LEUCOline

HIGHLIGHTS 2024

So that every cut is perfect

LEUCO PANEL SIZING SAWS

Strong, versatile & economical

More on page 4

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

Contents

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10 YEARS
nn system
2014-2024

10 YEARS OF nn-SYSTEM:

"A PERFECT BLADE DOES NOT MAKE ANY NOISE"

The revolutionary nn-System (no noise) by LEUCO marks the turn of an era in the product standard of circular saw blades. The essence of the innovation is a tool geometry with extremely small gullets. The effect is a significant reduction of noise during idling and operation combined with high cutting quality and usability for various materials. The father of the saw blade system and master of quiet tones, developer Dr. Dominique Fendeleur, looks back on the milestone in woodworking.

//Dr. Fendeleur, the nn-System focuses on noise reduction. Was that your goal?

Yes. We at LEUCO are very innovative and constantly endeavor to improve quality, efficiency and sustainability. This also includes the reduction of noise pollution of the saw blades particularly while idling.

//Why is the noise reduction so important, especially when idling?

Because the saw blades are idling more often than they are cutting. This is why everyone in the woodworking industry is familiar with saw blades that whistle when idling. Anyone who is directly or in the immediate vicinity of the saws is particularly affected. The entire working environment therefore benefits from our nn-System.

//By how much is the noise reduced?

With the nn-System saw blades, we obtain a noise level reduction when idling of up to 6 decibels compared to conventional circular saw blades. The LEUCO DP Flex saws equipped with the nn-System therefore immediately attracted attention when introduced to the market because they were unusually quiet. With a noise level of just around 70 decibels when idling, the wearing of hearing protection is virtually a thing of the past.

A clean affair all round: The nn-System saw blades cover a wide range from D 70 to D 350 for numerous applications. Since fall 2023, the system has been provided with a "topcoat" coating which protects the saw blades against adhering contamination and is easy to clean.

//How did the competitors react to the quiet saw blades?

All relevant manufacturers of saw blades try to offer similar solutions. This proves that the market launch in 2014 really means an important innovation for our industry segment.

//The nn-System saw blades also differ visually from others.

Exactly. This is also something really new. Due to the extremely small gullets, the teeth are hardly visible. The saw blades equipped with nn-System look like a perfect disc. Therefore, it not only makes less noise, it also offers greater safety.

//Do the small gullets affect the performance of the saw blades?

Absolutely not. The saw blades feature the same high cutting quality and long edge life as comparable LEUCO products. On the contrary, the small gullets and the focus on noise reduction have had an influence on the tool development in this industry segment over the last 10 years.

//What other innovations does DP flex offer?

The saw blades are very thin, with a cutting width of just 2.5 millimeters. The cutting pressure is noticeably lower, thus saving energy. The saw blades can be used for various materials and are even suitable for highly abrasive materials.

They offer an excellent cutting quality and long edge life.

A great feat of engineering: Before the LEUCO nn-System DP Flex saw blade was introduced, the state of the art was to use a specific saw blade for each material to reach optimum cutting results. The nn-System DP Flex combines quality and versatility and can also handle critical materials such as CFRP. Quiet and universal.

//Which saw blades are equipped with the nn-System?

The nn-System is available for different diamond- and carbide-tipped applications: main saw blades and conical scoring saw blades for classic pressure beam machines and clipping saws for through-feed machines. Even our diamond-tipped all-rounder DP Flex is equipped with this technology, ideally suited for table and clipping saws, vertical panel sizing saws, CNC and through-feed machines as well as for portable saws.

//What conclusions do you draw from this development?

With the no-noise system, we have ushered in a new era in the product standard of circular saw blades. Finally we can say: our products are industry leading.

Dr. Fendeleur, many thanks for this interview.

The brain behind the patented nn-System: Dr. Dominique Fendeleur, Head of Research & Development for circular saw blades and finger tools at LEUCO.

VARIETY IN PANEL SIZING SAW BLADES

THE RIGHT CHOICE YIELDS THE GREATEST BENEFITS

With the right saw blade for a particular application on a horizontal panel saw, users enjoy many advantages when it comes to maximum edge life, suitable cutting quality, possible repairs, easy handling, short machine downtimes, pleasant noise levels and low power consumption. The Horb-based tool manufacturer LEUCO offers companies a wide range of precisely matched stock saw blades for the many individual challenges involved in cutting wood-based materials.

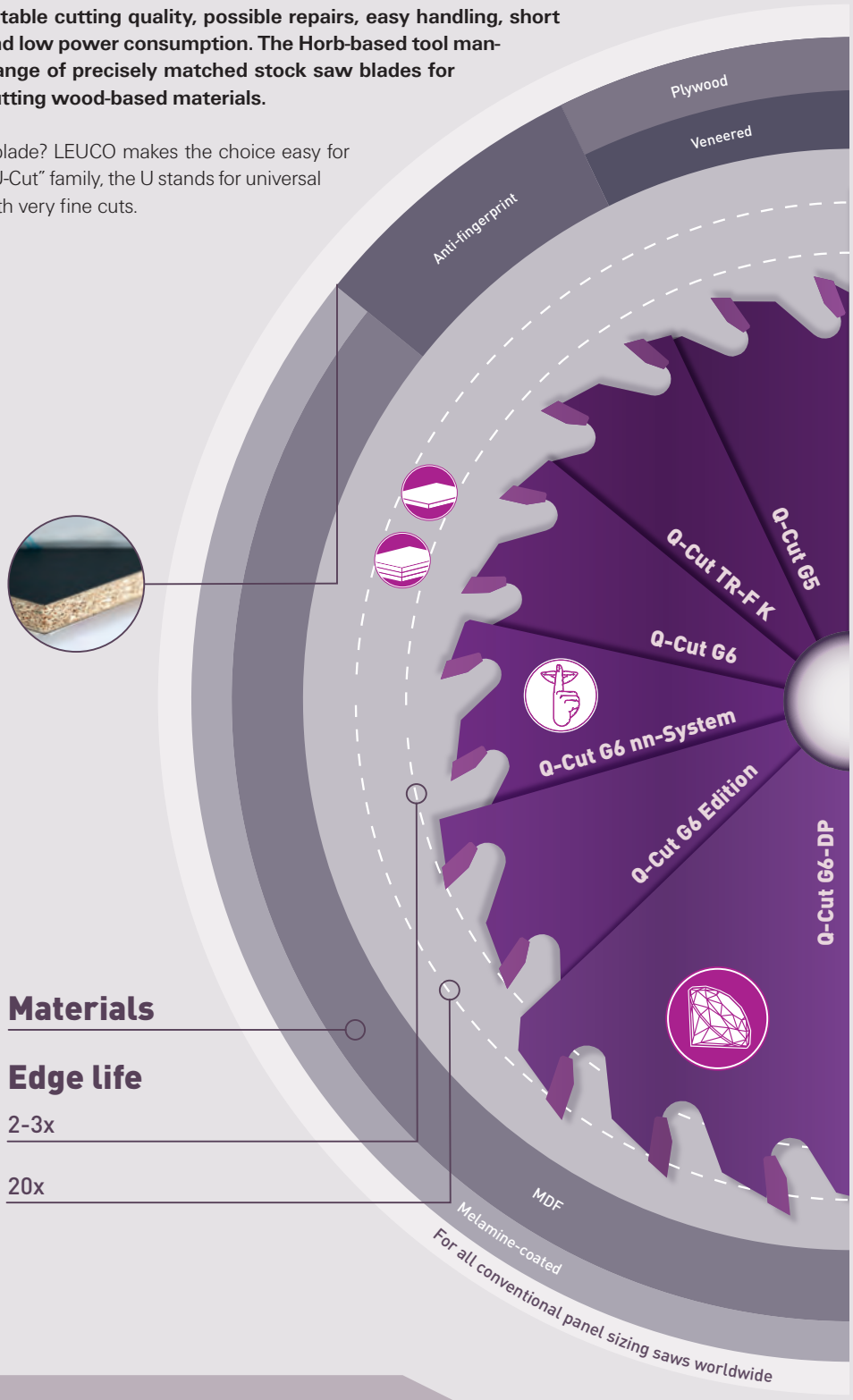
How do workshops find the right circular saw blade? LEUCO makes the choice easy for users with two aptly named product lines. In the "U-Cut" family, the U stands for universal use, and in the "Q-Cut" family, the Q for quality with very fine cuts.

Q-Cut

THE Q-CUT FAMILY FOR THE FINISH CUT

With its reduced vibration and high tool balance, the Q-Cut family is perfect for cutting results with chip-free edges.

