



Low-stress leveling for **stunning** prospects





Low-stress leveling – for **stunning** prospects

Flat, low-stress steel strips for high-quality window system solutions



Companies in the Winkhaus Group develop and produce high-quality system solutions for windows, doors, and the latest in access control. Winkhaus has three sites in Germany: manufacturing plants in Münster and Meiningen as well as a head office in Telgte. An additional factory for window systems is located in Poland (Rydzyna). With its international subsidiaries, Winkhaus is represented across Europe.

Since its **foundation in 1854**, Aug. Winkhaus GmbH & Co. KG has remained a family-run company that is still 100% owned by the Winkhaus family. Today, the fifth generation of the family leads a team of more than **2,300 people**. The innovative window systems developed by Winkhaus are characterized by their intelligent design and excellent performance. Window builders, dealers, architects, clients

Using intelligent technologies and perfectly coordinated components, Winkhaus offers high-quality window system solutions for stunning prospects. Images: Winkhaus

and users all over the world particularly appreciate the top-quality material and processing provided by the durable Winkhaus technology. Tough surfaces ensure the long-lasting retention of aesthetics and functionality.



The new strip leveling line produces flat, low-stress strips free from saber shapes.

The double-decoiler, with its hydraulic coiler expansion, pneumatic coiler braking and axially tensioned coil retainers, has a load capacity of 3 tons per side and ensures continuous operation.

New KOHLER strip leveling line for producing window fittings

Winkhaus has relied on the leveling expertise of KOHLER Maschinenbau GmbH for **more than 40 years**. Old systems have been successively replaced by new strip leveling lines, not just to keep pace with the increasingly stringent demands in terms of quality and functionality, but also to ensure the seamless assembly of modules without the need for costly reworking. The new KOHLER strip leveling line at the Telgte site, which was recently commissioned for the leveling of window fittings, meets every criteria with regard to precision and cost-effectiveness.



Precision and cost-effectiveness open up totally new perspectives

Over 33,000 tons of steel each year – chiefly as coiled material – are processed in **three shifts over five days a week**.

“Leveling the steel strips is an important step in our workflow, as the very fact it has been coiled generates certain stresses in the material, such as curvature, warping, and twisting. This makes the downstream processing more difficult and also adversely affects the quality of the window fittings.

The new KOHLER leveling machine eliminates these stresses,” explains Uwe

Birwe, Industrial Engineering Manager – Window Fittings at Aug. Winkhaus GmbH & Co.KG, Telgte.

The double-decoiler, with its hydraulic coiler expansion, pneumatic coiler braking and axially tensioned coil retainers, has a load **capacity of 3 tons** per side. The coiler is swiveled through **180 degrees** using a three phase A.C. motor. *“The advantage of the double-decoiler is the huge amount of time it saves. One coil can be changed while the other is being processed, allowing for continuous operation and greater productivity,”* observes Birwe.

At the heart of the strip leveling line is the precision leveling machine. A high degree of rigidity, **21 hard chrome coated leveling rollers**, and a camber leveler unit guarantee perfect leveling quality. Depending on the material being processed, particles of dirt will occasionally adhere to the leveling rollers and supporting rollers. The rollers should therefore be regularly inspected, serviced, and cleaned.

“The advanced cleaning system from KOHLER allows this to be done without any fuss. It’s just a simple matter of pulling the top or bottom cassette out manually to expose





The integration of the loop controller for loop guidance saves space and means less foundation work.

the leveling rollers so that they can be easily cleaned by one person,” comments Birwe.

Seamless production process right through to the finished window fitting

The result of the leveling process is a flat, almost stress-free strip that has no saber shapes.

The strip eventually enters the loop control – which acts as a buffer designed to compensate for the on/off operation of the feeder – so that the decoiling area can operate at as constant a speed as possible. *“The integration of the loop controller for loop guidance requires less space and saves on any unnecessary foundation work. Together with the electronically controlled roller feeder, we can significantly increase the stroke rate of the stamping machine to up to 60 strokes at maximum length,”* explains Uwe Birwe.

To achieve the required degree of precision of less than 0.1 mm, an additional leveler with 13 leveling rollers, each with a diameter of 40 mm, is connected after the stamping operation.

