities arise through appropriate modernization of a machine. This can be, for example, switching from conventional DKN clamping to hydraulic clamping. Another option would be to install an accessory system on the machine. This could, among other things, enable additional jointing after double hogging to improve quality. However, there should be free space available on the machine for this, otherwise the conversion is usually not economically viable. These questions are discussed in the course of the consultation, also in cooperation with the machine manufacturer.

There are no such restrictions when consulting before ordering the machine?

// That's right, all options are still available at that time. It's best to choose the optimal process and tool combination first. And then the right machine configuration. That's how users get the most out of sizing.

ADVICE FROM LEUCO ON SIZING CONCEPTS

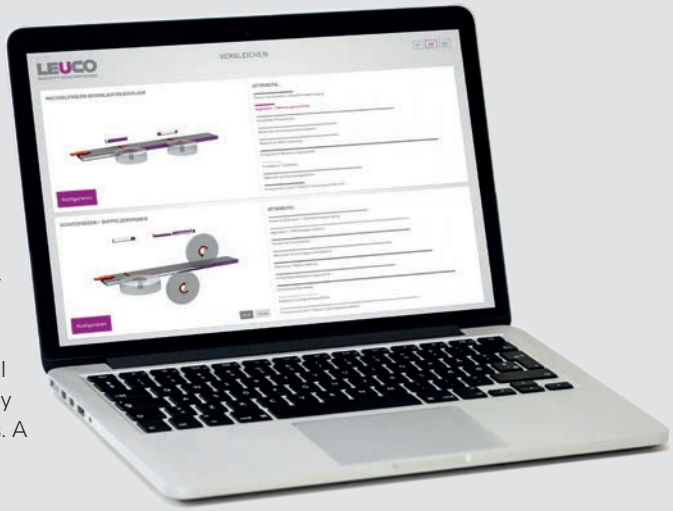
HANDLING THE DIVERSITY OF SIZING

Selecting the right jointing cutter from the wide range of possibilities available is elementary to achieving the best possible price/performance ratio for a sizing system.

LEUCO supports the choice of right sizing concept with a selection tool and advice. There are 20 processes for throughfeed production and around 250 tool variants to choose from. This allows companies to choose the best combination of machine, tool and clamping elements before making an investment.

Is it better to hog or joint panels? Maximum or gradual material removal? Is it worth investing in hydro clamping technology? LEUCO provides a tool to help make such decisions. It leads in three steps to the best combination of production process, tool and clamping elements. First, the users define their priorities. This involves factors such as productivity, quality, costs and flexibility in terms of lot sizes and material thicknesses. LEUCO's sales experts advise on which process is best suited to achieving the company's goals. The optimization of edge life is an essential criterion in every concept. During the consultation, LEUCO's tool illustrates which processes are currently available.

It contains 20 proven sizing concepts with hoggers, jointing cutters as well as combinations of these two types of tools. The software illustrates all these possibilities clearly. The machining sequence including the tool types is presented by means of 3D graphics. A comparison function makes it easy to get an overview of the different concept options and to differentiate between them on the basis of their individual characteristics. In the third and final step, concepts can be simulated together with specific selectable tools and clamping elements. In this way, LEUCO's sales department helps users to choose the most economical sizing solution for them. The presentation with the innovative tool facilitates comparison between the different processes and tools.

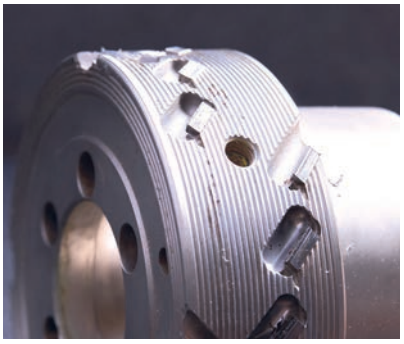


LEUCO's simulation compares the various processes and tool combinations for sizing on the basis of criteria such as edge life, quality, flexibility and much more.

MAGENTIFY YOUR OPTIONS

EXCLUSIVE REGENERATION OF TOOLS

RESTORED TO NEW CONDITION AND SUSTAINABLE



One tool, several life cycles: The photo on the left shows a used tool that, in the past, would have been scrapped. The picture on the right shows a tool regenerated by LEUCO with new diamond-tipped cutting edges.

LEUCO offers a unique service for two of its fixed types of jointing cutter - reconditioning them when resharpening is no longer possible. Restored to as-new quality with a design of cutting edge for which a patent is pending. It makes economic sense. In addition, the regeneration of used tools is a sustainable process.

LEUCO's two jointing cutters, the DIAMAX airFace and the DIAREX airFace now no longer get scrapped after use. Instead, they embark on a new life cycle.

USERS BENEFIT FROM REGENERATION

With exclusive reactivation, LEUCO restores its tools to a new gleaming finish or, more accurately, to restored sharpness. Compared to the cost of a new tool, this saves customers money – depending on the number of cutters and their cutting width.

Regeneration of a used special tool based on the DIAMAX airface and DIAREX airface jointing cutters takes much less time than the delivery of a custom product that has to be manufactured to order. In addition, repeat use of the base body conserves valuable resources such as steel and energy.

LEUCO replaces the used cutting edges with new ones as part of a service order. Once fitted with new cutting blades, these jointing cutters can be used just like new tools, delivering the same performance. After every regeneration, users get their own cutters back – so the tool remains the property of the customer throughout its entire service life.

Initially, this regeneration option is only being offered exclusively in Germany as well as for customers who already work with DIAMAX airFace and DIAREX airFace jointing cutters.

REUSED BUT PRECISE
FOR YOUR PERFORMANCE & OUR PLANET

A TOOL WITH MORE LIFE

It is possible to regenerate both of these jointing cutters several times. This greatly extends the use of the base body. For furniture makers and joiners, this unique regeneration offer presents an economical and sustainable alternative to the replacement of tools.

AIRFACE TOOL BODY IN DETAIL

ITS SPECIALIST DESIGN MAKES REGENERATION POSSIBLE

The diamond cutting edges on both of these milling cutters are mounted on the tools using an innovative technique on which a patent is pending, avoiding the familiar need for studs. Thanks to a new design of balancing screw, the base body no longer gets perforated during the balancing process. Both developments are needed to make the regeneration of LEUCO DIAMAX airFace and LEUCO DIAREX airFace jointing cutters possible. LEUCO has also applied for a patent for its special de-soldering and soldering process.

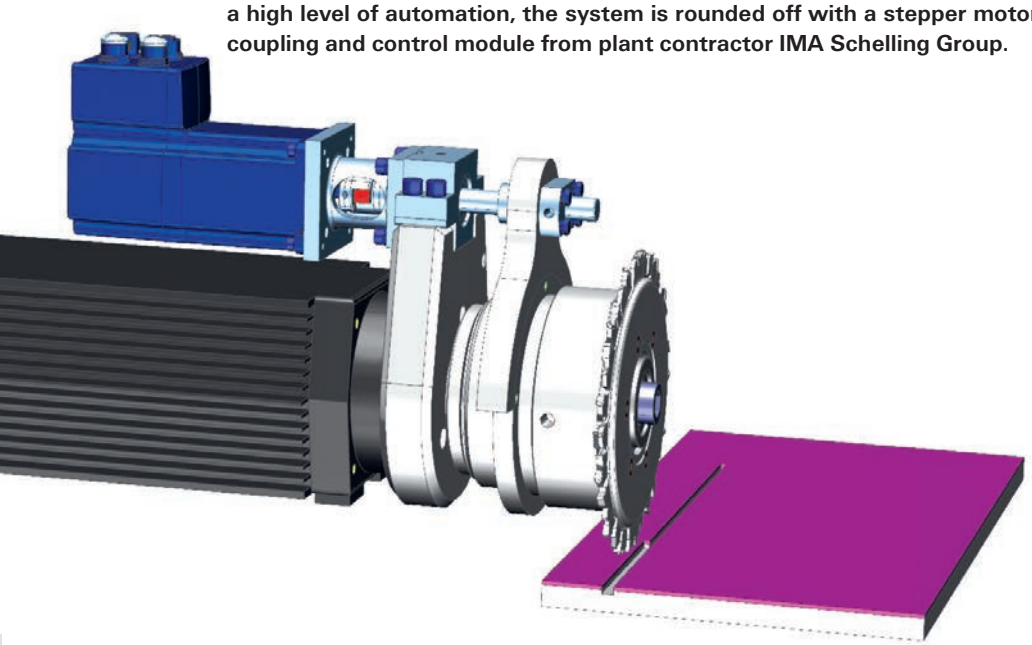
DESIGNS OF JOINTING CUTTERS

Classic on the left: Cutting blade with studs and balancing bores. On the right, the DIAMAX and DIAREX airFace principle: Cutting blade directly in the base body, balanced using balancing screws

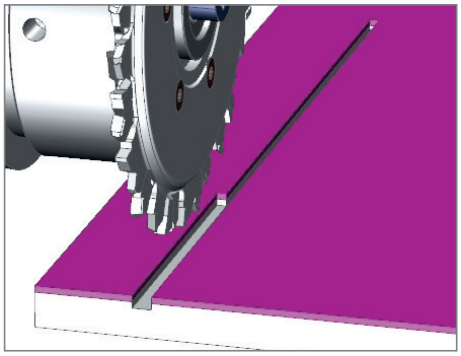
LEUCO ADJUSTMENT UNIT FOR GROOVING

INFINITELY VARIABLE REGULATION OF GROOVE WIDTHS IN THE GAP

The adjustment unit for grooving cutters from LEUCO enables furniture manufacturers to vary the groove widths of their components in a time-saving and cost-effective manner. To facilitate setup in the gap and to achieve a high level of automation, the system is rounded off with a stepper motor, coupling and control module from plant contractor IMA Schelling Group.