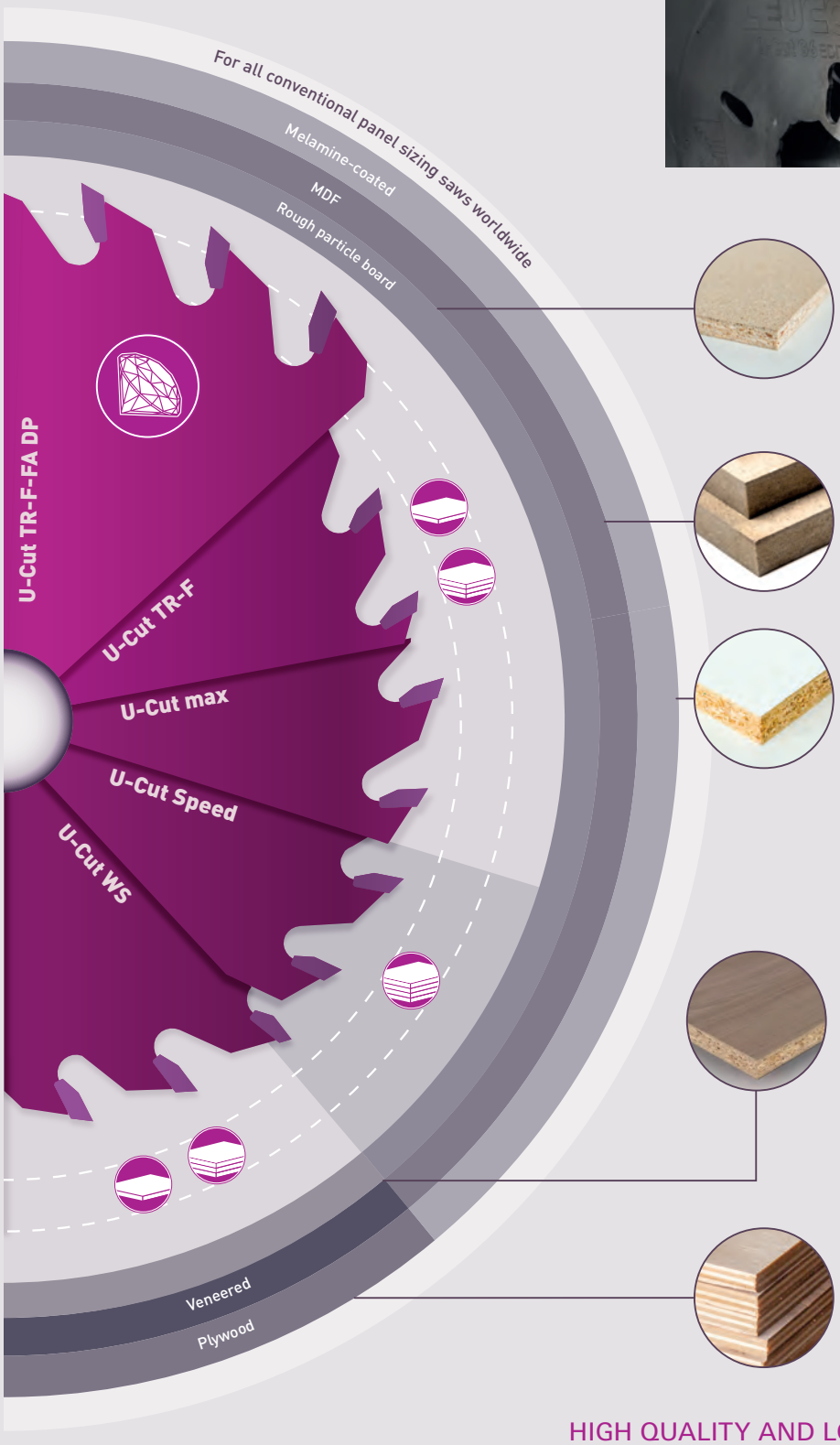
- With diameters of 280 – 520 mm, the **Q-Cut G6** is the most widely used saw blade in joineries and by furniture manufacturers for finish cuts in single panels or stack heights of up to 80 mm.
- The **Q-Cut G6 nn-System** is the ideal choice when, in addition to high cutting quality, noise minimization is also wanted.
- The diamond-tipped **Q-Cut G6 DP** offers up to 20 times the edge life of the carbide-tipped version.
- If the user wants to achieve a significantly longer edge life but does not want to use diamond as the cutting material, the **Q-Cut G6 Edition** is available as an alternative. It is carbide-tipped and the teeth have an elaborate and high-quality finish. The advantage for users is 2-3 times the edge life compared to the normal Q-Cut G6.
- The **Q-Cut G5** is ideal for finish-cut quality in plywood, veneered wood-based materials, panels with sensitive top layers as well as lightweight panels.
- The **Q-Cut TR-F K** is used for finish-cut quality in anti-fingerprint materials and plastics.



Features

- Single panels
- Stack cuts up to 80 mm
- Stack cuts > 80 mm
- Noise-reduced
- Diamond

Variety meets individual applications: LEUCO offers a wide range of saw blade types, including the Q-Cut family, with a cutting quality and edge life that makes them ideal for various materials and requirements. The saw blades are suitable for all conventional panel sizing saws.



U-Cut

CLASSIC CUTTING WITH THE U-CUT FAMILY

If the user's primary criterion is the classic, universal cutting of panel materials, the U-Cut family is the right choice.

- With its trapezoidal flat teeth, the **U-Cut TR-F** is the tried and tested universal saw blade for use on panel sizing saws.
- The diamond-tipped **U-Cut TR-F-FA** offers up to 20 times the edge life.
- The **U-Cut max**, on the other hand, gives users the longest edge life thanks to its extra-high tipping, which can be serviced up to five times more often than the standard tipping.
- The **U-Cut speed** with saw blade diameters from 520 mm on and corresponding numbers of teeth and robust tool bodies is recommended for high-performance systems with high throughput and stack cuts > 80 mm.
- Customers should choose the fifth member of the family, the **U-Cut WS**, for price-performance-optimized cutting of veneered wood-based materials, plywood boards, wood core plywood and raw particle boards.

HIGH QUALITY AND LOW NOISE

LEUCO has prioritized noise reduction for many years and implements this basic principle in the development of its saw blades accordingly. Special laser ornaments and expansion slots on all saw blades in the U-Cut and Q-Cut families therefore dampen noise and vibrations when idling and in use.

IMPROVED PANEL SIZING SAW BLADES

WHY SAWING WITH DIAMOND PAYS OFF

Extreme edge life, but sensitive cutting edges: For a long time, diamond-tipped panel sizing saws were synonymous with both - until LEUCO changed the latter. The innovative tool manufacturer offers diamond saw blades that are both particularly durable and of high quality, as well as being extremely stable. The robust high-tech saw blades can even cope with foreign objects in the panel material.

"Diamonds are the woodworker´s best friends" could be the motto when it comes to diamond saw blades from LEUCO. This is because the tools have been significantly optimized in order to fully exploit their strengths, such as the immensely long tool life and high cutting quality, right up to the end of the tool life.

BETTER BREAK RESISTANCE THAN EVER BEFORE, EVEN WITH CONTAMINATED PANELS

Thanks to thicker saw teeth and increased wedge angle, LEUCO reduces the risk of tooth breaking, smaller gullets allow the manufacturer to obtain a maximum tooth stability. The modified and robust diamond saws are suitable for all particle boards and MDF panels.

The robust saw blades can also cope with panel material containing recycling residues or other contamination which becomes ever more common in practice. If a tooth does break, the gap can be filled quickly and inexpensively by re-tipping.

Tailored to long tool life: The two new panel dividing saws Q-Cut and U-Cut with diamond tips from LEUCO.

LAST UP TO 20 TIMES LONGER, COST ADVANTAGE FROM 80,000 RUNNING METERS

Diamond-tipped saw blades achieve 20 times the tool life of carbide-tipped saw blades, i.e. a whopping 80,000 instead of just 4,000 running meters. The number of tool changes is correspondingly smaller. Both of these save time and money.

The diamond tool really pays for itself from around 80,000 running meters: From this point, the costs for tool life extension (new tool costs, sharpening service, set-up costs) increase only slightly - to just under 3,250 euros at around 410,000 running meters. In comparison, the costs for tool life extension of the LEUCO carbide versions are around 7,200 euros for the same amount of running meters, depending on the version. The new U-Cut DP and Q-Cut DP are therefore an economical alternative to the HW panel sizing circular saw blades, especially in companies that rely on cutting performance, see table diagram.

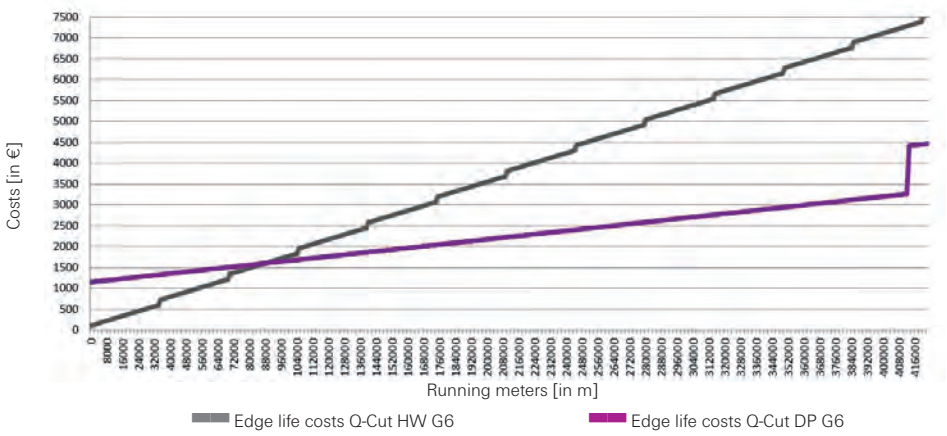
FAST DELIVERY OF STANDARD SAW BLADES

LEUCO has included the most popular sizes of diamond saws in its stock program. With the revision of the diamond-tipped panel dividing saws, the designations were also adapted to the carbide products in our company: "U-Cut DP" for classic or universal cuts and "Q-Cut DP", ideal for finish cuts. Thanks to LEUCO, the hardest material in the cosmos now also gives a brilliant performance in the world of panel dividing saws.