“After leveling, the parts pass directly to the parts ejector. The incoming parts are stopped by the braking system and slide down a chute into the



A leveler with 13 leveling rollers produces optimum leveling results after stamping.

parts container. KOHLER has provided an enormous amount of assistance to enable us to create an efficient, extremely precise and almost fully automated production process. The line is controlled by a Siemens TIA CPU and is operated from a modern control panel. We’ve been working with KOHLER for more than 40 years – a period during which we’ve both grown. KOHLER has always been there to help us, even when we had out-of-the-ordinary requirements,” concludes Uwe Birwe with satisfaction.

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The stroke rate of the stamping machine can be increased to up to 60 strokes at maximum length.

Line and material facts

Strip leveling line:

- Double-decoiler, 180 degree motorized swivel, load capacity 3 tons
- Precision strip leveling machine, 21 hard chrome coated rollers of 30 mm diameter
- Double pinch rollers
- Advanced quick change device
- 5-roller camber leveler unit for correcting saber shapes
- Loop controller for loop guidance
- Roller feeder, passing width 50 mm, roller diameter 100 mm
- Realigning unit with discharge table, 13 rollers of 40 mm diameter

Material to be leveled:

- Materials with thicknesses of 0.5 to 4 mm and 4 to 50 mm wide
- Stainless steel
- Steel



The incoming parts are stopped by the braking system and slide down a chute into the parts container.

Leveling for the energy sector

Level and low-tension metal sheets optimize downstream welding and assembly work

Three part leveling machines from KOHLER Maschinenbau GmbH are now in successful operation at the Lucy Group to ensure tight tolerances on end products.

Lucy Electric in Dubai. Image: Lucy

Lucy Electric is a leading provider of intelligent products and solutions for secondary power distribution with over **100 years of experience** in the industry. The company specializes in powerful switchgear for utility companies, industry, and the commercial sector, creating the conditions for safe and reliable energy distribution in homes and businesses around the world.

Lucy Electric is based in the UK and has production sites in the UK, United Arab Emirates, Saudi Arabia, India, and Thailand. Lucy Switchgear Arabia Ltd. in Dammam, Saudi Arabia, which is part of the Lucy Group, also opted for a **KOHLER 45P.900 part leveling machine** so it could supply level, low-tension sheets for electric distribution boxes, among other applications. KOHLER's first two Peak Performers are located in Dubai.

A team of **400 employees** working at Lucy's **42,000 m² production** site there process **1,000 metric tons of material every year** to produce high-quality switch cabinets made from stainless steel. The Dubai-based company knows only too well that laser-cut sheets have to be leveled before further processing. The more level the parts are for switch cabinet construction and the less tension they exhibit, the easier it is to weld and finally assemble them.

Creating a low-tension process

Tension may be released during lasering or other thermal cutting processes such as plasma cutting, or it can even be introduced at this stage. Sometimes visible irregularities show up on the sheet metal. Moreover, the material heats up during thermal cutting. A thermal gradient occurs within the

material, which directly increases tension.

"We produce high-quality switch cabinets made from stainless steel and all the cabling to go with them. Efficient welding and precise assembly of the parts is essential to ensure they meet the highest quality standards from both a technical and aesthetic perspective," stresses Niranjan Sankar, Global Operations Excellence Manager at Lucy Dubai.

"After laser cutting, the blanks are under tension and can warp. Parts that haven't been leveled cause time-consuming rework, higher rates of scrap, and expensive process errors. We purchased the first KOHLER part leveling machine shortly after getting our TRUMPF laser welding machine because the parts weren't level enough to achieve a good welding result. Once we had



commissioned the first leveler, our welding results were outstanding,” says Sankar.

Level and low-tension sheets in seconds

Process optimization, higher quality, and enhanced efficiency are some of the benefits Lucy enjoys with its part leveling machine from KOHLER. The Peak Performer ensures that the switch cabinets made from stainless steel are now of a higher quality. It only takes a few seconds to level parts on the 45P.900. The leveled stainless steel sheets meet the required levelness after just a single pass. Tensions are also significantly reduced.