The adjustment of the groove width takes place automatically in the gap during the process. A modular system up to motor interface makes this technology possible for both new and existing machines.



NO DOWNTIME AND SHORTER MACHINE LENGTHS

With the development of the adjustable grooving cutter, LEUCO reduces time-consuming work steps. Previously, the manufacturing of different groove widths took a lot of time or required additional machine length. This was because users were forced either to change the grooving cutters, to combine two or more or to use a separate motor for each cutter with a corresponding extension of the machine.

Now, an innovative design from the joint development project of the plant contractor IMA Schelling Group and tool manufacturer LEUCO makes it possible to set different groove widths using one tool unit: The grooving tools for the desired width are attached to two bushes. While one grooving cutter is fixed, the other can be moved steplessly up to 4 mm. This is how the adjustment unit achieves groove widths of between 2.4 – 18.0 mm.

SUITABLE FOR NEW AND EXISTING MACHINES

LEUCO adapts the fixed part of the adjustment unit to the respective motor interface with its modular system. Thus, realization is possible not only in close cooperation with the machine manufacturer for new machines, but also for existing machines. Mounted in the machine and equipped with the desired grooving tools, the unit can be automatically adjusted in the component gap. In addition to the adjustment unit, this application requires a stepper motor as well as a connection to the controller for machine adjustment of the desired groove width, plus an optimized dust hood.

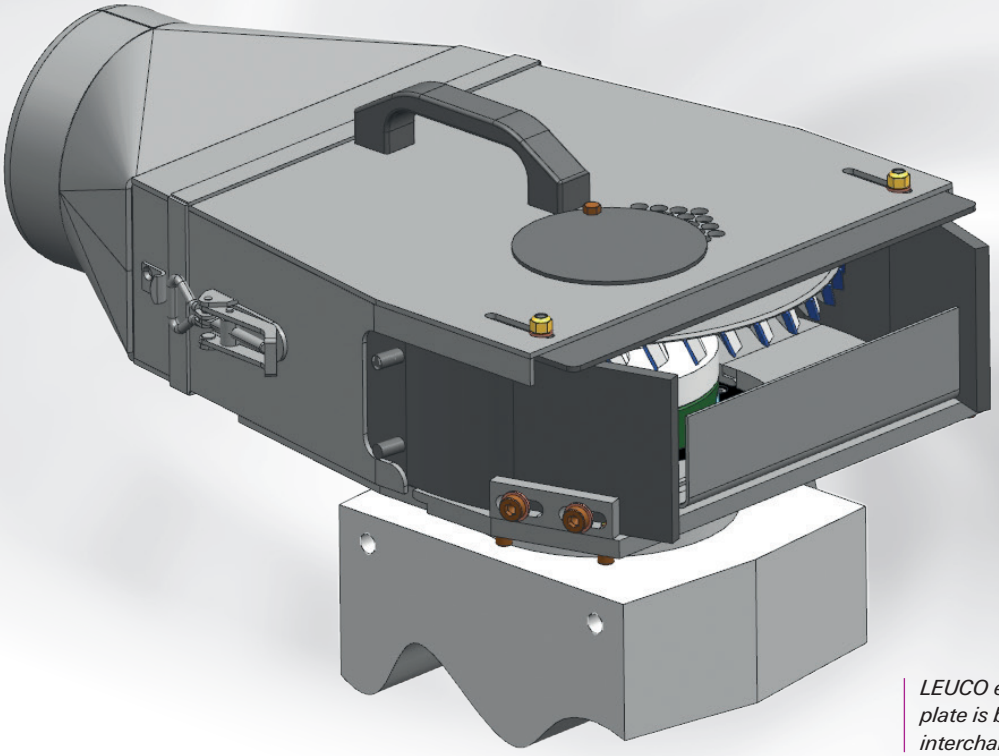
ALSO INTERESTING FOR SMALL PRODUCTION QUANTITIES

The infinitely variable adjustment unit covers the entire range of woodworking – from series production to small batches to individual pieces. The individual design of the grooving tools with regard to the machining quality required by the customer is defined and designed by LEUCO together with the customer in each case. The plant specialist IMA Schelling Group is the first machine manufacturer in this sector to provide this innovative groove-cutting technology.

The automatic adjustment unit for grooving cutters from LEUCO also marks a figurative break in furniture production – from now on, it makes the realization of different groove widths on through-feed machines faster, more flexible and more cost-effective.

IMPROVED HANDLING

COMPACT AND CUSTOMER-ORIENTED



LEUCO extractor hood closed: Wear plate is bolted to base plate and is interchangeable.

LEUCO has modified its extractor hoods for continuous throughput machines in furniture and flooring production. This robust new construction design is very resilient and, above all, has been designed to be user-friendly: It provides easier access to the tool and has a smart interface that makes hood installation a much faster process.

Turning two into one: LEUCO combined the extractor hoods for producing furniture and flooring. This produced a compact hood with enhanced properties.

SIMPLE AND EFFICIENT

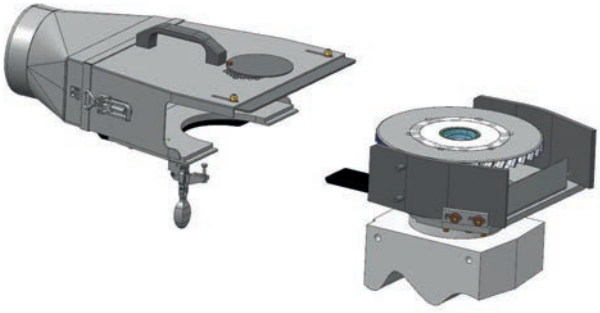
LEUCO listened carefully to its customers when creating this new concept for extractor hoods. This was how the tool manufacturer decided on a compact and robust design comprising rigidly connected components. Simply slide back the hood for improved access to the tool. A guide rail also makes it easier to install the hood.

In addition, the wear plates can be replaced quickly by unfastening the hexagon screws that connect it to the baseplate. The design of the basic hood means that it does not need to be replaced entirely when a wear plate actually gets badly worn. This assures long durability for the extractor hood. It also catches chips efficiently, reducing the amount of cleaning needed for the machine. The optimized design of this extractor hood reduces its suction power and this saves energy.

COMBINED AND VERSATILE

The revised design combines the previous extractor hoods for the production of flooring and furniture across the diameter range of 240 to 260 millimeters. For the furniture sector, this new variant still exists in the two diameter ranges of 210 to 230 millimeters and 180 to 200 millimeters.

Due to the modular design, extractor hoods can be used flexibly on the continuous throughput production machines from various manufacturers. With this design modification to its extractor hoods, LEUCO now provides the furniture and flooring sector an easy-to-operate way to machine workpieces with almost no shavings.



LEUCO extractor hood opened: optimum access to the tool.

The DIAMAX 8.5 mm shank-type rear panel cutter with alternating axis angles makes it possible to cut grooves to a finished width dimension of 8.5 mm.

WIDE GROOVES GUARANTEED

VERSATILE SOLUTIONS, 8.5 MM GROOVES IN REAR PANEL

It is popular to make grooves in the rear panel oversized to reduce the problems associated with getting rear panels to fit. LEUCO is providing two useful and time-saving solutions for CNC machines: The DIAMAX shank-type rear panel grooving cutter and the g5 system grooving cutter.

