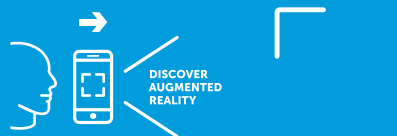


KOCKS delivers 100th RSB®. *Our Kocks technology emphasizes future reliability by incorporating all elements of digitalization and Industry 4.0. The digital twin of RSB® 5.0 creates a virtual rolling process. Our engineering embraces the idea that correlation leads to optimization. A workflow assistance will support operators in the future.* As a result of our intergenerational reliability and the integration of **Industry 4.0** into our manufacturing processes, KOCKS stands for **highest ROI** today and in the future. **The ultimate perfection and perfect vision** will be reached by extraordinary surface inspection and profile measurement – the 4D Panther® and the 4D Eagle®. All these engineering achievements lead to **the greatest dream of a rolling mill manager** because they can rely on our KOCKS promise **'We make your product GOLD'**. With this commitment, our customers will stay ahead of their competition in the world steel market.



- 1 Download the YONA app free of charge from your App Store.

- 2 Open the app and scan the images marked with the following symbol:



- 3 Have fun discovering our KOCKS world with augmented reality.



DISCOVER THE **WORLD OF KOCKS** *WITH* **AUGMENTED REALITY**

Download the YONA app in the Google Play Store,
the App Store or via the QR-Code.