Stainless steel parts after laser cutting and before leveling on the 45P.900. Image: Yes Machinery

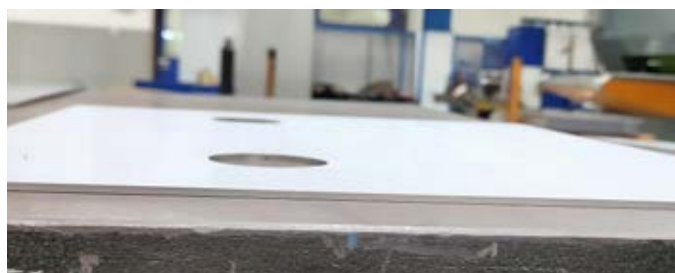


Fully satisfied with the Peak Performer (from right): Mohankumar Venkatesan, Assistant Manager Maintenance at Lucy Dubai; Niranjana Sankar, Global Operations Excellence Manager at Lucy Dubai and Mard Lasu, Area Head of Sales at KOHLER. Image: Yes Machinery

Part leveling machine at Lucy Electric:

- Peak Performer 45P.900
- Levels sheets made of stainless steel
- Width of the sheets: up to 900 mm
- Material thickness of the sheets: up to 9.5 mm
- Intuitive user interface
- Air conditioning system

*“Leveled parts speed up both automated and manual welding processes, since the welding gap is more constant due to the material having been leveled. The parts remain level during the welding process as well. This reduces the straightening work required and the end product is more dimensionally stable. Materials that are level and dimensionally stable also play a key role in assembly operations, as they can be assembled more quickly and precisely if they have previously been leveled. By using the part leveling machine from KOHLER, we can achieve a leveling **tolerance of up to 0.1 mm/m**, which is ideal for downstream work. We are very happy with our part leveling machine from KOHLER. Our TRUMPF distributor recommended the KOHLER machine to us. We were really impressed because it offered the right machine concept, a fair price/performance ratio, optimal leveling results, and convenient operation,” concludes Sankar.*



The picture shows the part before leveling on the left and after leveling on the right. Image: Lucy

Convenient to use and easy to maintain

The human-machine interface is designed to be so simple and intuitive that operators can quickly find the right settings for the specific material via the touch display. Presaved settings for known parts can also be accessed quickly, making work much easier. Last but not least, Lucy was also won over by the ease of maintenance and

energy efficiency of KOHLER's part leveling machine. All KOHLER part leveling machines work without hydraulics. The result is a machine that is low maintenance, leak-free, unaffected by temperature fluctuations, more energy efficient, and therefore more environmentally friendly. After all, it makes sense for a company focusing on energy solutions for the future to also use especially energy-efficient machines. ■

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It only takes a few seconds to level parts on the 45P.900. Image: Lucy



Switch cabinets after the welding and assembly stages

Why **KOHLER** Part Leveling Machine?



► Watch now

Electromechanical dynamic gap control

- Low maintenance
- Energy-saving
- Insensitive to temperature
- Precision accuracy
- Quick response overload protection



Innovative options

- Advanced cleaning system
- Smart return mode with roller paths
- Position reversible leveling rollers
- Edge protection system with easy-feed
- Wireless tools such as QR & barcode scanners and calipers



Extensive standards

- Easy operation touch display
- Expert calculation system for system setting leveling parameters
- OPC UA interface
- Plug & Play
- Extra wide supporting rollers for all sizes



KIS GmbH manufactures products including watch dials for renowned luxury watch brands with that special, exclusive feel. Instrument dials and watch faces for top-quality measuring instruments. Images: KIS GmbH



Low-Tension Leveling— On the Cutting Edge



Whether it's identification plates, front panels, composite panels, instrument dials, or watch faces, Kronauer Industrieschilder GmbH manufactures not only for the chemical and electrical industries, for medical technology, and for machine, instrument, plant, ship, and vehicle engineering, but also for **renowned luxury watch manufacturers**.

Starting with its state-of-the-art, high-capacity pre-press, through to machines and lines for offset and screen printing, and finally on to finishing – what sets the company apart is its full in-house production, manufacturing premium-quality bespoke plates with precision. The company's origins date back to 1912. With their exceptional eye for quality and outstanding attention to detail, **35 employees** meet every customer's specific needs with precisely tailored machinery.

The manufacturing processes are as versatile as the product range is extensive. *"We manufacture anything and everything to do with display, operation, metering, and labeling,"* says Stefan Stange, Managing Director of Kronauer Industrieschilder GmbH. To give, for example, instrument dials and watch faces that special touch of value and brilliance, they can be satin-finished, undergo a cylindrical grinding process, and be refined by imparting gold or brass coloring.