Very effective over short distances: The edge rounding of a carbide saw tooth after 4 km of cutting.

Endurance for long distances: The edge rounding of a diamond saw tooth after 80 km of cutting.

Illustration of economic efficiency: costs / running meter



The gap between the saws: The tool life costs per running meter of circular saw blades with diamond (line below) are significantly lower than those with carbide.

LEUCO UniType CUTTERS IN THE AVIATION INDUSTRY

MILLING PERFORMANCE INCREASED BY 400%

Which cutting material is best for a milling cutter to cut carbon fiber-reinforced plastic efficiently? The answer for a LEUCO customer in the aviation industry recently became clear: PCD. Since milling the contours and cutouts of wings with the diamond-tipped "LEUCO UniType" milling cutter, it has achieved a 400 percent increase in edge life and milled three times faster.

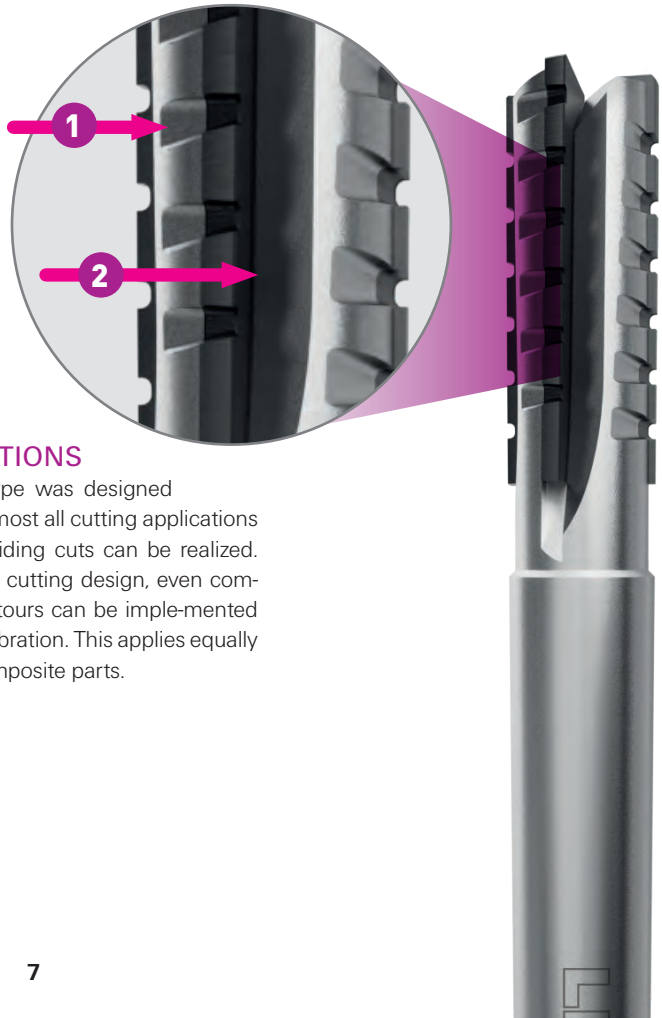
The LEUCO UniType has replaced a conventional CVD-coated solid tungsten carbide router at a major supplier in the aerospace sector.

The material of the wing consists of CFRP with a thickness of approx. 6 mm. Various fiber orientations can be found in the laminate. Milling such fibers has an abrasive effect on the cutting edges of the routers. In addition, the top and bottom layers of the material tend to delaminate and tear out very quickly.

The previous tool was used with a feed rate of 1 m/min and a speed of 13,000 rpm. The edge life was approx. 20 running meters, which is roughly equivalent to one component. With the PCD-tipped LEUCO UniType, the feed rate could be increased to 3 m/min at the same speed. In addition, four components can now be milled with the UniType instead of one before the tool has to be replaced.

The LEUCO UniType milling cutter increases efficiency and improves the milling process for this aerospace supplier.

THE LEUCO UniType MILLING CUTTER IN DETAIL



THE TECHNOLOGY

The LEUCO UniType combines upward and downward-pulling PCD cutting edges in one tool. Each cutting edge has a different face shear, allowing the tool to mill through the material smoothly and without vibration.

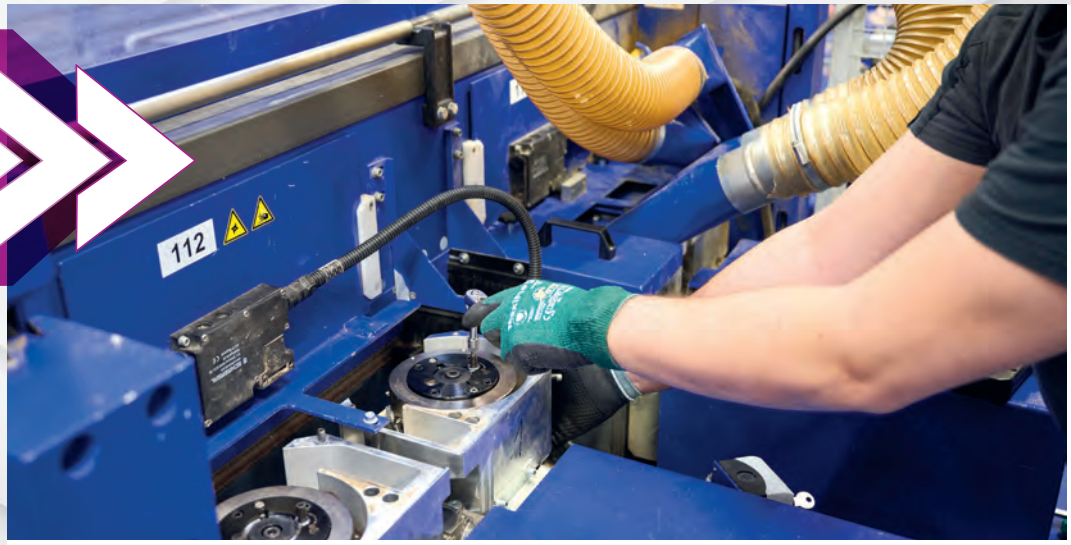
The cutting edges are equipped with chip breakers [1], which reduce the cutting forces during milling. This ensures smooth milling and increases the edge life of the tool.

Large gullets [2] allow the operator to reach high feed rates in order to achieve an economical milling process.

THE APPLICATIONS

The LEUCO UniType was designed as an all-rounder. Almost all cutting applications from grooves to dividing cuts can be realized. With the inno-vative cutting design, even complex 3D milling contours can be imple-mented easily and without vibration. This applies equally to thick and thin composite parts.

MAGENTIFY YOUR EFFICIENCY



Efficiency under control at the kitchen manufacturer Ballerina: The employees "resharpen" the cutting edges on the LEUCO milling cutter by small turn with an Allen key - minimum machine downtime, maximum tool utilization, flawless product quality.

LEUCO CUTTERS IMPRESS IN THE PRODUCTION OF PREMIUM KITCHENS

THANKS TO HIGHEST PRECISION AND EXTREMELY LONG EDGE LIVES

Ballerina kitchens rank among the top brands of the industry segment. The manufacturer is the German Design Award winner 2023 and uses the advantages of the LEUCO precision tools for jointing bodies and fronts. The p-System and the DIAREX jointing cutter offer the kitchen manufacturer an excellent cutting quality and high utilization times which can additionally be extended by an innovative adjustment technology.

"Our customers appreciate our excellently manufactured kitchen furniture. In order to meet this demand, we rely on a high-quality equipment of our production. Like the products of LEUCO", says Holger Gierth, member of the plant management at Ballerina Küchen based in Rödinghausen, East Westphalia, Germany. For the award-winning producer of design kitchens, the synchronously adjustable p-System and DIAREX jointing cutters are part of the basic equipment of their machines.

PRECISE AND PRODUCTIVE

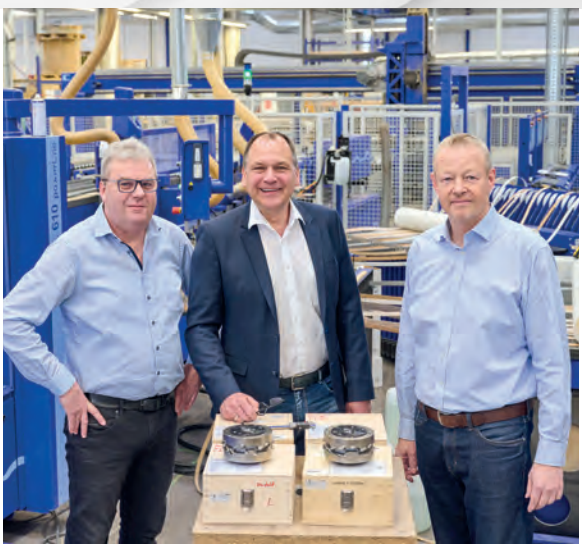
Currently, the company uses a Homag machine with an exactly calculated sizing concept for the jointing of kitchen furniture fronts and bodies. Thanks to the well-matched interaction between machine, clamping element and tool, the furniture manufacturer achieves an optimum production process in terms of economic efficiency and quality. The tools that are used here are the synchronously adjustable jointing cutters of LEUCO with different shear angles.