DIAMAX SHANK-TYPE REAR PANEL GROOVING CUTTER

The lower positive arrangement of cutting edges promotes good chip transport away from the bottom of the groove, while the upper region with negative cutting edge provides clean cutting of any top layers.

Another often helpful technical detail is the relatively short design of the positive cutting edge, which allows groove depths as shallow as 4.5 mm. The maximum groove depth achievable with the DP shank-type cutter is 14 mm

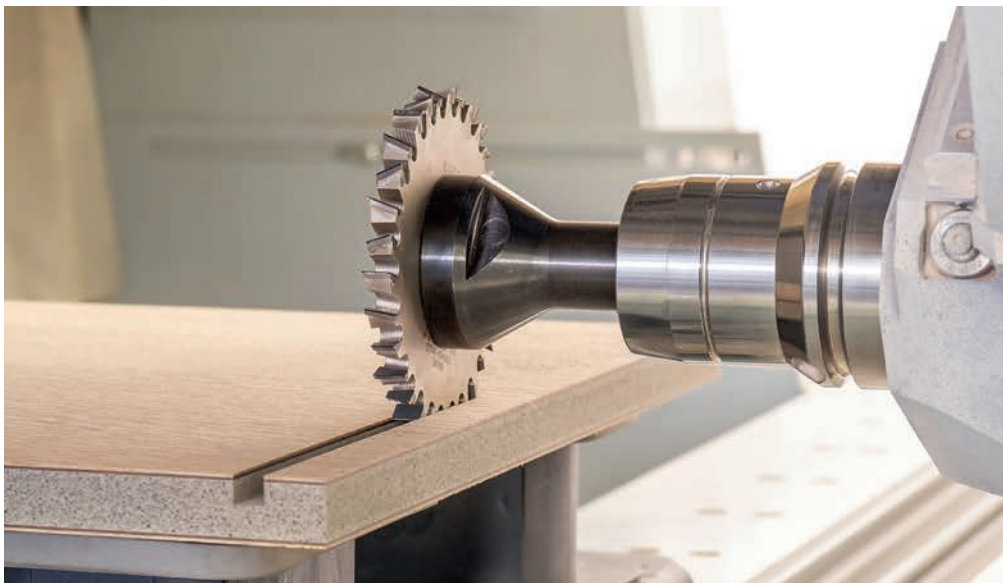
Grooving saws with an 8.5 mm cutting width for use in grooving units on CNC machine are already relatively widespread. However, if the grooving unit is equipped for a smaller groove width that is required even more frequently, the only option is to produce the 8.5 mm back wall groove with a shank-type cutter.

LEUCO GROOVING CUTTER WITH THE g5-SYSTEM

LEUCO uses the proven G5 toothing on a grooving cutter with a width of 8.5 mm. Thanks to the special tooth geometry and arrangement, the cutting pressure is reduced and, for this reason, also the driving power of the motor. This is why the grooving cutter can be used with motors which are designed to drive grooving cutters of a width of 4 and 5 mm.

Due to the smooth G5 serration of LEUCO, it is possible to produce 8.5 mm wide grooves in a single step also on smaller CNC machines. Using the new g5 saw blade, wide grooves can be produced more quickly. At the same time, the edge life is doubled since the saw blade does only perform one processing step instead of two. Also, in keeping with all saw blades in the g5 system, this grooving cutter only produces a low noise level. This will improve the work environment in the processing plant.

Another advantage of the LEUCO grooving cutter is the high quality of its cutting action. Whether solid wood, plastic or painted surfaces: Perfect for grooves in cabinet showcases or dresser parts for manufacturers of high quality furniture and furniture components.



8.5 mm wide grooves in a single processing step with best cutting quality in a variety of materials, long edge lives and a pleasantly quiet noise level. The low cutting pressure of the tungsten carbide-tipped g5 system grooving cutter requires less motor power. This means that the grooving cutter can be used on any CNC machine.

SUSTAINABILITY IN CNC NESTING

SLIM, SWIFT AND STABLE

LEUCO's new Fibonacci Z4+4 shank-type cutter is a highlight on the nesting machining scene. The manufacturer employs a new kind of construction design to accommodate four rows of diamond-tipped cutters within a diameter of just twelve millimeters, including appropriate gullets. This enables the milling cutter to achieve high feed speeds and excellent cutting results while also remaining robust, even with its extended number of cutting edges, operating smoothly and also consuming less energy.

Another advantage of these small nesting cutters for milling is that they produce fewer offcuts, meaning that they make much better use of the material. With its new Z4+4 shank-type cutter, LEUCO now combines the benefits of minimum size with maximum cutting power – employing a remarkable efficient concept derived from mathematically definable structures from the natural world.

GENUINE Z4+4: MORE TEETH, FASTER TEMPO – AS WELL AS SHATTER-PROOF WITH LOW VIBRATION

The LEUCO Fibonacci series of Z4+4 nesting milling cutters operate using four rows of cutters, each with several diamond-tipped blades – all accommodated within a diameter of just 12 millimeters. Since four blades are in operation continuously at every point on the workpiece, this tool has everything that defines a genuine Z4 milling cutter. It is the innovative design of this milling cutter that enables it to operate so robustly and smoothly. To achieve this, LEUCO employs the Fibonacci principle, based on highly functional shapes in the natural world. Which results in an optimum arrangement of blades on this narrow tool.

Because it has these additional blades and because they are arranged in such an efficient formation, this milling cutter is able to achieve what at present are the highest speeds during feed – a gain of as much as 25 percent compared to tools with three teeth. This enables the Z4+4 shank-type cutter with a 23 millimeter length of cut to achieve feed rates of 17 to 22 meters a minute when machining unpainted or coated particle boards, at speeds of 18,000 rpm. At a rotational speed of 24,000 rpm, that feed rate rises to 22 to 28 meters a minute.

This efficient configuration based on the Fibonacci principle enables more teeth to be arranged on a tool while also making the base body more stable, delivering advantages across all versions.

LEUCO FIBONACCI NESTING RANGE: VERSATILE AND ENERGY-EFFICIENT

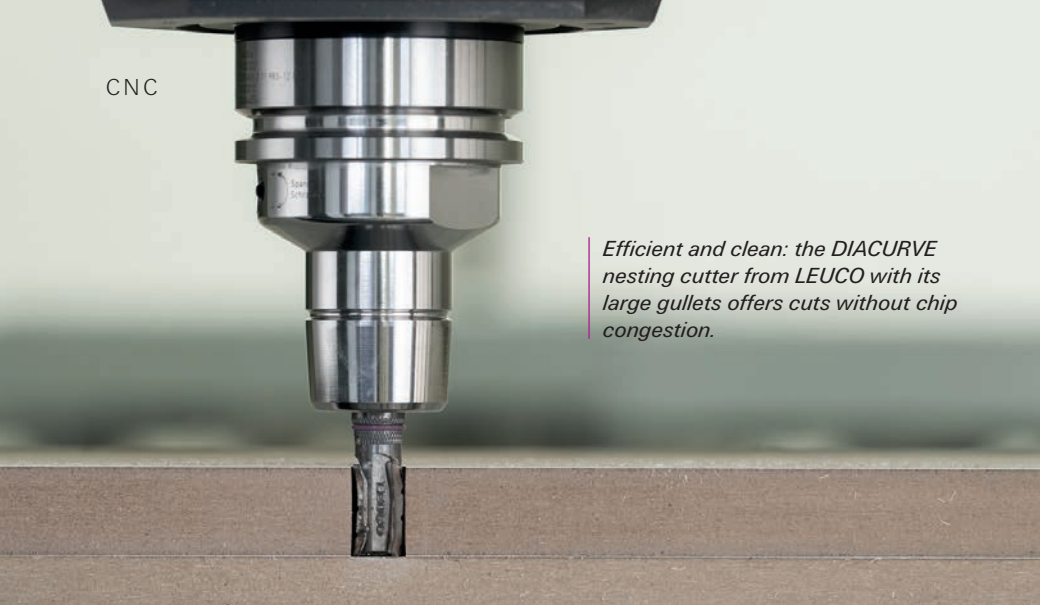
In LEUCO's new Fibonacci nesting range, the Z4 milling cutter can also be paired with tools with diameters of 12 and 16 millimeters and ½'' with cutting widths of 23 and 28 millimeters. To satisfy individual requirements, LEUCO can also provide other cutting widths of 19 millimeters up to a length of 45 millimeters.

Even on versions with fewer teeth, a Fibonacci nesting milling cutter is worth choosing. Operation is remarkably sustainable, with a power saving of up to 15 percent compared to tools with the same number of blades. In addition, the special Fibonacci arrangement of blades makes the base body more robust and the tool breaks less easily.