From left to right: Stefan Stange, Managing Director of KIS GmbH, and Klaus Wehrle, Head of Leveling Center, KOHLER Maschinenbau GmbH

However the aluminum, brass, or stainless-steel products are processed and finished – whether they're being brushed matte, printed, punched, milled, embossed, or cylindrically ground – the materials must be kept level and free from tension to guarantee the utmost quality.

Quality starts with Leveling

The **defect rate at KIS GmbH is less than one per thousand**. To maintain this process-specific KPI, certain parts are directed to KOHLER Maschinenbau GmbH for contract manufacturing. During leveling, any irregularities in the thickness of the material are eliminated and tension is reduced. There could be any number of causes for irregularities in the materials.

“In particular, fluctuations in material quality and brushing processes require the material to be leveled. Because, owing to the relatively low volume we'd be working with, it would not be economical for us to invest in leveling technology, we lean on the expertise of KOHLER Maschinenbau GmbH. The latest leveling orders that we sub-contracted to them included stylish aluminum watch faces for a luxury watch brand and round V₄-stainless-steel components for the food industry. The stainless-steel components for the food industry were intended as surrounds for emergency-stop buttons and must be perfectly smooth and free from tension to prevent the ingress of germs and impurities after the line has been disinfected,”

explains Stefan Stange. Aside from fluctuating material quality, another cause could be the thermal deformation of certain materials. During punching, lasering, or other

thermal cutting processes such as plasma cutting, tension may be released, or it may be introduced. Sometimes visible irregularities show up on the sheet metal. Moreover, the material heats up during thermal cutting. A thermal gradient occurs within the material, which directly increases tension. Level, low-tension plates and cut parts are, however, an absolute necessity when it comes to meeting high quality standards.

Time for Quality—Even without an In-House Part Leveling Machine

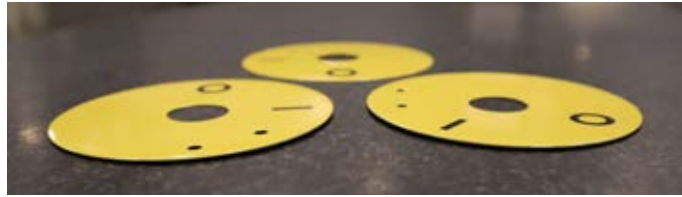
In general, all metals with a distinct yield point and an ultimate **elongation of at least five percent** can be optimally leveled. If these values are not known upfront, KOHLER offers custom leveling tests at its leveling center in Lahr,

Germany, which is ideally equipped for the task. The KOHLER center of expertise has a variety of Peak Performer part leveling machines on hand to level sheet metal with widths of up to **2,500 mm** and thicknesses of between **0.2 and 40 mm** and more.

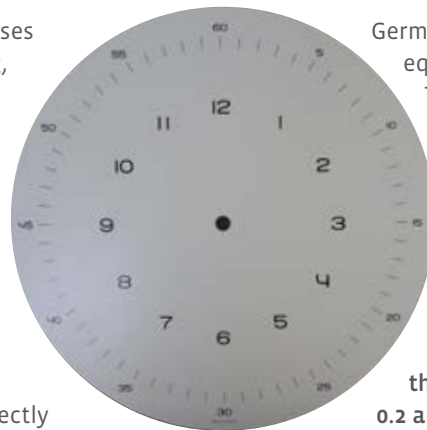
If, as with Kronauer Industrieschilder GmbH, investment in in-house leveling technology is out of the question, KOHLER offers high-quality contract manufacturing with a broad range of part leveling machines, innovative features, and tailored service ranges. Even when it comes to perforated sheets, thick sheet metal, or parts with complex geometries, customers can count on optimal and, most importantly, consistent leveling results, leaving them free to focus on their own core skills. ■



Dials for renowned luxury watch manufacturers: Left before leveling, right after leveling



V₄-stainless-steel surrounds for emergency-stop switches: Front parts before leveling, back part after leveling



Contract leveling for KIS GmbH at the KOHLER Leveling Center in Lahr, Germany



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Leading European metalworking company chooses KOHLER 85P.2000 part leveling machine

Low-stress and flat sheets **optimize processing** with minimum stress

Cutting, punching, edge trimming, bending, milling, turning, welding, assembling: At every stage of sheet metal processing, stresses in the sheets sometimes play a major role in determining how smoothly the production process runs. These stresses, combined with how flat the blanks are, have a significant impact on productivity and quality when manufacturing edged and bent parts, as well as in the production of welded assemblies.