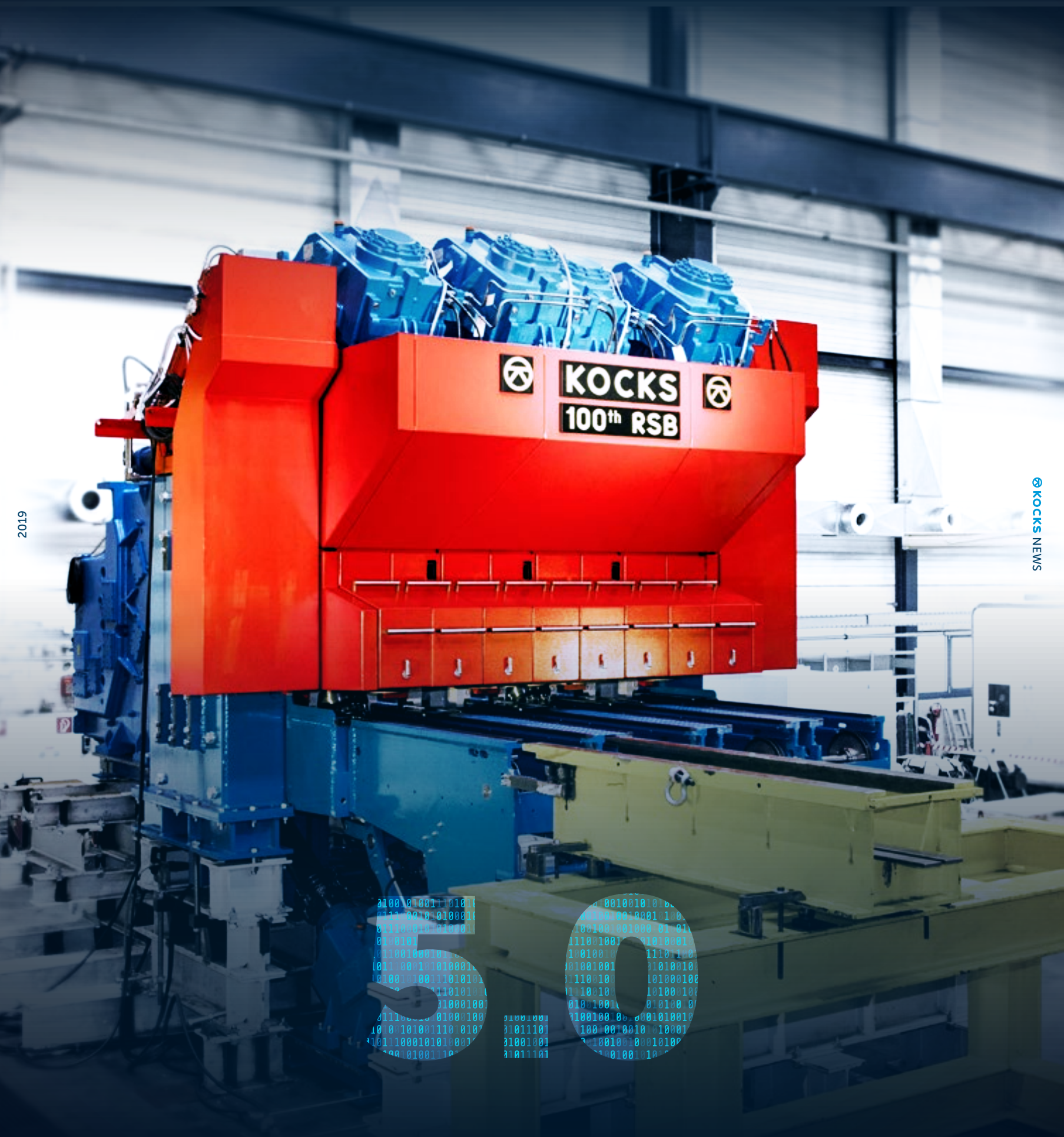


KOCKS is the
SPECIALIST with the
deepest knowledge of
simulation and design
for complete SBQ
rolling processes.

RELIABILITY

2019

KOCKS NEWS





⌘ KOCKS

*WE GO WITH
GREAT IDEAS*
**FAR BEYOND THE
EXISTING.**

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***FUTURE NEEDS
RELIABILITY.
WE AT KOCKS SAY:
FUTURE MEETS
RELIABILITY***



RSB® 5.0

© KOCKS NEWS

The 3-roll technology has proven to be the best deformation method for Special Bar Quality. It leads to strong reliability in quality, productivity and economic results. The core of the 3-roll technology was invented by KOCKS in the 1960s and is being perfected constantly.

That's the reason why KOCKS says:
WE MAKE YOUR PRODUCT GOLD.

2019 KOCKS can look back on more than 110 RSB® references all over the world.

KOCKS DELIVERS **100TH RSB[®]**

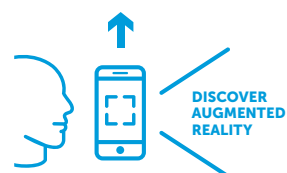


**THE KOCKS TEAM
CELEBRATES THE TEST ASSEMBLY
OF THE 100TH RSB[®] FOR YONGGANG**



For decades, KOCKS has been known in the steel industry as a supplier of proven, mature engineering and equipment, developed with ingenuity to meet the customer needs of tomorrow.

With Yonggang's decision to invest in the 5th generation of KOCKS Reducing & Sizing technology [RSB® 5.0], the barrier of 100 references was broken. With the investment in the KOCKS 3-roll technology, Yonggang aims to play an outstanding role among the leading SBQ producers in tomorrow's challenging world.