Use of the Fibonacci principle prevents overlapping cuts. This substantially improves the cutting quality compared to conventional nesting tools. The optimum configuration of blades, based on a natural principle, minimizes vibration and enables the tool to operate more smoothly. LEUCO is able to use the space gained from its efficient tool design in various ways, including to strengthen the mounting of the basic cutter. This also enables the milling tool to cope with difficult situations.

Properties that make this nesting milling cutter the top performer in its sector. It is also quite unique: With its individual blades arranged within a tiny area, robustly and efficiently in accordance with a successful principle that has evolved in the natural world of millions of years. A perfect tool - small in size, big on delivery.

LEUCO's genuine Z4 Fibonacci nesting milling cutter sets new standards in terms of productivity, efficiency and quality.



Efficient and clean: the DIACURVE nesting cutter from LEUCO with its large gullets offers cuts without chip congestion.

NOVEL NESTING TECHNOLOGY

PERFECT CUT, EASY TO HANDLE

The unusual DIACURVE nesting cutter from LEUCO catches the eye immediately. With end-to-end arc-shaped cutting edges and large gullets, the tool delivers high cutting quality without chip congestion. In addition, its diameter is always constant, which makes it uncomplicated and safe to handle.

If woodworking took place on a stage, the DIACURVE nesting cutter from LEUCO would be the star there. Its overall appearance and the design of the diamond tablets underline the innovative and patent-pending construction at first glance.

THE UNIQUE CUTTER IS TAKING THE NESTING SCENE BY STORM

Everything about it is extraordinary: instead of many small individual cutting edges, the DIACURVE cutter relies on end-to-end cutting edges in the shape of an arc. With fewer diamond tablets and two alternating shear angles per cutting edge, the tool achieves precise and chip-free results without overcuts – which protects the surfaces of the wood materials. The extra-large gullets enable higher feed speeds and at the same time prevent chips from jamming.

Chip breaker grooves additionally reduce the cutting pressure, and their soft design prevents overcuts. Further, its PTFE coating allows the chips to slide off the tool better and lends it a striking appearance to boot. The unique design also allows for a reinforced cutter core, made of low-cost steel instead of the expensive heavy metal commonly used in nesting cutters.

THE TOOL EVEN OFFERS SPACE FOR MORE CUTTING EDGES

The new nesting cutter is offered in five variants, each designed for panel thicknesses from 12 to 25 millimeters. The filigree tool can also accommodate several cutting edges: four cutting edges are possible with a cutter diameter of 12 millimeters, three cutting edges at 9.5 millimeters.

The choice between two, three or four teeth determines the cutting speed and feed. Depending on the material and speed, feed rates of up to 29 m/min can be achieved with the tool in a four-tooth configuration.

The DIACURVE nesting cutter is suitable for nesting all common wood materials. The tool is designed for one edge life without resharpening. Its constant diameter simplifies use: no changes to the tool database are necessary, which rules out incorrect entries by operating personnel and thus increases process reliability – an advantage for regions without a comprehensive service network or where skilled labor is lacking.

Innovative shape and sustainable wrapping: the DIACURVE nesting cutter from LEUCO has an end-to-end, arc-shaped cutting edge and packaging made of recycled material.

LEUCO is available to its customers at any time and worldwide for questions regarding the use of all tools offered. In this way, the company brings together customer orientation and innovation. And also thinks ecologically: the packaging of the DIACURVE nesting cutter is already made of recycled plastic.

The cutters are stocked with D12 and Z2 (for panel thicknesses 12-15 mm), Z3 (16-19 mm and 22-25 mm), Z4 (16-19 mm) and D 3/8 inch with Z3 (16-19 mm)

MAGENTIFY YOUR PERFORMANCE

t3-SYSTEM CUTTER AT 3D-HOLZ DESIGN

PERFECT MILLING IN WOOD

Master carpenter Andreas Weinzierl from Traunstein is a maestro in his field. Specializing in complex wood moldings for instruments, restoration of works of art and furniture design, he was given the opportunity to test LEUCO's new t3-System shank-type cutter at length. His conclusion: "We don't want to give it back any more."

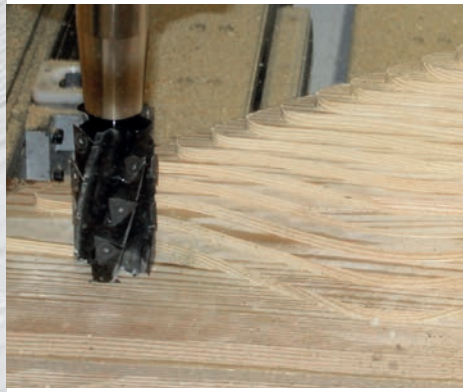
Cutterheads and shank-type cutters with square carbide turnover knives for CNC have been established on the market for many years. With its new "t3-System", LEUCO has now complemented the strengths of these tools with a completely new design method and triangular carbide turnover knives with rounded edges. Master carpenter Andreas Weinzierl, known in the trade as an artist at the CNC milling machine, was invited by LEUCO to test the product innovation intensively in his workshop.

His company, 3D-Holz Design, has been producing complex parts from solid wood and wood-based materials since 2006. He and his two employees program complex shapes in CAM, fully exploiting the manufacturing possibilities of their 5-axis CNC machine. Series are not his thing – each job is programmed individually. "We don't use stored building blocks, but really do start every day with 'File/New'," Weinzierl explains. His clients include instrument makers, art restorers, industrial companies wanting high-quality wooden cases and fellow carpenters with subcontracts. The 3D-Holz Design brand is known nationwide for free-form objects in wood. "I can count my few competitors in the segment on one hand," says Weinzierl.

LEUCO had presented the new shank-type cutter to Weinzierl so that it could demonstrate its versatility in handling the complex requirements of 3D-Holz Design. The t3-System can cut in a spiral shape and at an angle, which makes it ideal for sculptured surfaces. The small diameter of only 54 mm offers many practical advantages. Narrow milling grooves and pockets from 60 mm in diameter can be machined, and wooden parts can be shaped in one work cycle. Cutting speed and milling performance lie at the upper end of what is attainable.

JOINTING AND RABBETING WITHOUT REWORKING

The triangular turnover knife with rounded edges allows the shear angle for the draw cut to be set perfectly, thereby preventing formation of offsets at the overcuts. In addition, thanks to the triangular shape the shear angles can be set so that outstanding surface and edge processing can be achieved when jointing and rabbeting; furthermore, the rear side of the cutter does not protrude. This distinguishes the t3-System from other spiral cutterheads. The triangular turnover knives are positioned such that the shear angle always pulls in the correct direction.



The surfaces and edges in ash produced by the LEUCO t3-System shank-type cutter are smooth and chip-free.

Andreas Weinzierl (left) and his team program all milling work individually.

(Quelle: 3D-Holz Design)

EXPANSION OF THE LEUCO t3-SYSTEM TURNOVER INSERT TOOL RANGE

VERSATILE APPLICATIONS FOR SMOOTH SURFACES AND SHARP EDGES

"I tried the cutter extensively with different materials – from hard wood right through to foam board. We roughed and planed to a finish. It was clear to us after two hours that we would take the milling cutter. The t3 can be used for both roughing as well as for finishing, i.e. fine tuning."

Andreas Weinzierl praises the high surface finish quality in particular: "We hold a perfect workpiece in our hands almost without any rework." The new shank-type cutter with its aggressive cutting edges is also ideal for plunging. "If the workpiece is oversized, then we can also drill it with the t3. Nothing starts to flutter or vibrate." The new system has now replaced two tools at 3D-Holz Design: a carbide spiral cutterhead and a 40 mm shank-type cutter.

LEUCO is expanding its range of t3-System tools with triangular turnover knives. The four new products are a grooving cutter, hole saw, copy milling cutter and cutterhead with bore. Like the t3-System shank-type cutter already available on the market, they unfold their strengths especially in the machining of solid woods and wood-based materials.

THE ABOVE-MENTIONED EXTENSIONS TO THE TOOL RANGE OF THE PATENT-PENDING t3-SYSTEM ARE EXTREMELY PRODUCTIVE AND ACHIEVE HIGH-QUALITY EDGES, RABBETS AND SURFACES.

The first tool presented in this system by LEUCO was a shank-type cutter. It achieves such smooth edges, steps, curves and surfaces that they usually require no regrinding. The low cutting pressure involved contributes significantly to this. Solid woods, in particular, have a higher surface finish quality when machined with the t3-System shank-type cutter than when milled with square inserts. This cutter already produces pockets and milling grooves from a diameter of 60 millimeters. Thanks to its aggressive cutting edges, it can also be used for plunging.