Leveled sheets, by contrast, exhibit little stress and have the required degree of flatness to be processed further without any problems.

These advantages are appreciated by EKO MEĐIMURJE d.d., which is based in Croatia and mainly produces complex sheet metal constructions. Whether cabs or tanks for mining machinery from well-known brands such as Liebherr, Komatsu and Caterpillar, or ovens for the food industry – time-consuming rework, distortion when welding, and inconsistent results are a thing of the past, since the introduction of KOHLER part leveling machines.

EKO MEĐIMURJE d.d. has around **400 employees** and processes approximately **500 tons of steel a month**. Its **production site covers**

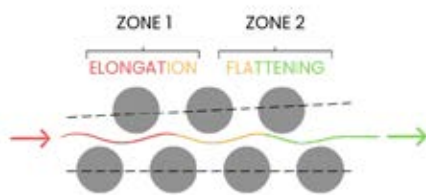
20,000 m² and boasts modern machinery: **Laser machines, diverse plasma cutting systems and press brakes, plus 110 welding machines, two robot welding stations, Cobot welding robot, numerous machining centers and modern paintshop** form the backbone of the production process. To improve quality and significantly shorten throughput times, the production line has recently been expanded with the addition of a Peak Performer 85P.2000 part leveling machine from KOHLER Maschinenbau GmbH.



The KOHLER Peak Performer 85P.2000 part leveling machine started operations at EKO at the end of 2023.

Leveling: Precision right from the get-go

The leveling of sheet metal on a roll leveling machine is nothing more than a series of repeated bending operations. During this process, the material is subjected to ever decreasing alternating bending generated by offset leveling rollers. Imagine the bending process as a decaying sine curve. As the material passes through the first leveling rollers, it is subjected to strong alternating bending, which becomes weaker as leveling progresses. Finally, the curvature and bending are reduced to the extent that the sheet adopts a flat state without any additional springback. The alternating bending and continuous decrease in forming means that after leveling, the material is, for all intents and purposes, stress-free. Areas of the material that were previously under stress are elongated and compressed around the neutral axis beyond the yield point to achieve the desired level of stress reduction.



Stress-free leveling for ultra-precise welded constructions

"We supply customers who are primarily based within Europe. They demand top quality of delivered products. At the same time, the quality of purchased sheet plates, in terms of flatness and without internal stress, can only be expected up to limited degree which is not enough for the process. The highest levels of precision have to be ensured in the manufacture of our steel assemblies, whether they're cabs, tanks or different machine parts. The **largest product** we've ever produced had, believe it or not, a total weight of **74 tons**. When welding, however, we were only able to achieve the desired level of flatness in the past with a great deal of trouble. Vast amounts of production-related activities and much manual work was necessary. We frequently employed specialists who leveled the parts using a torch before they could be welded with the required degree of precision

into assemblies that in some cases weighed several tons. In many cases the results were satisfactory, though they were not always to a consistent standard and, more significantly, could not be achieved in a way that met our productivity targets.

We eventually came across KOHLER through our friends at KARMET BULGARIA LTD. KARMET is a close trading partner of KOHLER and was able to show us a machine that precisely met our requirements. We then submitted some of our key parts to extensive leveling trials at the well-equipped KOHLER leveling center. These parts were then fed back into our production lines. We were able to see right away the massive increase in quality and productivity that the leveled parts gave us in the subsequent bending and welding operations. This clearly showed us that this investment would be key to the ongoing development of our company. After placing our order and its seamless processing, the Peak Performer 85P.2000 part leveling machine was successfully up and running on our site by the end of 2023. The introduction of the KOHLER part leveling machine has enabled us to reduce to a minimum the amount of alignment work the sheets require before welding. Likewise, there's now less distortion during the welding process," explained Zoran Zdolec, Electrical Facilities Manager at EKO MEDIMURJE d.d.



EKO assembles semi-finished and finished products such as cabs for mining machinery. Image: EKO MEDIMURJE

Maximum cost-effectiveness thanks to innovative features & functions

The regular cleaning of particles of dirt from the leveling rollers and supporting rollers is essential, particularly when working with up to **90% blackplate**. The user-friendliness of ACS, the advanced cleaning system only available in this performance category from KOHLER, also made a big impression on EKO.

Weekly cleaning with the advanced cleaning system is more or less child's play. Cleaning prevents the accumulation of deposits on the leveling rollers and supporting rollers, as well as on the leveling material itself.