For the furniture bodies, Ballerina uses jointing cutters with the patented LEUCO p-System with a shear angle of 70 degrees. The p-System convinces with an excellent cutting quality for a variety of body materials and offers higher edge lives than jointing cutters with standard shear angle. The LEUCO DIAREX jointing cutters are used for the jointing of fronts. This tool is also characterized by long edge lives and offers an excellent zero-joint look for different front materials due to its high jointing performance. The p-System and DIAREX cutters have a diameter of 150 millimeters and are designed for conventional hydro motors with a spindle of 30 millimeters.

INNOVATIVE AND EFFICIENT

Both LEUCO cutter types are additionally equipped with an adjustment option that allows the still unused areas of the diamond cutting edges to be brought into use with a simple, manual rotation - which results in a further increase in tool life. Depending on the variety of materials, Ballerina achieves a total of six tool lives with the p-System cutter and an adjustment of up to five times. With the DIAREX milling cutter, the kitchen manufacturer achieves up to 10 adjustments and therefore a total of 11 edge lives, depending on the material mix. The machine operators only need a

Successful use: To achieve highest quality and economic efficiency, the premium quality kitchen brand Ballerina relies on LEUCO tools, such as the DIAREX cutter (left side of the picture) and the p-System cutter (right side of the picture), both equipped with innovative adjustment technology.



Proud of the tools and the results: (from left to right) Holger Gierth, Plan Manager Ballerina Küchen, Heiko Ellersiek Managing Director Ballerina Küchen and Michael Koch, Key Account Manager at LEUCO.

little effort to extend edge life: stop the machine, readjust the tools and continue production. By this, the tool concept minimizes machine downtime and resharpening costs.

The high cost-effectiveness of the tool comes into its own, especially with panels of the same or similar thickness. Holger Gierth: "If, for example, consistently panels with 16 millimeters are processed, we only have to set up once and can readjust the cutting edges several times with a simple rotation. Readjustment takes hardly any time because nothing needs to be calibrated, as the milling cutter works synchronously." The tool is easy to mount using hydraulic clamping, "it centers itself on the motor shaft using oil pressure," adds Michael Koch, Key Account Manager at LEUCO.

PROFITABLE AND RELIABLE

Minimum machine downtime, optimum utilization of the cutting edges, outstanding tool lives and reduced follow-up costs make the adjustable jointing cutters profitable tools. "The acquisition costs are higher than those of conventional milling cutters. But the many advantages make the investment worthwhile," emphasizes the operations manager.

Holger Gierth also draws a positive conclusion for the decades of cooperation with LEUCO: "In addition to the first-class tools, I would like to emphasize the reliability of the company. Here the benefits of confidence and fast routes are combined. This brings us forward." In 2024, a new machine from IMA Schelling will also be equipped with LEUCO tools. Michael Koch: "Both one-piece and synchronously adjustable p-System jointing cutters with a diameter of 220 millimeters for a motor shaft of 40 millimeters are used on the two-sided system" where melamine-coated body parts are processed for the perfectly shaped designer kitchens from Ballerina.

Premium needs precision: The winner of the German Design Award Ballerina produces numerous panel formats for the bodies of high-end kitchens - using LEUCO high-performance tools.

FOR OPTIMAL NESTING OPERATIONS

SELECT EXACTLY THE RIGHT TOOL

With a total number of five cutter types, LEUCO can offer a great variety of specialized products for nesting operations. The correct selection of the suitable tool is decisive for an effective application. LEUCO advises the customer on which milling cutter delivers the best result and when, with a differentiated view and a wealth of experience and know-how.

CONFIDENT DECISIONS THANKS TO EXPERT ADVICE DIRECTLY BY LEUCO

Which cutting length has to be selected for which panel thickness? What needs to be considered regarding tooth geometry and number of teeth? Is a disposable or a resharpenable milling cutter the right choice for my specific application? Every application and their specific parameters are taken into account by LEUCO since even minor differences may have an effect on the result. Only tools exactly adapted to the requirements achieve an optimum degree of quality and economic efficiency. Therefore, the manufacturer has developped a variety of products: the shank-type cutters, the DIACURVE tool with constant diameter and the Fibonacci variant inspired by nature (see boxes).

This differentiated approach allows LEUCO to advise and support the customers. Thanks to a combination of detailed knowledge and wide product range, the best possible solution i.e. the optimal tool can be found for each application. The LEUCO standard range consists of cutters with a positive cutting edge arrangement, which transports the chips particularly well towards the dust extraction. When tools with a negative cutting edge arrangement are used, most of the teeth work in direction of the workpiece. These tools can therefore be used for many material thicknesses. The Fibonacci versions offer higher performance and higher rigidity. The DIACURVE cutter with its constant diameter is ideal for all those who do not want to adjust their machine parameters too much. The cost-efficient VHW variants of LEUCO complete the nesting cutter program.

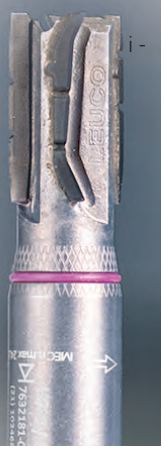
KEY TO SUCCESS: PAYING ATTENTION TO WHAT DOES MATTER

The individual example makes one thing clear: each application has its own requirements. This starts with the material, whether particle board, MDF, multiplex, plywood or solid core panel, also the respective material thickness must be taken into account. The feed and rotations per minute which, in turn, depend on the size and the clamping situation of the part to be milled play a decisive role. Are the parts to be machined small or large, is there a good or normal vacuum and should a rough surface or a surface for further processing be achieved?

In addition, the human factor and the requirements placed on the tool determine the selection, including the quality of the workpiece and tool life as well as other preferences such as diameter consistency, resharpening options or energy consumption. In total, the individual parameters result in a large number of possible work constellations, for each of which there is a suitable cutter type and specific advice from LEUCO.

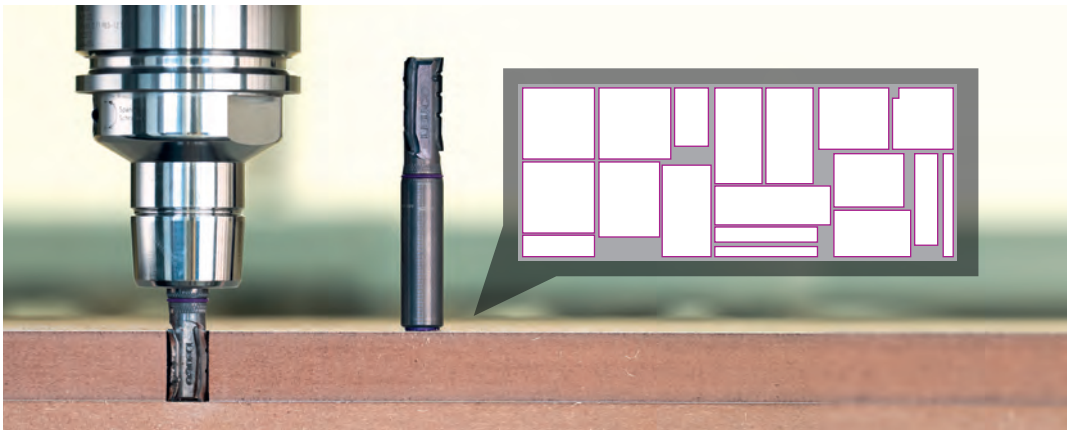
NESTING TO GO
DIACURVE WITH CONSTANT DIAMETER

Diamond-tipped disposable tool. Very robust and economical. Tool geometry for which a patent is pending. Excellent cutting quality without chip congestion due to continuous cutting edge in the shape of an arc. The large gullets enable high feed speeds. Constant diameter, no resharpening required, no abrasion, therefore no readjusting of the machine. Simplified and safe operating and work processes. Ideal also for users without special knowledge.