Following the shank-type cutter, four other tools with the t3-System from LEUCO have come onto the market in quick succession. Like the grooving cutter for joinery machines. Its cutting edges are always directed downwards, as a result of which it achieves high edge quality. With its diameter of 61 millimeters, it is the ideal tool for grooves in frame construction.

The range now also includes an optimized hole saw. It consists of a t3-System shank-type cutter with a special attachment. This tool creates depressions for cavity sockets in one work cycle. This is advantageous where numerous socket outlets have to be placed in timber construction. In addition to this, it is possible to drill and chamfer in one operation with an angle of 45 degrees – ideal for materials in frame construction such as soft and hardwoods, composite lumber, wood and panel materials as well as plasterboard.

Cutterheads with a bore for CNC machines as well as a copy milling cutter for table shapers are also available. The tool, specially designed as t3-System, enables higher cutting speeds and thus greater feed rates, while delivering particularly clean fiber separation. The copy milling cutter uses the advantages of the t3-System for table shapers. It excels in joining, in milling small rabbets and, with a thrust ring, in copy shaping.

The triangular, curved inserts characterize the t3-system. Due to this shape, the angles of the cutting edges are aligned in such a way that the cut is always made in the direction of the wood. By contrast, the previously common square cutting inserts always drag outwards.

The advantages of the t3-System come into their own in the new spiral cutterhead, grooving cutter and hole saw: very smooth surfaces on edges and faces, even when removing large chip volumes.

MAGENTIFY YOUR EFFICIENCY

TOOL AND KNOWLEDGE DELIVERED

INTEGRAL CONCEPT INCREASES PERFORMANCE AND QUALITY

In its finger jointing line, the cross laminated timber manufacturer Theurl uses a finger joint cutter from LEUCO. Since use of it began, edge life has almost tripled and quality has improved substantially. However, LEUCO is convinced that the tool used is only one of several factors that have to work together to obtain an optimal result.

Anyone who has ever commissioned a large industrial plant knows that plug-and-play solutions do not exist in reality. Too many large and too many small screws need to be adjusted in order to optimize complete operation of the plant piece by piece. During the commissioning of Theurl's cross laminated timber plant in Steinfeld in 2020, the milling tool in the finger jointing line was one of these crucial screws. "Finger joint cutting was an important key to increasing quality and productivity," recalls Theurl maintenance manager Martin Stocker.

QUALITY IN HIGH QUANTITIES

Theurl has been producing cross laminated timber at its newly established Carinthian site in Steinfeld since 2020. As with all its products, the East Tyrolean family business focuses on the quality of the cross laminated timber without neglecting productivity. The maximum possible output in Steinfeld is 100,000 cubic meters of cross laminated timber per year.

Site manager Gerald Theurl sees the finger joint of the individual lamellas as central to the production of high-quality panels as customer demands on the surface, in particular, have increased in recent years and the quality of the finger joint is essential here.

CLOSE COOPERATION

Against this background, Oertli, LEUCO's sales partner in Austria, established contact with the company and shortly afterwards LEUCO and Theurl were working together on an optimal solution. "We were already convinced after the first test cycle with the new tool as far as quality, edge life and milling speed were concerned," Stocker reports.

Since then, the performance of the Weinig Grecon Power-Joint 15 finger jointing system has been increased bit by bit to ever new highs. "It is not only the tool that is decisive, but above all also an exact understanding of the custom-

Made of poly-coated, powder-metallurgically modified steel, the finger joint cutter is particularly resistant to breakage

LEUCO application engineering manager Markus Schindhelm (left) and Theurl maintenance manager Martin Stocker always have a lot to talk about. Together, they were able to significantly increase the performance of the finger jointing line.

er's requirements and consideration of the machine parameters, operators and the material to be processed. Only if we constantly take all these factors into account can we push an already very good result higher and higher," explains LEUCO application engineering manager Markus Schindhelm.

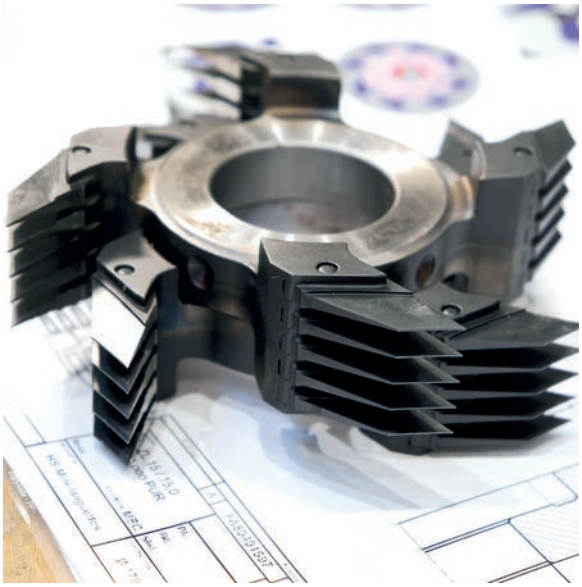
LEUCO organized on-site training sessions for the operators and the maintenance team, in which topics such as grinding, tool changes or possible incidents were discussed and run through during on-going operation. "We had never experienced such intensive support before. Our employees learnt a lot from these training sessions, which is particularly evident in significantly more stable plant operation," reports Stocker.

DURABLE MATERIAL

To be exact, Theurl uses a LEUCO Solid 34 finger joint cutter made of poly-coated, powder-metallurgically modified steel. The hook and flank clearance angle were specially adapted to the requirements on site. In addition, the flank angle selected allows the use of both fibrous and fibre-free adhesives. "Thanks to this special steel, there is a significant reduction in breakage for our customers, considerably higher edge life, fewer chipping on the exit side and thus significantly higher quality," says Schindhelm, summarizing the advantages.

The quality of the finger joints plays a central role at Theurl. Since using LEUCO fingers with Solid 34 cutting material and topcoat coating, Theurl has recorded almost constant finger jointing quality over the entire edge life of around 600,000 cycles.

All points that Stocker can also confirm: "We used to manage 250,000 to 300,000 cycles – now it's around 600,000, depending on the quality of the wood. Combined with a significantly reduced risk of breakage, this results in much less maintenance work, which can also be planned much better. Our finger joints are now almost completely free of chipping, with the finger jointing quality remaining almost the same throughout the entire service life."



Theurl produces its finger joints in the cross laminated timber plant in Steinfeld with the help of a LEUCO Solid 34 finger joint cutter

EVOLUTION WITH DISC TINE MILLING CUTTERS

WITH THE EFFICIENCY OF MILLIONS OF YEARS

For its updated disc tine milling cutter, LEUCO drew its inspiration from a natural principle with a proven and successful track record. This system, for which a patent is pending, achieves better cutting results, smoother operation and also enables machines to achieve energy savings of up to 15 percent. In addition, the corrugated shape of the new easyFix bore simplifies installation because it causes less friction. Its reinforced back stabilizes the milling cutter.

The machine tool specialist has equipped its disc tine milling cutter with new properties – by incorporating the Fibonacci sequence, an efficient geometric formula derived from the modular system of natural evolution.

OPTIMUM BLADE CONFIGURATION: MORE POWERFUL AND MORE ECONOMICAL

With the Fibonacci formula, LEUCO's updated disc tine milling cutter achieves an optimum configuration of blades. The specified pinholes make it possible to arrange individual disc tines at the Golden Angle of 137.5 degrees. This achieves spiral-shaped positioning of blades. For finger joint cutting, each of the blades in turn penetrates the wood material at an optimum angle. This results in a substantial reduction in cutting pressure that boosts cutting performance. In addition, this optimum configuration of blades reduces the power required by the machine by up to 15 percent, a source of further cost savings.

EASYFIX BORE: LESS VIBRATION AND LONGER-LASTING

Another innovation of the disc tine cutter is found directly in its centre: The patented easyFix hole for attaching the tool to the bush is corrugated instead of circular. This means that individual disc tines can be stacked more conveniently without any risk of wedging.

REINFORCED TOOL: MORE PRECISE AND MORE ROBUST

In addition, the back of the cutter has been reinforced, allowing the disc tines to dissipate the compressive forces that occur when entering the wood more effectively. This results in a reduced level of vibration. Furthermore, with the stiffening of the base body, a more precise shaping of the tines is possible. The extended back of disc tines also increases the flexural strength of the individual carbide teeth.