Among the items EKO manufactures are mobile crushers for the recycling or preparation of rocks

"The fully retractable leveling cassette enables all the rollers to be cleaned quickly and easily. This extra feature not only improves our leveling results by eliminating contamination, it also considerably extends the service life of the rollers", pointed out Zoran Zdolec.

Intuitive operating concept & high levels of energy efficiency

The ease of operation of the KOHLER Peak Performer 85P.2000 part leveling machine also impressed the Croatian sheet metal specialists. The HMI and the Expert Calculation System tool, which is installed as standard, are of such a simple and intuitive design that the operator can quickly locate the appropriate material-specific parameters. Presaved settings for known parts can also be accessed quickly, making the whole process much more straightforward.

Last but not least, EKO was also won over by KOHLER's advanced environmental credentials. The Peak Performer 85P.2000 is not only powerful, it's also energy-efficient, and hence environmentally friendly as well. All KOHLER part leveling machines work without hydraulics, so are therefore noticeably superior to conventional levelers. The results across the entire range of materials were, without exception, outstanding: Leveling with low levels of maintenance, no leakages, no susceptibility to the high temperatures prevailing in Croatia, greater energy efficiency and hence improved environmental sustainability.



EKO MEDIMURJE d.d. is based in Čakovec, Croatia; (from r. to l.): Vedan Babić, Member of Management Board – Technical Manager at EKO MEDIMURJE d.d., Dr. Hans-Peter Laubscher, General Manager at KOHLER Maschinenbau GmbH, Zoran Zdolec, Electrical Facilities Manager at EKO,

"The low electricity consumption is extremely welcome. In stand-by mode, the KOHLER part leveling machine uses under 2 KW, while in idle, consumption increases to just about 2.5 KW. Apart from the electromechanical dynamic gap control, this low consumption is down to the fact that the individual leveling rollers are all direct drive rollers. The electromechanical dynamic gap control, a patented KOHLER feature, ensures superb leveling results, even with complex geometries. The direct

The advanced environmental credentials of KOHLER part leveling machines:

- Powerful and energy-efficient at the same time – and environmentally friendly as well
- Servo-electronic machine concept without any hydraulics
- From size 60P: responsive, electro-mechanical dynamic gap control
- From size 85P: energy-efficient and powerful direct drives



Before acquiring the part leveling machine, parts had to be laboriously leveled using a torch

drive system uses a separate drive for each leveling roller. The result of this is that individual drives, fitted with planetary gearing, are used in preference to a large distribution gear with an oversized central drive. All things considered, we are extremely satisfied. That demonstrates that the investment decision was the right one! The part leveling machine will have paid for itself in very reasonable time," concluded Zoran Zdolec.

Part leveling machine at EKO MEDIMURJE d.d.:

- Peak Performer 85P.2000
- The leveled sheets are primarily of blackplate
- Width of the sheets: up to 2,000 mm
- Material thickness of the sheets: up to 28 mm
- Advanced cleaning system
- Patented electromechanical dynamic gap control
- Intelligent overload protection
- Pinch-off edge protection
- Easy-Feed
- Direct drive
- Intuitive user interface

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SUER STAHLTECHNIK:

Leveling and deburring parts on a single line

Companies are increasingly focusing on improving their production processes – by combining multiple processes that might ordinarily be considered a secondary workflow – in an effort to improve their productivity. The increasing demand for part leveling machines in combination with a deburring machine underlines this trend. At Suer Stahltechnik in Raesfeld, Germany, a Peak Performer 85P.1600 from KOHLER operates in a single line with the 1,600 mm wide 42 RB series from Timesavers. One person can operate both systems to save time, space, energy, and increase productivity.

Suer Stahltechnik is a young company, having been **founded in 2020** by Leonard Suer. With a team of **12 people**, it provides high-quality sheet metal work: from laser cutting, leveling, and deburring, to edging and milling. All machining work takes place in Raesfeld. A product that has been through the laser cutter is not finished yet: *“We would still like to deburr it, drill the holes, galvanize the surface, and cut the necessary threads in it. We take care of everything for our customers so that they no longer have to do a thing,”* explains Leonard Suer. Most of Suer’s customers come from the same federal state of North Rhine-Westphalia and are mainly machine, steel, and hall builders, but there are also representatives from the railing and staircase construction sector or even the automotive industry.