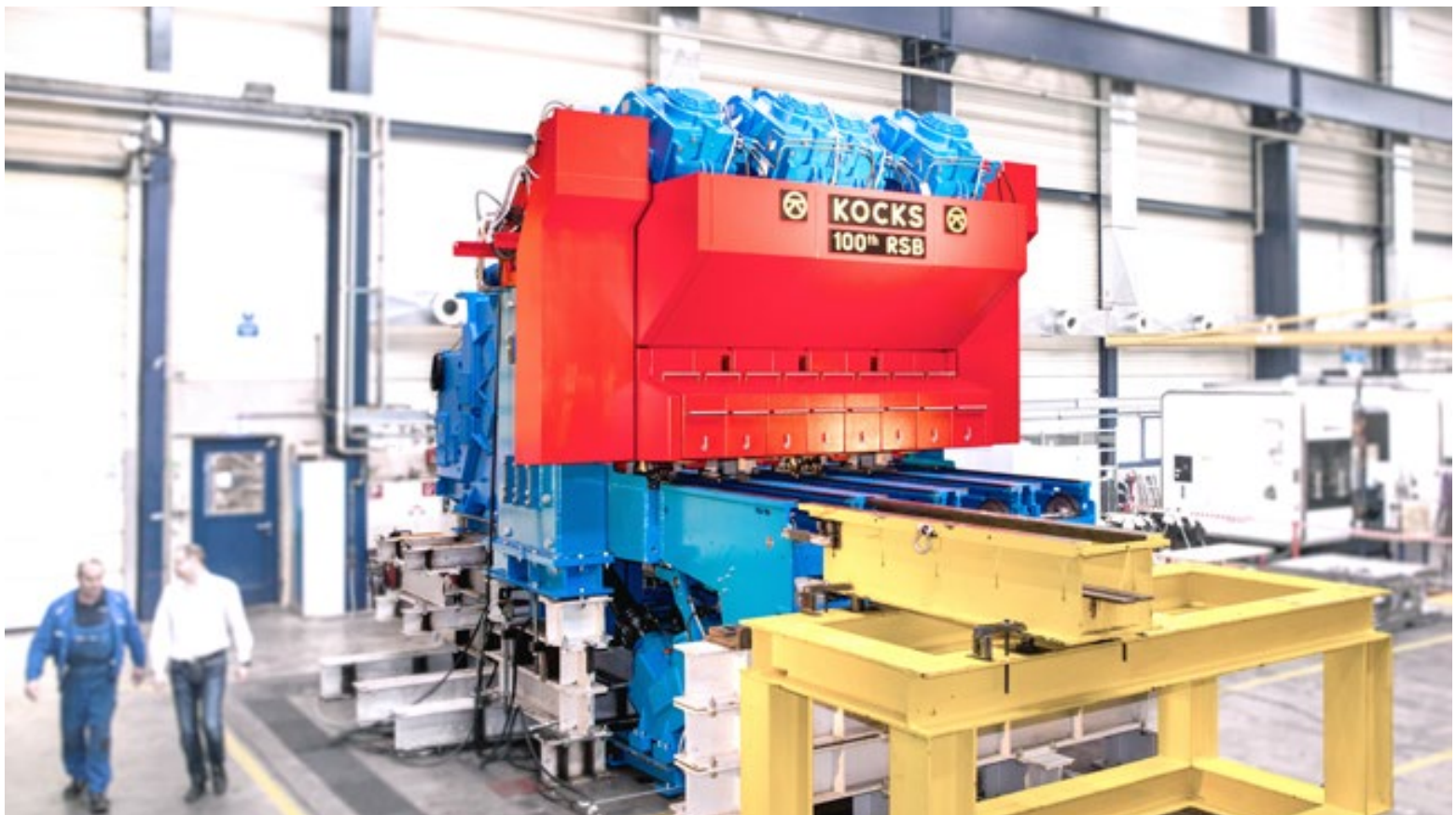
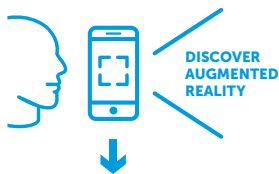


Looking into today's booming market it is not a big surprise that the 100th RSB® will be installed in China at Jiangsu Yonggang Group Co., Ltd.. Yonggang is a large-scale integrated iron and steel enterprise. The company employs 10,000 people with an annual capacity of 8 million tons.

The decision for KOCKS was driven solely by the excellent performance and reputation of the KOCKS Reducing and Sizing technology.

KOCKS is expanding its leading market position by providing the highest reliability in terms of investment security, customer satisfaction and quality.