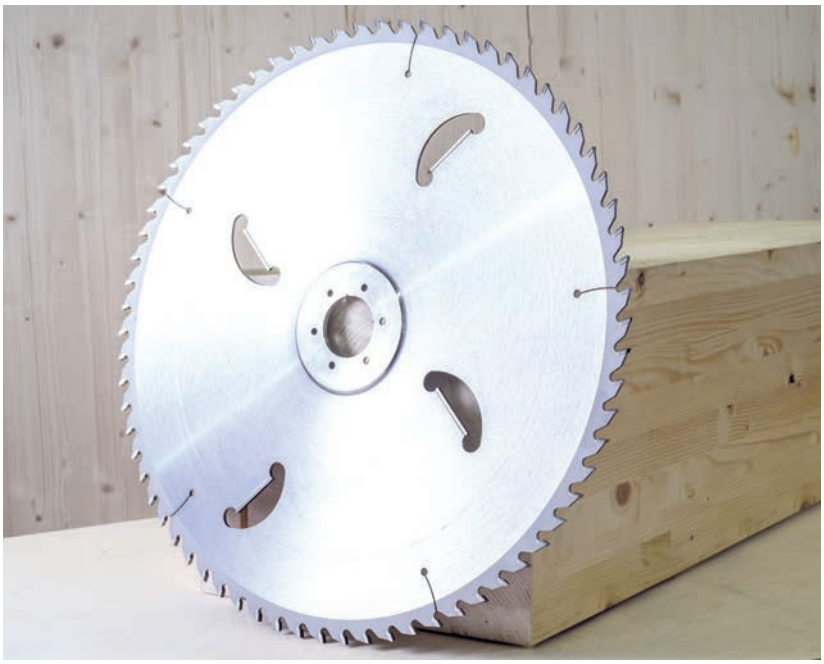
These innovations make the LEUCO disc tine milling cutter a powerful and reliable tool for use on finger jointing lines as well as on machines with cutting units for transverse and longitudinal jointing of soft and hard woods. In addition, this cutter is an example of how a natural principle can be implemented successfully in a technical application.

Using the Fibonacci formula (shown here on the right), this updated disc tine milling cutter from LEUCO achieves the optimum position of blades.

Fibonacci

THE NEW G5 JOINERY CIRCULAR SAW BLADE PROGRAM

ALONG AND ACROSS THE GRAIN FOR ALL



Brilliant with innovative tooth geometry: the g5 saw blade from LEUCO reduces the cutting pressure.The result is chip-free cuts and longer edge life – a win for joinery centers.

With its innovative g5 system, LEUCO offers high flexibility for joinery centers. With it, you can saw in both machining directions and now also use the blades on machines from various manufacturers thanks to additional dimensions.

Thanks to their special geometry of one leading tooth and four following teeth, g5 system saw blades from LEUCO reduce the cutting pressure. As a result, they achieve an excellent cutting result with chip-free edges and smooth surfaces throughout. They are also extremely quiet and have a significantly longer edge life than conventional saw blades. The g5 geometry cuts through the wood with less cutting pressure and demonstrably reduces power consumption. In addition, the g5 tools are suitable for sawing along and across the grain, which means that no change of saw blade is required when changing the machining direction. LEUCO now offers the high-performance g5 system for flexible use on joinery machines.

Im Detail: g5-System Sägeblätter mit einem Flachzahn und vier Wechselzähnen für den Abbund bietet alleinig LEUCO

THE G5 ARE TRUE ALL-ROUNDERS

Markus Erkenbrecher, product manager at LEUCO, emphasizes: "Especially the chip-free machining of beams makes the new g5 saw blades all-rounders for timber post and frame construction as well as for timber engineering projects. This is where the g5 system shows its strengths: long edge life, very quiet operation and an excellent cutting result – both when cutting along and across the grain. This also saves users having to change the saw blade when changing the machining direction."

Clean cuts in timber frame and post construction with the g5 system saw blades.

With its "quartet for every situation", LEUCO offers an economical cutter for trimming composite components individually for every application and level of difficulty: UniType, ProType, Spiral End Mill and Z2 PCD (f. l. t. r.)

A QUARTET FOR EVERY SITUATION

COMPOSITE MILLING MADE EASY: SMALL DIAMETERS – BIG EFFECT

Innovative tool solutions for composite machining are characterized by the lowest possible material losses, few process steps, long edge life, greatest possible chip removal and clean edge qualities nevertheless. The more precisely the application is defined in advance, the more economical solutions can be offered.

SLIM

In composite machining, milling tools with small diameters are mainly used in order to keep the hogging volume of the expensive material as low as possible. Tool diameters between 3 mm and 8 mm are used as standard here.

LOW VIBRATION

Thin components in combination with complex 3D contours require cutters with tooth geometries that avoid vibration of the material that is to be machined, which would counteract the milling quality.

WEAR-RESISTANT

LEUCO counters high tool wear caused by the widespread abrasive fibers in laminates with hard cutting edge materials such as PCD or VHW, some with special coatings. LEUCO offers special tooth numbers and tooth geometries for razor-sharp cutting of differently oriented or even tough fibers in composite materials.

WHICH CUTTER FOR WHICH APPLICATION

Thanks to its large gullet, the LEUCO Z2 PCD cutter is ideal for heat-sensitive materials such as GFRP. Chips can be removed easily from the machining zone during machining and unnecessary heat for the tool is prevented. The alternating shear angle (one cutting edge pulling, one cutting edge pushing) also ensures a good quality of machining edge. Due to the small number of cutting edges, the Z2 PCD cutter convinces with a good price-performance ratio.

The LEUCO UniType, ProType and Spiral End Mill are suitable for trimming all types of composite components. The number of teeth, design and various fine adjustments allow high feeds in combination with the best edge quality. These tools can be designed appropriately for each application. Chip breakers and variable pitches provide additional smoothness during machining and reduce cutting forces. This effect can increase the edge life.

BASIS FOR DIGITALIZATION

TOOLS WITH UNIQUE IDENTIFIERS

The serialization of new and existing tools enables LEUCO to lay the groundwork for digital tool management. A unique laser-applied code on each tool is the key to all the important data. In addition, the digitized tool can be coordinated efficiently on the app. Tools that do not yet have this code can obtain one on request during a maintenance appointment at LEUCO Service.

Digitization of tools is the key to managing them seamlessly throughout their life cycle. Starting from initial receipt of goods to return from Service – including storage, use on a machine and maintenance. Important insights can be derived from the data obtained, such as the current use of the tool including its respective performance status and service requirements. Initial types of machine on the market already offer the scope to record tool data and to provide process data such as linear meters produced. This speeds up operations hugely and prevents defects, saving time and money.

SERIALIZATION AS THE FIRST STEP TO DIGITIZATION

Digitization is based on unique recording of each tool. This is known as serialization. The 'digital twin' – a data image of the real tool – is not born until this identification process. With this digital twin, the tool can be controlled and monitored by the management app.

Serialization involves assigning a globally valid identification number to each individual tool, engraved by LEUCO in the form of a data matrix code (DMC). The code itself does not reveal any direct tool data. Instead, the underlying data can be accessed by scanning the code.

Successful digitalization: LEUCO generates all relevant data when it produces new diamond tools and also when it repairs or re-serializes existing tools and then makes this data available to the customer in digital form.

When machining abrasive materials that could render the engraved code on the tool illegible, LEUCO provides the option of identifying tools with more durable RFID chips.

In addition to the digitally stored tool information, the customer continues to receive a separate card, a hard copy version, of tool details. If the card gets mislaid or lost, tool data can be retrieved anywhere and at any time with a scan.

LEUCO serializes its diamond-tipped shank-type tools and tools with bores from the date they leave the factory. LEUCO offers a retrospective serialization service for tools already in circulation that have not been recorded digitally. This then enables users to access the data and the digital twin of their tool on an app. Managed and controlled by its digital twin, each tool can run through several life cycles very efficiently indeed.

DIGITALIZATION AS THE WAY TO MORE EFFICIENT TOOL CYCLES

Businesses can choose to use different digitization processes.

These include:

- **LOCALIZATION** of tools: The unique identification of a tool by laser-engraving a data matrix code prevents mix-ups and enables tool tracking. Customers can use an app to post a tool to a machine, and other operations.
- **CALLING UP MEASUREMENT DATA PROVIDED:** After sharpening, LEUCO updates the data with the new dimensions of the tool, such as the reduced diameter after an erosion process. With the app, this information is available anywhere and at any time together with important parameters for using the tool on a machine.
- **NETWORKED COMMUNICATION:** The tool data regenerated and provided by LEUCO are transferred to the machine. This includes the measurement data for the tool as well as 'collision dimensions' together with safety-related data such as the maximum diameter or the maximum speed. In return, the linear meters produced by the tool are communicated back to the tool management app where they are stored for evaluation. These properties are already available with the first types of machine and they provide operators with great added-value in their daily work.