Suer Stahltechnik is committed to its customers in order to grow together. But what makes Suer different from all the rest? They are still young and embrace new challenges. For example, Suer recently purchased a machine to meet a particular customer request. The customer wanted a product that they were originally unable to make. After discussing what they needed with Suer, the decision to purchase an additional machine was made.

Deburring

After discussions with several abrasive manufacturers, Suer was steered in the direction of Timesavers: and it quickly became clear that a Timesaver was the way to go. Suer originally opted for a **42 RB series** machine with a working width of 1,350 mm, but which was ultima-



The Peak Performer ensures level and low-tension metal sheets.

tely replaced by a model of the same series but **with a working width of 1,600 mm** in order to accommodate new customer requirements. The machine with rotating brushes is ideal for deburring, edge rounding up to a **radius of 2 mm**, oxide layer removal, and finishing. Removing the oxide layer is crucial for coating and galvanizing, as the coating adheres much better to a clean surface. An important role in this project was played by 1A-Maschinen, the dealer of Timesavers machines. It supplied the deburring machine in combination with AMI roller tables and the extraction system from Absaugwerk GmbH.

Curved parts and plates

Suer had been working with the Timesavers deburring machine for two years and were very satisfied with it. Nevertheless, they always had the same problem: the parts



The KOHLER 85P.1600 part leveling machine and the deburring machine from Timesavers in a single process line



that they fed into the deburring machine were not completely flat. During laser cutting, tension is introduced to the sheet metal. When this tension is released, the sheet metal deforms. This can lead to time-consuming reworking and higher costs in subsequent processes such as welding or assembly. However, deburring is also difficult with deformed, uneven sheet metal. To save such costs, the tension has to be removed first. Therefore, a **Peak Performer 85P.1600** was purchased from KOHLER Maschinenbau GmbH. The deburring machine from Timesavers and the part leveling machine were then linked together by KOHLER to form the line.



The Peak Performer 85P.1600 has an advanced cleaning system.

Relaxed leveling of sheet metal

The Peak Performer 85P.1600 part leveling machine is used to level sheet metal blanks of steel, aluminum, and stainless steel with **dimensions up to a maximum of 1,500 x 3,000 mm and at a thickness of up to 28.0 mm.**

It is fitted with an advanced cleaning system whereby the leveling rollers can be electrically extended from the machine, which significantly simplifies the cleaning process, especially after straightening blackplate. This is very important for Suer, as the company processes a wide range of metals including aluminum, stainless steel, and blackplate. The machine also has an electromechanical leveling gap control, which shows its full strength with

workpieces of varying cross-sections and easily masters the changing forces that occur. The patented electromechanical leveling gap control detects the change in force flow in just milliseconds, compensating and counteracting it immediately. The leveling gap also remains constant during the leveling process – an enormous advantage for optimum leveling results, especially with more complex components. In addition, the part leveling machine is also equipped with a barcode scanner, reversible leveling rollers for a longer service life, and functions such as pinch-off edge prevention and overload protection.

Relaxed combination for a process-optimized production line

In order to save space, Suer wanted to combine the part leveling machine with the deburring machine to form a single process line. The control panels of the KOHLER and Timesavers machines are integrated into a single system, allowing just one person to control and monitor the entire process. *“This saves time, space, and energy – and it works very well,”* emphasizes Leonard Suer. The KOHLER part leveling machine thus ensures flat and low-tension metal sheets. Max Burgert, Product Manager at KOHLER, explains that there is more to leveling than just making a flat sheet. By reducing and equalizing the stresses

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- ✓ Diagnostics
- ✓ Repairs
- ✓ Spare parts
- ✓ Retrofitting

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A KOHLER service technician, wearing a grey t-shirt with the KOHLER logo, is working on a machine in a factory setting. The technician is looking at a control panel with a monitor.

in the material, further processing becomes more reliable and efficient. The leveled part then runs over the roller table into the deburring machine, where it is deburred, the edges are rounded, the oxide layer is removed, and the surface is finished. If required, the conveyor belt reverses again at the push of a button, conveying the part back to the infeed.