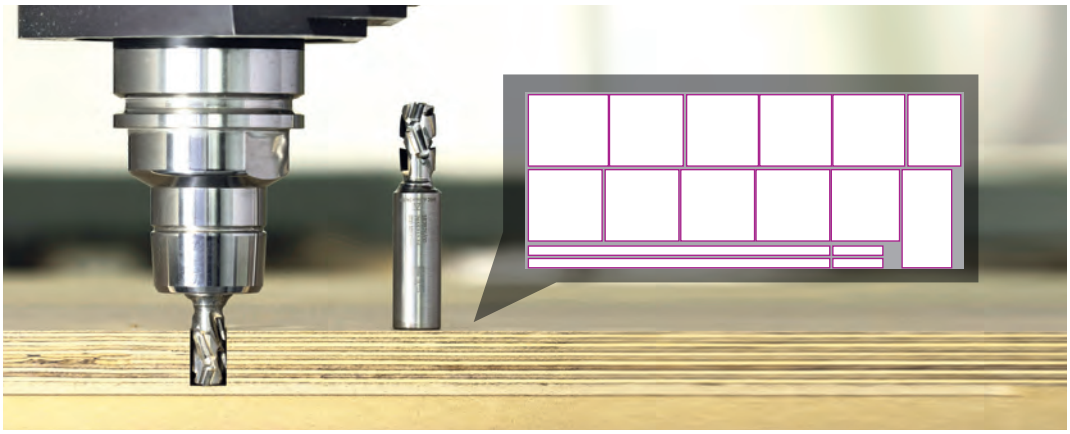


NATURAL NESTING
THE FIBONACCI CUTTER

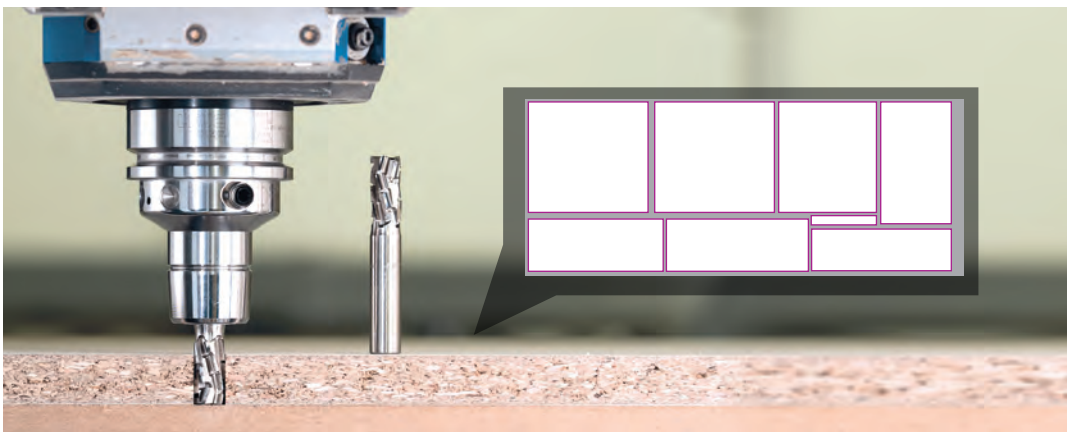
Spiral arrangement and therefore optimum distribution of cutting edges. Modeled on the golden angle of nature. Patent pending for the edge arrangement. Very effective with excellent cutting quality without overcuts. The cutting edges enter the wood one after the other. This reduces the cutting pressure and power consumption up to 15 percent. It also stands out due to a smooth running, high feed rates and long edge lives.



Requirement: MDF panel, 19 millimeters, high number of small parts, normal vacuum, no overcuts at the edges, no readjustment of the CNC machine after sharpening.
LEUCO SOLUTION: DIACURVE cutter Z3 with constant diameter for which a patent is pending, 15 meters of feed and 24,000 rotations per minute.



Requirement: Multiplex panel, 18 millimeters, small parts, chip-free edges.
LEUCO SOLUTION: high-performance shank-type cutter CM DP Nesting Z2+2 with negative edge arrangement acting towards the workpiece, 7 meters of feed at 22,000 rotations per minute.



Requirement: particle board, 16 millimeters, big nesting pattern, excellent edge quality, high feed rates, reduced power consumption, resharpenable tool.
LEUCO SOLUTION: nesting cutter Z4+4 in Fibonacci version for which a patent is pending, 28 meters of feed at 24,000 rotations per minute.

MAGENTIFY YOUR OPTIONS

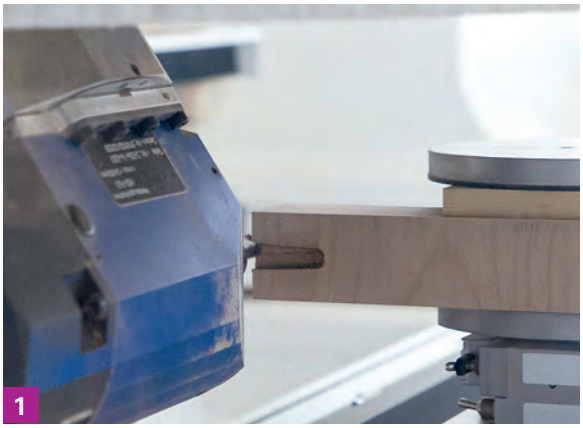
LEUCO DOVETAIL CUTTERS

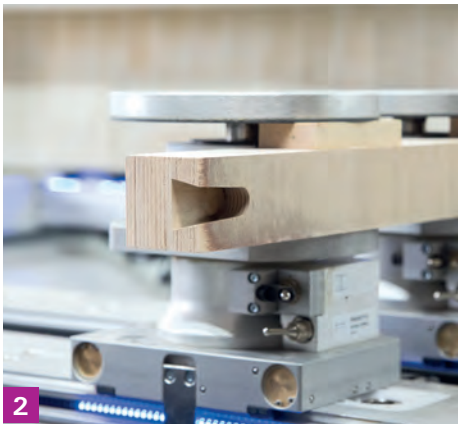
FOR THE INDUSTRIAL PRODUCTION OF HIGH-QUALITY JOINING FORMS

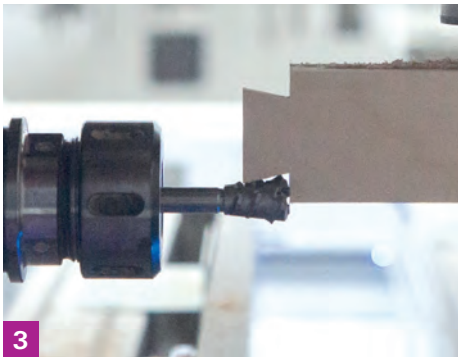
A good working relationship: Joinery owner Jochen Lang and LEUCO customer advisor Christian Stark (left).

They stand out because of their exceptional stability, elegance and functionality: solid wood joints. Their production is a traditional craft and was previously demanding and time-consuming. With the precision cutters of the p-System from LEUCO, the dovetail joints familiar from classic furniture construction can be produced easily and therefore extremely economically on a CNC machining center. For example at the Lang joinery in Ederheim in Bavaria where the use of the tool started with the construction of an exhibition stand.

The particularly elegant dovetail joints are mainly used for exquisite solid wood furniture that is produced in small batches. What used to be laborious manual work can now be completed extremely efficiently in a short time on a 5-axis CNC machine using precise LEUCO tools - dovetail cutters for the fingers and slot cutters for the counterpart.







1 The start of a special piece: The milling of a dovetail slot on a CNC system marked the beginning of the mechanical production of traditional plug-in joints for the Lang joinery from Ederheim - made possible by the dovetail cutter from LEUCO.
2 Once by hand, now by machine: perfect dovetail slot - masterfully and effortlessly realized by master carpenter Lang with the LEUCO tool.
3 Also suitable for the counter-piece: Using the dovetail cutter from LEUCO, the joinery also produces the dovetail tenon completely on the CNC system.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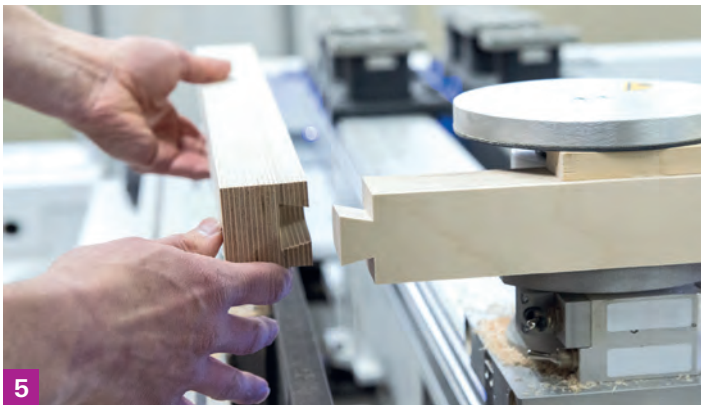
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4 First class artwork and some sawdust: perfectly crafted dovetail tenon, milled counterclockwise by master craftsman Lang with LEUCO. Exit at the bottom without chipping. The fine sawdust can be removed by the carpenter with the fingers.
5 Fits together exactly: Two become one - the dovetail slot and tenon produced by master carpenter Lang with LEUCO cutters on the CNC machine fit together precisely.
6 Wooden harmony: Elegant and stable dovetail joint created industrially - fast and economical.
7 Goodbye effort: master carpenter Jochen Lang with his finished exhibition stand made of machine-made dovetail joints - not only impressive, but also easy to assemble and dismantle.

GOOD JOINTS ARE THE BASIS FOR A PERFECT STAND

Master carpenter Lang also had something special in mind and used a LEUCO dovetail cutter for the first time in 2023 to build an exhibition stand. "After we had thought about doing this with stable plug-in joints," says Jochen Lang, "I called LEUCO because I knew I could get the right tool there." Using the milling cutter supplied, the carpenter created an exhibition stand with precisely those connecting elements, which, in addition to its unique design, can also be quickly assembled and dismantled. "Everything worked really well," summarizes Lang, "the exhibition stand is impressive, extremely robust and very easy to put together, almost completely without tools."

CRAFTSMANSHIP MEETS INDUSTRIAL TOOL GENERATION

The LEUCO cutter generates the perfect finger form thanks to the patented p-System with a shear angle of 70 degrees and the extreme pulling cut: significantly smoother wood surfaces than with standard tools, as if finely peeled. Therefore, no rework is required. The manufacturing process is very simple - the LEUCO tools allows the users such as master carpenter Lang to mill through on a CNC machine without any chipping at the exit. So high quality requirements and industrial efficiency can be combined. Jochen Lang: "Using the p-System, I can work in one step, completely without chipping. In the past, I had to process the workpiece from both sides to achieve clean and smooth edges. Now I have fewer tool changes on the CNC system and less travel distances, which is cheaper and takes less time." LEUCO's standard range includes suitable cutter sizes with angles of 12 and 15 degrees

for various dimensions and material thicknesses of wooden panels and fingers and also offers customer-specific special solutions on request.