VIDEO:
Digital twin
Re-serialization of tools

SCAN ME

25 YEARS SILVER JUBILEE

A SIGNIFICANT MILESTONE FOR LEUCO MALAYSIA

LEUCO Malaysia was officially founded 25 years ago, in Feb 1998. From a humble beginning with a basic setup of only 2 Q-Eroding machines and a handful of grinding machines for HW circular sawblades, we have now grown to be the central hub for the ASEAN region equipped with a DP tool production and complete state-of-the-art DP & HW servicing center.

We have driven our business through knowledge, expertise, creativity, hard work and customer satisfactions. Tremendous efforts accumulated over the last 25 years have resulted in LEUCO Malaysia being recognized as a reputable precision tooling company in the Southeast Asia market.

Today, we are not only supplying standard tools from our program but also customized tooling solution to a wide range of customers from all different industry segments. We cover furniture, flooring, kitchen, joinery, industrialize materials such as aluminum, gypsum and fiber cement boards.

Our local DP tool production was established in year 2002 with the aim of providing faster response and delivery time to our customers. We are fully integrated with headquarter in Horb, Germany on the powerful Unigraphics & NX programs, enabling our local Application Engineers to retrieve and share information on the Team Center database. This enables us to be able to design and produce tools locally that gives us flexibility and to be more competitive in the market.

Greetings from Melaka: The LEUCO Malaysia team with its managing directors Ellen Teh (8th f. l.) and Mark Lim (10th f.l.)

We are proud of what we had accomplished so far. We remain committed to our mission in pro-

INTRODUCING LEUCO SERVICECENTER VIETNAM

HOW DIAMOND-TIPPED TOOLS ARE RESHARPENED

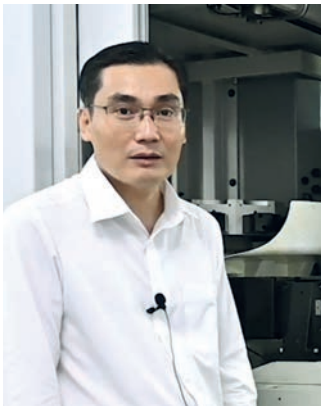
At LEUCO Vietnam's ServiceCenter in the province of Long An, all types of diamond-tipped woodworking tools are resharpened, such as shank-type cutters, brazed jointing cutters, jointing cutters equipped with interchangeable cutting edges and circular saw blades. The ServiceCenter is fully equipped with the latest eroding technology. After sharpening, the tools have the same quality as a new tool from the manufacturer.

LEUCO's resharpening service is interesting for the entire woodworking and wood processing industry in Vietnam. Furniture, kitchen and flooring manufacturers can have diamond-tipped tools regenerated in the country. For the emerging industry segment in Vietnam, this service in the country means time savings as their tools are available again for use in production much sooner.

The latest technology in the SerivceCenter guarantees panel processors the highest precision in their tools and thus the highest edge and profile qualities in their products.

In a video, CEO Mark Lim and plant manager Pham Hoang Khanh give a behind-the-scenes look at how a diamond-tipped tool with blunt cutting edges is turned into a high-precision, sharp-edged tool.

LEUCO Vietnam was founded in 2019. LEUCO is thus the first German tool manufacturer to commit to the local woodworking and furniture industry in Vietnam with a branch in Long An province (near Ho Chi Minh).



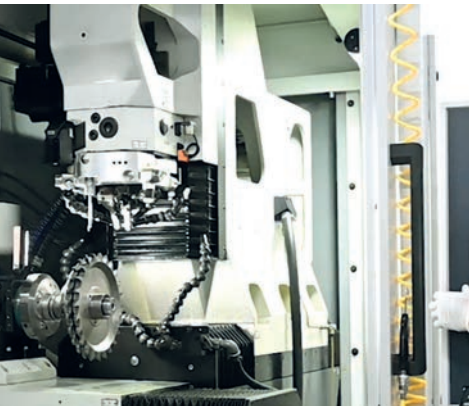
viding innovative products and intelligent services to our customers and we look forward to continuing to grow and succeed in the years to come.

To all our employees, customers, stakeholders and friends - Thank you for being that someone who made us capable enough to celebrate such a glorious day. Thank you for inspiring us in all these years. Our success story remains incomplete without your support.

From Management of
LEUCO Malaysia,
Ms. Ellen Teh & Mr. Mark Lim

VIDEO:
LEUCO ServiceCenter VIETNAM

SCAN ME



ServiceCenter in Tarnowo Podgorne: with the know-how of the employees and modern machinery, we create tools of manufacturer quality.

2003→2023

20 YEARS OF LEUCO POLAND

LEUCO Polska was founded in November 2003 as our first subsidiary in Eastern Europe. At the site in Sady, we started with a sharpening service for diamond (DP) and carbide (TC) tools, mainly for major customers. Initially equipped with only two erosion machines and several sharpening machines for TC tools, we gradually developed into a service center with state-of-the-art technology for all DP and TC tools in the woodworking and furniture industry.

A new era of the company began twelve years ago with the distribution of LEUCO tools on the Polish market, which was previously only carried out to the largest customers directly from the headquarters in Horb am Neckar. We support many manufacturers of furniture, flooring and doors as well as manufacturers of various finishing and industrial materials. For many of them, in addition to standard tools, we offer special customized solutions that enable high-quality and effective production. These solutions and LEUCO's know-how are appreciated by our customers and thus further strengthen our position in the market.

We constantly fulfil and will continue to fulfil the mission of supporting our customers by offering innovative technical ideas, tooling solutions and services of the highest order. For us, the future is a challenge that we face with pride and commitment.

All this would not be possible without our 19 employees, who through their contribution build a better foundation for LEUCO in Poland every day, and our customers, who appreciate this.

But it would also not be possible without the openness, support and commitment of many colleagues who work in the LEUCO Group worldwide and form a great team. THANK YOU to everyone for this!

Your Przemyslaw Ratajczak
Managing Director LEUCO Poland

Our mission for our Polish customers is to offer them innovative ideas for tools and services for the highest quality.

LEUCO IS ONE OF THE 50 GERMAN LEADERS

THE TRADITIONAL HORB-BASED COMPANY RECEIVES A PRESTIGIOUS AWARD IN BERLIN

Frank Diez, CEO of LEUCO AG, and Daniel Schrenk, Managing Director Sales and Marketing of LEUCO, received the prestigious award in Berlin.

LEUCO is proud to be the only company in the cutting tool sector to be nominated for the "50 German Leaders" campaign.

The companies selected for the award are those that excel in their respective fields and hold a leading position in their industries. LEUCO will now join the ranks of companies such as the fittings manufacturer Grohe, the Zurich insurance company, Thyssen-Krupp or the book publisher Cornelsen.

The awarded companies are presented in a short video, these videos can be found under https://www.globalthoughtleaders.org/50-german-leaders. This film gives a view into the current production and the company philosophy of the traditional Horb-based company.

LEUCO board member Frank Diez and managing director Daniel Schrenk attended the summit on September 26, 2022 in Berlin and also contributed to the panel discussion on "Innovation made in Germany - Germany's future in European and global competition."

The summit was attended, in addition to the 50 nominated companies, by CDU grandee Wolfgang Bosbach and Manuel Barroso, former President of the European Commission and Prime Minister of Portugal.

CEO Frank Diez commented: "We are delighted to receive this award, and that the performance of our company and our employees is obviously being recognized beyond industry and national borders."

VIDEO:
LEUCO, one of the 50 German Leaders

SCAN ME

THE FUTURE BELONGS TO LEUCO

"EMPLOYER OF THE FUTURE" - LEUCO IS VERY PROUD TO RECEIVE THIS AWARD

(Photo: JDB Media GmbH)

In Cologne, the former German Economics Minister Zypries presents the award to Frank Dietz for LEUCO as "Employer of the Future". The traditional Horb-based company is thus one of the particularly "innovative, modern and digital" companies that have been given an excellent overall result and are therefore among the most attractive employers.

The LEUCO management was awarded the predicate "Employer of the future" during the World Congress Digital in Cologne. LEUCO was chosen as "Employer of the Future" from among 2,767 companies nationwide. Experts from various subject areas choose the winners according to an objective point system. Additionally industry analyses have been evaluated and business consultants have been interviewed. The ranking attests to the winners being particularly "innovative, modern and digital".