Good cooperation as the basis for success

KOHLER, Timesavers, 1A-Maschinen, and Suer Stahltechnik can look back on a good working relationship. Their cooperation was not just centered on supplying individual products, but about offering the best process. Regular consultations were essential

during the development and delivery of the production line. *“What I really liked was that no customer request was ignored. You could simply say ‘I’d like this and this, is that possible?’, and they would try and implement it. Every company also worked very closely together, which I found extremely positive. The whole process was a great success,”* says Raoul Knoop, Machine Operator and Workshop Manager. ■

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Ecological sustainability living responsibly as a company

In the sustainability triangle, ecology, economy, and social issues are interconnected and considered equally important. Only if all three principles are given equal consideration can a sustainable and future-oriented corporate culture be created. To achieve this high standard, companies are required to improve the longevity of their machines and systems and save resources through energy-efficient concepts.

Low-Tension Leveling with green accents

KOHLER part leveling machines not only achieve optimum leveling results, but also score points with their environmental benefits. This is because all KOHLER part levelers operate entirely without hydraulic systems. The result: low maintenance, no leaks, insensitivity to temperature fluctuations, higher energy efficiency and therefore improved environmental compatibility.

Thanks to the use of a direct drive for the leveling rollers and the proven electromechanical dynamic gap control, the Peak Performer part leveling machine from model series 85P upwards also outperforms conventional machines on the market with **up to 75 % less energy consumption**.

KOHLER is not only breaking new ground in the field of part leveling machines but is also underscoring its sustainable corporate strategy in the field of strip feeding lines. Until now, the coiler mandrel was only spread hydraulically to fix the coils. This important function can now also be performed by a servo motor. The complete elimination of hydraulic units not only brings advantages in terms of quality and performance, but also offers efficient savings potential such as reduced maintenance, service, operating and, above all, environmental costs.



Images: AdobeStock.com

With electricity from its own photovoltaic system, KOHLER is setting additional benchmarks in terms of ecological sustainability.

The roof of the production hall with an area of of **1500 m²** was equipped with **816 PV** modules. The PV system has been in operation since November 2023 and is designed to be **100 %** self-sufficient in the summer months with **310 kWp**.

KOHLER as an important player in the field of e-mobility

Manufacturers of components for electric motors rely on strip feeding lines and leveling machines from KOHLER.



Electric motors are used by automotive manufacturers wherever there is movement in or on modern motor vehicles. So drive units are in great demand in the automotive and supplier industry. The two main components that are responsible for turning electricity into movement in the motors: the rotor and stator.

From the coil to the sheet stack

The production of rotors and stators is complex and involves a large number of process steps. The components are made from electrical steel, which is supplied to the manufacturer as coiled strip material. Components are punched from these coils and packaged in several layers. This is because stacks of sheets generate a more uniform and more usable magnetic field compared to solid materials.

Absolute precision leads the way

How precisely the components are manufactured has a major influence on the fault-free and energy-efficient operation of the motors later. Therefore, one thing is particularly important: absolute precision. To achieve precise, reproducible results in production, manufacturers rely on highly automated



The production of rotors and stators is complex and involves a large number of process steps. Manufacturers of components for electric motors therefore rely on strip feeding lines and leveling machines from KOHLER.



Driven pinch rollers pull the strip into the leveling machine. The result of the leveling process is a flat and virtually tension-free strip.

production lines. KOHLER Maschinenbau GmbH is an important player in this field. The company, based in Lahr, Baden, develops and produces strip feeding lines and part leveling machines for industrial sheet metal processing. Leveling sheet metal strips is an essential work step, as stresses such as bends, curvatures and torsions occur in the material in the rolling mill and when it is wound into coils.

This not only makes further processing more difficult but, significantly impairs the quality of the end product. These tensions that cause problems downstream are eliminated by the leveling machine.

For this process, coils weighing several tons are installed onto a coiler with the strips. An automatic pinch roller pulls the strip into the leveling machine, in which up to **21 rollers** level the material until the respective yield point is reached. The result of the Leveling process is a flat and virtually tension-free strip. This is then fed into a strip loop – a buffer to compensate for the start-stop of the strip due to the feeds at the presses.

Rotor-stator – the magnetic heart of electromobility

Manufacturers of rotors and stators are optimistic about the future. In addition to electrically powered vehicles, modern cars are equipped with increasingly more comfort and safety functions, which also often require additional electric motors.



Strip feeding lines from KOHLER Maschinenbau GmbH are used to manufacture important components for electromobility to precisely level coil material and sheet metal for rotor-stator production, battery housings, battery connectors, cell connectors and plug connectors. (Image: AdobeStock)

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