LEUCO IS AN INTEGRAL PART OF THE LANG JOINERY

Since the construction of the exhibition stand, master carpenter Lang has been using the tools for various pieces of furniture and components. Above all, the excellent cutting quality of the p-System enables good milling results to be achieved, says Lang. Anyway, the craftsman is already very familiar with the LEUCO product range. He often uses various products from the tool manufacturer based in Horb and contacts them when he needs project-specific tools. "We work together very productively," says LEUCO employee Christian Stark, describing the customer relationship, emphasizing that the joinery is extremely results-oriented and that everyone is always open to new ideas. He adds: "A large number of our tools are in use there, about half of them on the CNC machines. This also includes other products from the p-System family". Sales representative Christian Stark visits the customer regularly to check that everything is running smoothly. "That's exactly what I appreciate about LEUCO," says Jochen Lang, "Support and service are really good. Together we always find practical solutions. And the products are convincing." After this final sentence, the master carpenter goes to a machine to produce a new piece of furniture - perhaps another exhibition stand or furniture with special wooden joints.

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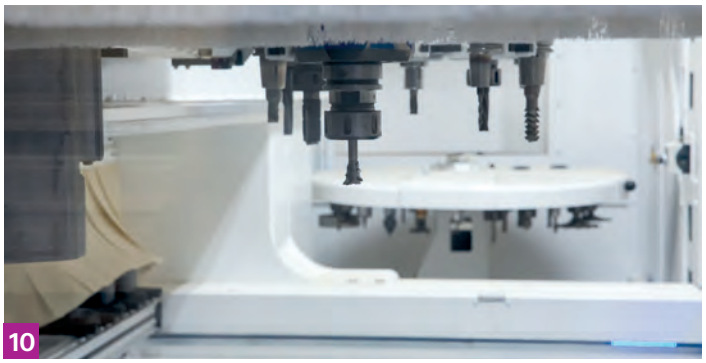

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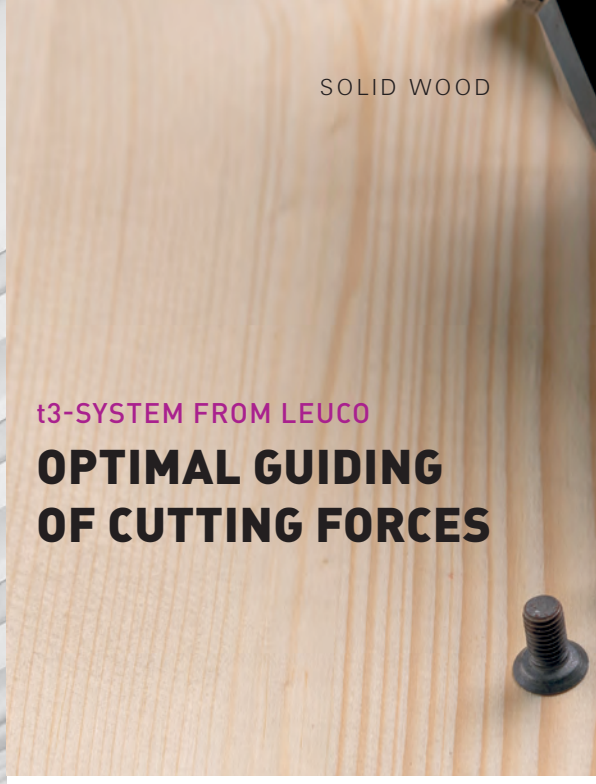
8 Versatile: With the LEUCO milling cutter, the carpentry company can produce joints in different connection sizes.
9 Convinced by the efficiency: Joinery owner Jochen Lang now uses the LEUCO dovetail cutter to machine the plug-in joints that were previously laborious to produce by hand
10 Lang appreciates the LEUCO range: Dovetail cutters and other milling cutters are waiting to be used in the company's CNC tool changer.



t3-SYSTEM FROM LEUCO

OPTIMAL GUIDING OF CUTTING FORCES

Powerful in performance, consistent in results, amazing to use: With the innovative arrangement of triangular cutting edges, LEUCO offers a tool that is still an insider tip in CNC woodworking. Anyone who discovers it will benefit from advantages such as milling free of chipping and tear-outs without time-consuming rework and visible overcuts, plus joining and rebating in a single step, as well as achieving high feed rates and large chip volumes.

With its exceptional properties, the unique tool concept is becoming increasingly popular with trade and industry. The ingenious cutting geometry of LEUCO's patent-pending t3 system offers exactly what characterizes the modern high-performance production: outstanding quality, fast work processes, maximum efficiency. The special effect of the t3 system comes from the newly positioned triangular inserts that guide the cutting pressure in an ideal direction.

ROUGHING CUTTER WITH THE FINENESS OF A FINISHING CUTTER

The highlight: The triangular turnover knives of the t3 system tools can be attached at a shear angle that pulls the cutting forces of the milling cutter inwards at the workpiece edges. This keeps the edges chip-free, eliminating the need for time-consuming rework, even when milling against the grain. The four-sided inserts, however, can only be placed in such a way that their cutting pressure on the material acts outwards resulting in unclean edges which require additional rework.

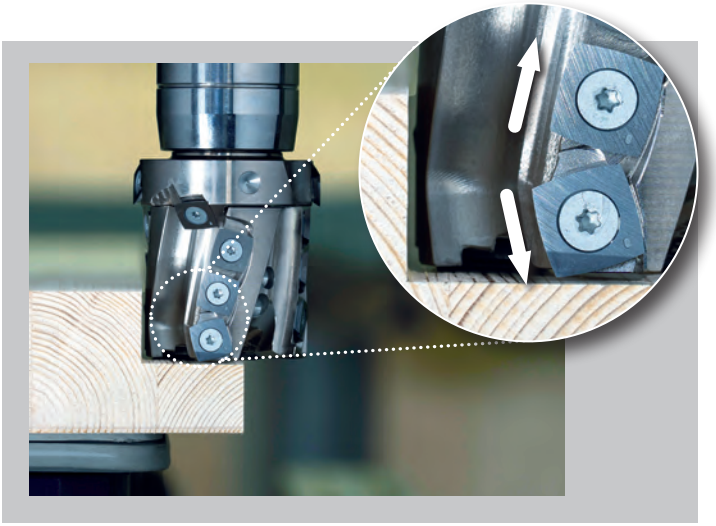
In addition to fine edges and less additional work, the triangular turnover knives with their combination of optimized shear angle and aggressive hook angle provide further benefits: joining and rebating in a single pass with excellent surface quality. No optical overcuts,

The right edges for each material: LEUCO offers 4 different variants of turnover knives, from left to right: "Normal" version for hard and soft wood is included in the basic equipment. "Hard" for hard wood and wood-based materials. "Laminated" for a double to triple edge life. And a problem-solver version with a special spur for planing without tracks.

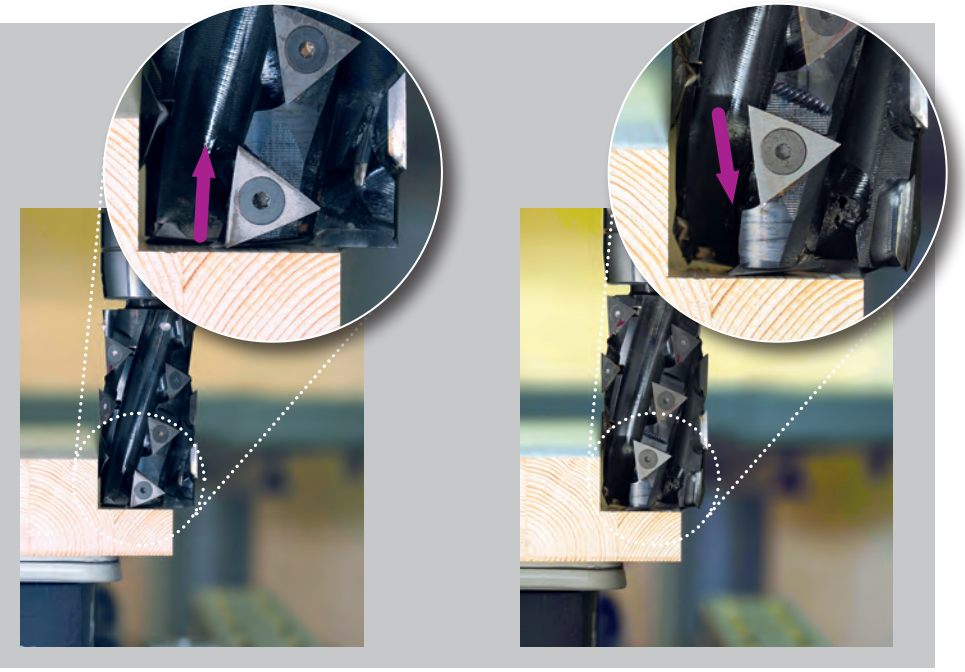
feeds of 10 to 12 meters per minute, without multiple hogging thanks to the large chip volumes. Users can count on flawless results and high efficiency, which by far compensates for the short tool life of the triangular turnover knives.