"Our seal is your trophy. It creates trust and transparency," says the German Innovation Institute for Sustainability and Digitalization (DIND) in its explanatory statement. With its tools, LEUCO also makes a contribution to the efficient use of resources because customers in the wood and plastics processing industry not only receive high-performance and durable tool solutions, but these can also be repaired and regenerated many times - an important contribution to an efficient circular economy.

Not least because of this, LEUCO is attractive worldwide for its customers and for its employees. "You should take advantage of this when recruiting skilled workers," said the former German Economics and Justice Minister Brigitte Zypries in her laudatory speech at the DIGITAL X 2022 Digital World Congress where she presented the award to LEUCO CEO Frank Diez. "The overall result is excellent. You are in the top seven percent!"

LEUCO perceives the current award as a confirmation "that even a medium-sized company in rural regions can be successful and an attractive employer". The internationally operating company with more than 1,200 employees worldwide is well-equipped for the future even in difficult times, ensures CEO Dietz. Managing Director Schrenk adds: "With our strategy of supplying the right tool for every customer - from carpenters to furniture manufacturers - we have become the world market leader. And that will not change in the future. This is our mission."

Paul Götz, the Head of Product Management (left) and Marketing Director Wolfgang Maier informing about the trends and new developments for woodworking tools.

WE AIM TO PROVIDE THE BEST POSSIBLE ADVICE FOR ANY FORM OF USE

The tools used in woodworking machines contribute decisively to the quality of the furniture products they produce. This is true in equal measure of milling cutters, drills or saw blades. This applies in a factory that manufactures volume products just as much as it does to a carpentry or joinery workshop making custom-built interior furnishings. A decisive factor here is the interaction of tool and machine. This is why tool producers work closely with the machine industry.

m+t: LEUCO's Mr. Maier will be exhibiting tools at the forthcoming LIGNA trade fair where Nature plays godfather to the configuration of cutting edges. In a broader sense, what role is played by tool design?

//Maier: The most important factors in the development of any tool are tool design

and the configuration of cutting edges. By way of example, it is the design that determines the entry point of the tooth into the material to be machined, the further course of the cut through the material, the level of noise generated, guidance of the chip flow and a great many other factors. At LIGNA, we will be showcasing an innovative new arrangement of cutting edges on the base body founded upon the Fibonacci principle which, as you mentioned earlier, does indeed occur in Nature, for example on the seed head of a sunflower or on a pine cone. In summary, the aim of all this is to deliver the ideal way of using the limited space available for cutting edges on the tool body. An innovation of a very different kind is the DIACURVE milling cutter. Here, LEUCO is delivering a new principle for nesting milling cutters with a curved but continuous diamond cutting edge. Instead of many small chip spaces on multi-part

cutting edges, there is now just one chip space. And yet another highly innovative and, most importantly, a sustainable solution: With a process for which we have a patent pending, we can desolder and reload the used diamond-coated cutting edges of certain fixed joint milling cutters. This effectively provides the customer with a new tool on an existing base unit. Regenerating brazed diamond-coated milling cutters is entirely new in this sector. Until now, milling cutters that reached this stage were simply scrap.

"IN COMPETITION, IT'S ALL ABOUT THE PERFORMANCE CAPABILITY OF THE TOOLS"

m+t: Improved tool function is one of the ways to differentiate ourselves from other tool manufacturers. Is there actually an objective way of checking the service lives of tools?

//Götz: In practice, a fairly simple way of checking the performance capability of tools is simply to measure the performance in linear meter terms with a customer who has worked with a similar tool. This is a way of ensuring that influencing factors such as machine, material and quality claim remain constant. However, since a wide range of different measuring results can be obtained from different customers using the same tool under similar conditions, LEUCO always quotes the minimum value achieved by any of the test candidates. Last but not least, special microscopes can be used to view and measure rounding irregularities on cutting edges.

m+t: How has the digitization of tools vaunted at LIGNA 2019 been implemented in practice today?

//Götz: Over the ensuing four years, we have done a great deal of work on that, and have achieved a great deal. For some time now, all of LEUCO's new tools are supplied

with a DatamatrixCode. But to leverage the full benefits of a digital twin, the entire tool inventory ought to be digitized. At the forthcoming LIGNA trade fair, LEUCO will be demonstrating how an entire tool inventory can be digitized and what stages are available, depending on how far a customer can go with digitization for in-house purposes. In our opinion, given the shortage of skilled employees, digitization has an important role to play. A first step is the introduction at this time of attribute designation, as defined in the VDMA standard. This simplifies process such as the setting of machines for which skilled operatives were needed previously.

"DIGITALIZATION HELPS TO SIMPLIFY PROCESSES"

m+t: In your expert opinion, what have been the most important innovations in tools over the last 20 years and what benefits have they delivered to users?

//**Maier:** There are always trends upon which tool research tends to focus. Edge lives are always on the agenda. Twenty years ago, there were far fewer diamond-tipped tools than there are today. Coatings of cutting edges or base bodies have really opened up. Intensive work has also been done on chip guidance in tools, enabling chips to be guided more accurately to the extraction system where they can be captured and disposed of. Quite definitely, mountains of chips in machines now occur less frequently. The same is true of noise, e.g. on Kapp circular saw blades in through-free machines, format and panel-splitting saw blades. Without any question, there are solutions out there that are a great deal quieter. Also, batch size 1 is new for run-through machines, e.g. unit from machine manufacturer and a suitable 3-in-1 edge profiler from LEUCO.

"NEW MATERIALS AND PROCESSES PRESENT TOOLS WITH A CHALLENGE"

m+t: Is there an innovation at LEUCO that has defined a benchmark or that has revolutionized the market?

//**Götz**: Without exception, over the last ten years, with its patented 'p-System' tools with a 70° axis angle, LEUCO has 'inspired' all tool manufacturers. This axis angle also delivers service lives that previously simply did not exist, while also achieving a tremendous improvement in cutting quality. The LEUCO patent covers the axis angle range of 55° to 90°. All tool manufacturers then went to the patent limit of 54.9°. Before the p-System, the average axis angle for all manufacturers was 35°. In terms of linear meters and quality, this constituted a quantum leap for the sector.

//**Maier:** In addition, 20 years ago, there were no interchangeable diamond-coated segments on aluminum base bodies. The technical sophistication that enables the diameter to remain constant after new segments have been inserted makes this tool an attractive proposition for users because they can continue working after a brief period of downtime and are not required to send the tool to an external contractor.

m+t: In recent years, the furniture-making industry has witnessed the arrival of an increasing number of new board and surface materials and associated manufacturing processes. Has this resulted in any change to the requirements for tools?

//**Götz**: We should start with wood materials: Here we are noticing an increasing proportion of highly abrasive content in the panels due to recycled material. The biggest impact of this is on tool service life. Metal parts in the wood materials constitute a problem for customers. If, for example, diamond-tipped tools, chosen for increased tool life were used for machining and a DP cutting edge then hits a metal part, the tool unfortunately has to be re-eroded.

Now let's take a look at the surfaces where, for example, foil-covered matt lacquers are characterized by brittle surfaces on standard chipboard. In theory, you would need two different tools for machining - one for the top layers, another for the middle layer. The key thing is obtain a recommendation about which tool to use for machining these materials. Until now, we have been able to draw upon our wealth of experience and we have not yet had to develop a special tool for this kind of plate.

"THERE IS A TREND TOWARDS MORE PRECISE INTERFACES"

m+t: Are you noticing any changes to production processes?

//**Götz**: We are indeed registering that production processes are changing. However, there are not only new processes or types of machine, there are also changes in relation to quality. Here a clear trend among machine manufacturers is emerging, towards more precise interfaces, and we are delighted to adapt our tools to suit, simply because the performance capability of a tool is enhanced by having a more precise interface than with a simple double-keyway interface with less stringent tolerances.

m+t: To conclude our discussion, we would very much like to give our readers a sense of what the future of tools might hold. What form might this scenario take?

//**Götz**: One thing is for sure – it will continue to develop. Since we are in daily dialog with customers, machine manufacturers, the scientific community etc. our R&D department is working all the time on improvements that deliver answers to the questions put to it. And it is not unusual for one of those optimized answers justifiably to be called an innovation. For example, at LIGNA, in addition to the aforementioned innovations such as the regeneration option for certain DP milling cutters, we shall also be offering the option of using a digital twin for tools in production.

Richard Barth conducted the interview. Excerpt, and the complete article was published in the 02/23 edition of the material+technik möbel trade journal

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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 digital 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, Vietnam, as well as sales and production locations in China, France, Malaysia, Russia, Switzerland, South Africa, the USA our company is represented on all five continents.

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