LARGE VARIETY OF APPLICATIONS WITH DIFFERENT VARIANTS OF TURNOVER KNIVES

LEUCO offers different versions of the triangular turnover knives: a standard version for hard and soft wood, a hard variant for hard wood and wood-based materials as well as a laminated turnover knife for a double to triple edge life. Moreover there is a problem-solver version with a special spur for planing without tracks. For this variant, the corners are provided with a haptic chamfer which creates the pre-cutting effect. The tool is also very easy to fit: the inserts automatically align themselves with the base body when screwed on - no need for a large tear-out for a chip-free result.



Conventional standard tool: The rectangular turnover knives can only be positioned in a way that the cutting pressure on the workpiece is directed to the outside (see arrows).
Consequence: rough edges that have to be reworked.



Innovative LEUCO tool: The triangular turnover knives of the t3-System are arranged in way that the cutting pressure acts towards the inside of the material (see arrows). Effect: very fine edges, no rework required.

MAGENTIFY YOUR CAPACITY

IN-PRACTICE COMPARISON

A TEST HAS SHOWN: THE TRIANGULAR FORM DEFEATS THE SQUARE FORM

The result is clear: The t3-System hole saw from LEUCO comes out on top. Background: Two high-quality hole saws were compared in machine use - one with square inserts, the other from LEUCO with triangular inserts. The t3-System tool by LEUCO came out on top. The excellent cutting quality of the cutter due to the arrangement of the triangular indexing inserts for which a patent is pending makes the difference.

Both cutters were put to the test at Weinmann, a leading manufacturer of machines for woodworking. The crucial question was to find out which of the selected hole saws with square or triangular inserts can deliver the more convincing performance. The tools are mainly used for milling of socket holes and cable ducts in beams in frame construction – especially by woodworking companies with joinery machines and multifunction bridges placing high demands on surface and cutting quality.

INCREASED FEED, OPTIMUM CHIP EVACUATION AND SMOOTH SURFACES

The test was carried out on a WALLTEC M-300 multifunction bridge in the test department of the machine manufacturer Weinmann. The upper edges of both tools are arranged at an angle of 45 degrees so that drilling and chamfering can be carried out in one step. The equivalent cutter has square inserts in contrast to the t3 system tool from LEUCO working with an efficient and patent-pending arrangement of triangular inserts.

The tool of the competitor was tested with a feed of 8 meters at 12,000 revolutions per minute and a feed of 34 millimeters. However, when the feed was increased to 10 meters per minute, burn marks appeared on the piece wood due to frictional heat.

This was not the case with the LEUCO hole saw which delivered a convincing cutting quality at a feed rate of 10 meters and 12,000 revolutions per minute - with excellent surface quality of the wooden workpiece and chip-free edges at the socket hole.

Another benefit is the excellent chip evacuation without clogging the gullets or overloading the dust extraction.Another highlight in the test: the WALLTEC M-300 had been specifically programmed for spiral plunge-cutting of the tool. This enabled the feed rate of the LEUCO t3-System milling cutter to be increased to 12 meters per minute, which meant that only 30 percent spindle power was required for the entire work process - a considerable saving in energy and less stress for the machine.

CENTERED SHEAR ANGLE, EXCELLENT EDGE QUALITY, NO OVERCUTS

The t3-System turnover knives of the LEUCO hole saw can be positioned at a shear angle which allows to guide the cutting force to the central part of the cutter. This will pull the cutting edges in direction of the workpiece to be machined, which improves the milling quality especially when processing crosscut wood and when cutting across the grain. The tool cuts socket holes and cable ducts in one pass,

Holes made by LEUCO: clear test result for the t3-System cutter – excellent milling quality, excellent edge quality, no burn marks. The chamfer with 45 degrees at the upper edge is produced by the innovative tool in one pass.

Canale Grandioso by LEUCO: the t3 system milling cutter has no need to shy away from comparison and is also impressive when it comes to producing chip-free and clean cable ducts

produces smooth surfaces and excellent edge quality – without overcuts. The cutter is also suitable for sizing and is ideal for processing various materials, such as soft and hard wood, glued laminated timber, wood and panel materials or gluelam construction timber. Even abrasive gypsum plaster boards can be processed.

The simultaneous drilling and chamfering using the upper cutting edges at a 45 degree angle eliminates the need for time-consuming rework. In addition to the high hole and surface quality, the cutting-intensive arrangement of the turnover knives increases the chip volume and optimizes chip evacuation. Advantages that were also convincing in the comparison test at Weinmann - since then, the woodworking machine manufacturer has preferred the innovative t3-System can milling cutter from the toolmaker in Horb.

Top: A LEUCO champion on the machine: passed the stress test with flying colors - the t3 system milling cutter delivers top results at a feed rate of up to 10 meters and 12,000 revolutions per minute.

Below: Work big with LEUCO: even large chip volume can be evacuated by the t3-System cutter with ease – as the practical test shows.

WITH THE t3-SYSTEM MILLING CUTTER

you can effortlessly cut through 55 mm thick multiplex board

t3-System cutter

- D 54 mm, cutting length 106,5 mm (LEUCO Ident-No. 187113)
- RPM: 15.000 U/min
- Feed rate: 4,5 m/min
- Plunge: circular
- Machine: HolzHer Blackline

The LEUCO t3-System milling cutter mills the 70 mm hole in the 55 mm thick multiplex board like butter. The removal of the large chip volume is problem-free thanks to the large chip spaces. Tear-free cross-section despite the wood grain running in opposite directions in places, no burn marks or similar.

SERIALIZATION FOR SEAMLESS TOOL MANAGEMENT

DIGITAL TOOL MANAGEMENT – IS IT WORTH IT?

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. Serialization involves assigning a globally valid identification number to each individual tool – LEUCO engraves this ID in the form of a data matrix code on its tungsten carbide and diamond-tipped machine tools.

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. 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, prevents defects and saves time and money. The prerequisite for the serialization is the assignment of a globally valid identification number for each individual tool, engraved by LEUCO in the form of a data matrix code. The code itself does not reveal any direct tool data. Instead, the underlying data can be accessed by scanning the code.

SERVICE AND SAFETY

When machining abrasive materials that could render the engraved code on the tool illegible, the manufacturer based in Horb 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. The company 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 allowing them to manage and control the life cycles of the original very efficiently.

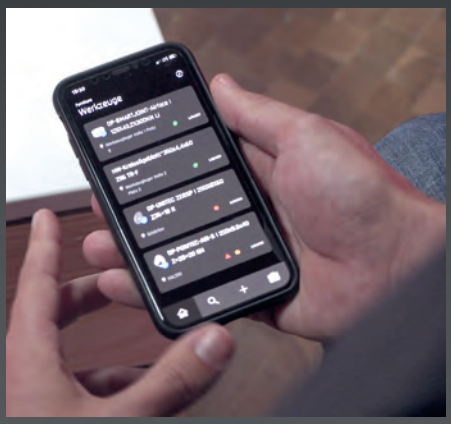
DIGITIZATION AS THE WAY TO MORE EFFICIENT TOOL CYCLES

Users 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. Users 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

LEUCO collects all important data both in the production of new diamond tools as well as in the repair or re-serialization of existing tools.



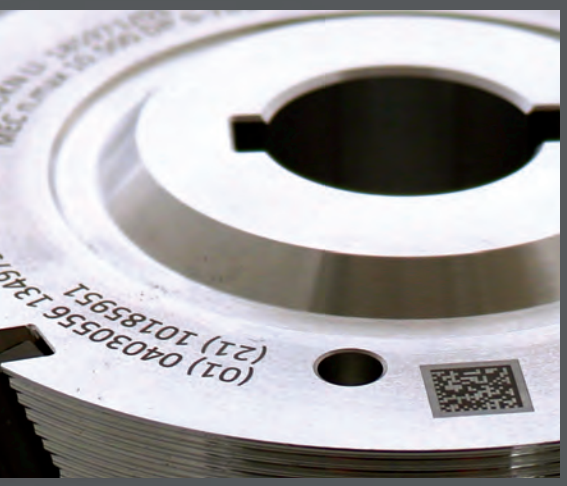
The traffic light system shows green for tool store, yellow for currently on the machine. In the case of red, the tool is currently being serviced by the tool manufacturer.

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.

DIGITAL TOOL MANAGEMENT

With its new re-serialization service, the tool specialist based in Horb is driving digitization forwards. This offer means that existing tools can also be included in the digitization process, alongside new tools. This speeds up the digital roll-out process which in turn enables companies to benefit rapidly and extensively from the digital twins of their tools. For complete digital management of its tools, LEUCO offers the Twinio app developed by Tapio. All in all, this enables LEUCO to provide its customers with a comprehensive level of support to accomplish successful digitization of tool-related processes in the processing of wood and plastic.

LEUCO lasers a data matrix code onto each of its tools.



INTERVIEW WITH PAUL GÖTZ, HEAD OF PRODUCT MANAGEMENT AT LEUCO

Paul Götz
Head of Product Management at LEUCO

// Mr. Götz, how can the path to digital tool management be described?

In principle, each tool in an individual. To a certain extent, this means rethinking the way we use and handle the tool, as up to now we have mostly talked about it at the higher material level. However, efficient, digital tool management will only work when each tool is looked at individually. This becomes clear when you consider the following questions: Where is which tool located? What is the current diameter of the tool? How many meters have been produced with the tool? How often can this tool be resharpened?

As standard, our diamond-tipped tools are already supplied with an engraved serialized data matrix code. For already existing tools, LEUCO offers the option to have them serialized subsequently by the service department.

// Do you need your own software for digital tool management?

The serialization and the associated tool data are an import factor in supporting our customers on their way to digital tool management. The second factor is an appropriate software which digitally maps the customer's tool processes in production, from warehouse management and production machines to goods delivery and service for repairs. A software that maps exactly these processes is Twinio from Tapio.

// What does digital tool management ultimately involve?

I would like to answer this question in a more abstract or figurative way and therefore switch to "soccer language" (smiles). For the digital tool management, we at LEUCO can provide the complete build-up of the game - i.e. everything that happens behind the center line. The goalkeeper acts as the cornerstone with the serialization of the tools, in defense the static master data, such as the maximum speed or the direction of rotation, prove their elementary importance and in midfield our dynamic measurement data, such as the current diameter values from each service cycle, drive the game towards the attack.

The end customer then completes the perfect pass from us and carries out the tool booking processes - such as stock receipt, booking onto the machine, etc. - via a tool management software in order to generate

THE POST-SERIALIZATION OF TOOLS allows the user not only to create digital twins of new tools but also to adjust the already existing tools to the digital age. Viewed realistically: The digital tool management, such as Tapio, only makes sense if the entire tool inventory is digitized. "The serialization of new and existing tools enables LEUCO to lay the groundwork for digital tool management"

Paul Götz,
Head of Product Management at LEUCO

the best possible efficiency for their success. This illustrates very well that digital tool management requires perfect interaction between LEUCO and the end customer - and we do our best to achieve this.

//What is the role of the digital twin?

An enormously important one - even if the term "digital twin" leaves a lot of room for interpretation. In simple terms, we at LEUCO want to do our part by supporting the physical tool process with digital data so that the customer can benefit from it. The aim is therefore to ensure that all the gears run together correctly throughout the entire process...

This includes - and this is of course beyond question - the machine. Tool data is to be transferred to the control system, thereby reducing set-up times and feeding back tool usage data from the machine. Coupled with the current status data and location information of the tool, optimizations in terms of productivity and cost-effectiveness can and should be initiated in a substantiated manner.

// What does the serialization of tools mean in detail in this context and what are the costs of complete digitalization for the customer?

As already mentioned, our diamond-tipped tools are already serialized, so there is no additional work. For non-serialized tools, we offer the customer the option of "post-serialization". which can be carried out easily and conveniently during the normal service process. The customer can decide whether they "only" want a standard data matrix code (DMC) engraved on the tools or an additional, more wear-resistant RFID chip.

DMC engraving on a tool and the optional RFID chip offer the huge advantage that the identification is permanently linked to the tool and therefore no unnecessary mix-ups occur. In addition to identifying the tools, the corresponding tool data is generated and provided in parallel.

// Which existing tools are suitable for serialization and which are not?

Clearly, it is important to consider for which of the existing tools a re-serialization will make sense. On the one hand, it is necessary to check how often a tool can still be sharpened; if, for example, only one sharpening is possible here, re-serialization naturally hardly makes sense. A decision must also be made with the customer on how to deal with inexpensive "disposable tools" such as drills or inserts.

// Serialization is a step towards digital tool management. What will be the next step?

A logical next step will be to learn from the data generated along the tool process in order to initiate improvements and optimizations. For example, stock monitoring could be automated and the new tool process could be linked if necessary; various status messages about the tool will create more transparency, ...

Of course, the operational data also plays a role in this topic. There will be many interesting starting points in the interaction of machine data, and possibly also material and tool data. There are no boundaries to creativity.

// What is the role of the app during serialization and digitalization?

As mentioned at the beginning, the right software is of fundamental importance; the tool management app is practically the crucial piece of the puzzle between our digital tool data, the machine and the physical processes with the tools in production at the customer. The complete tool cycle - from goods receipt and warehouse management, use on the machines and maintenance and back again - is mapped here. With such an app, there is complete transparency at all times and in all places. The tool management app therefore certainly plays an elementary role.

The interview was conducted by the trade magazine HOB with Paul Götz in the HOB 11/2023 issue

LEUCO CHINA

NEW LOCATION AND BUILDING FOR HEADQUARTERS

LEUCO China is very well structured in Taicang, Shaxi Twon, to offer customers in China even better products and services: The LEUCO China team.

LEUCO, a leading provider of precision tools and sharpening services for the woodworking industry, is pleased to announce the opening of the new headquarters of the Chinese LEUCO company in Taicang, Shaxi Town. After more than a quarter of a century of continuous growth and success, the move to the state-of-the-art building marks a significant milestone for LEUCO China.

Since June 2023, LEUCO China has been operating from its new location, which has been specifically designed to meet the growing needs of the company and its customers. The new location combines the production of market-specific precision tools, the high-end sharpening service for carbide and diamond-tipped tools, as well as the technical departments, sales and marketing, and administration under one roof.

The new location in Taicang not only stands for LEUCO's continued commitment to quality and innovation, but above all offers ideal conditions for the future to serve the Chinese wood, flooring and furniture industries as well as the composite market in a flexible and future-oriented manner. With this strategic move, LEUCO China is ideally positioned to offer even better products and services to customers in China.

The move reflects the steady growth of LEUCO China since its foundation in 1997. The new premises in Taicang offer double the production space compared to the previous location, state-of-the-art machinery and advanced equipment to further increase the efficiency and quality of production processes and services.

LEUCO China employs more than 100 people and stands for local expertise and comprehensive application consulting. In addition to the production site in Taicang, LEUCO China also operates service centers in Dongguan, Wuxi, Yuyao and Wuhan to ensure a nationwide presence and proximity to customers.

The company plans to continuously invest in high-tech machinery and innovative business systems at the new site to create innovative and intelligent processes and offerings for its customers.

Visit from the head office at the new LEUCO China headquarters: from left - Jason Chen (Head of Sales LEUCO China), Udo Leiber (Managing Director LEUCO Asia) Daniel Schrenk (Managing Director LEUCO), Tony Yuan (Managing Director LEUCO China)

LEUCO SWITZERLAND

NEW MANAGING DIRECTOR MICHAEL WOHLGENSINGER

After more than 27 years as Managing Director of Leuco AG in St. Margrethen (Canton of St. Gallen/Switzerland), Reinhard Mathis has retired. Michael Wohlgensinger has been his successor as Managing Director since the beginning of August 2023.

The 42-year-old has previously worked in the areas of engineering, sales and project management in the wood, machine and tool industry and as a member of the management board in the IT sector. He would like to use his many years of experience and expertise to continue to offer the high quality tool standard together with the competent LEUCO staff and to further expand the advantages for the customers. "It is very important to me to understand the requirements in detail, to provide the right tool solutions for them and to further expand LEUCO's good cooperation with the industry in Switzerland," says Michael Wohlgensinger.

The Leuco AG was founded in 1969. Today, LEUCO is a leading provider of new tools, sharpening services and advice on machine tools for the woodworking and furniture industry in Switzerland and has a payroll staff of 34 people.

With LEUCO AG's Chairman Frank Diez (right) and Managing Director of Sales and Marketing, Daniel Schrenk, LEUCO has set an important course for the future in its anniversary year.

70TH COMPANY ANNIVERSARY

LEUCO LOOKS POSITIVELY INTO THE FUTURE

When LEUCO was founded in 1954, the engineer Josef Störzer and the businessman Willi Ledermann laid the foundations for the success of the LEUCO brand. Deeply rooted in their hometown, the two men pursued the ambitious goal of raising the possibilities of woodworking to a new level with revolutionary tools.

In the years that followed, LEUCO consolidated its reputation as a leading manufacturer of precision tools with a constant flow of developments in the field of carbide and diamond-tipped tools. This reputation has continued to grow to this day and has lost none of its appeal.

Innovative, pioneering and reliable: LEUCO has been known for pioneering innovations in tool technology unparalleled in the industry for seven decades. Over 240 registered and granted industrial property rights and numerous patents since 1954 underline the company's innovative strength.

This strength in innovation results from a lively dialog with all those involved in the process, including customers, machine manufacturers, cutting material and workpiece material manufacturers as well as research and science.

The internationalization of the company, which began in the 1960s and has been driven by a large number of subsidiaries and long-standing sales partnerships in all key markets, has contributed significantly to LEUCO's growth and success.

Investments in the future: in recent years, in addition to many individual investments worldwide, immense investments have been made in the Horb site. In addition to the new construction of a modern service center, considerable investments will also be made in modern logistics and a new canteen in the anniversary year 2024. These construction investments are the result of a continuous and successful long-term corporate strategy.

With the completion of a state-of-the-art logistics facility next to the ultra-modern diamond production facility and directly adjacent service center, LEUCO is aiming to significantly improve efficiency and customer service.

LEUCO's innovations have also proved to be particularly forward-looking. At the last world's leading trade fair in Hanover under the motto "Innovative with passion. Sustainable by conviction", the company offered the woodworking industry completely new possibilities in production.

Today, around 1,200 employees work for LEUCO internationally and the company is represented by more than 100 sales partners in 64 countries on all five continents.

LEUCO is looking positively to the FUTURE

and would like to thank its customers, employees and suppliers for 70 years of loyalty.

LEUCO
MAGENTIFY WOOD PROCESSING

1954 - 2024
70 YEARS

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.

LEUCO
Magentify Wood Processing

WE ARE HERE FOR YOU:

64 Countries
1.200 Employees worldwide
20 Subsidiaries
93 Sales partners

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