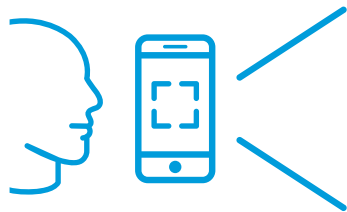
The ceremonial unveiling of the final engineered RSB® 5.0 took place in our workshop in Bremen. ■



THE DIGITAL TWIN

THE LITTLE AND BIG SMART RSB® 5.0

” Our ability to pre-design the entire rolling mill with a software tool, which can simulate the whole rolling process, represents an enormous benefit for our customers. A factor which makes a decisive difference in rolling results. Thanks to this focus on technology and customer service, we are setting benchmarks in innovation, in long-lasting quality and in proficiency-based services.“



DISCOVER THE WORLD OF KOCKS WITH AUGMENTED REALITY

- 1** Download the YONA app free of charge from your App Store.
- 2** Open the app and scan the images marked with the symbol above.
- 3** Have fun discovering our KOCKS world with augmented reality.





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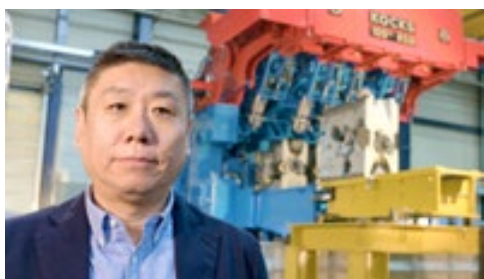
MAKE YOUR
PRODUCT GOLD

6XOCKS

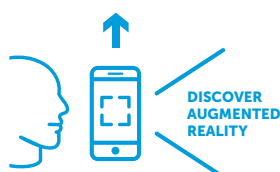
**»FOCUS MEANS
BEING A PROVEN
EXPERT AND STAYING
TARGETED ON QUALITY
& DEADLINES.«**

CASE STORIES & REFERENCES





Shi Tao
General Manager



LAIWU LARGE BAR PRODUCTION WITH EXCELLENT METALLURGICAL PROPERTIES

The State-owned Shandong Iron and Steel Group Co Ltd, located in Jinan, Shandong Province, was created out of the restructuring of Jinan Iron and Steel Group Co and Laiwu Steel Group Corp. and is ranked 12th biggest steel producer in the world with an annual production of nearly 22 million tons of steel.

LAIWU's medium section bar mill has implemented the KOCKS RSB® 500++/4, including size control system (SCS®), a 4D EAGLE® pro-file gauge and the design and closed-loop automation for the low temperature rolling process. With this implementation, LAIWU enters the expanding and demanding market for medium size SBQ products with excellent metallurgical properties.

The RSB® 500++/4 will be located in a brand new medium bar mill, consisting of 17 stand positions in horizontal/vertical arrangement and will produce SBQ products within a range of Ø 50 to 130 mm.

Owning the process responsibility, KOCKS designed six water boxes operating in combination with the KOCKS closed-loop LTR automation package for homogeneous cooling of the bar products within the complete finished size range.

The commissioning is scheduled for end of 2019. ■

MAANSHAN'S SBQ ROLLING MILL INCLUDES KOCKS RSB®, TMR, SCS® PLUS 1ST 4D EAGLE® IN CHINA

Maanshan Iron & Steel Co., Ltd. (Masteel) ranks among the 15 biggest steel producing companies in the world and follows its spirit of 'pioneering, innovation and creation'.

With the implementation of the KOCKS core technologies, Maanshan serves the market with varieties of high-quality straight bars for automotive, aerospace and mechanical engineering applications out of their brand new SBQ Rolling Mill.

Masteel successfully commissioned a KOCKS 3-roll RSB® 5.0 in October of 2018. The scope of supply was rounded off by the real-time closed-loop control system SCS®, the Thermo-Mechanical-Rolling (TMR) process including automation as well as the first light section profile measurement gauge 4D EAGLE® installed in the Chinese market. ■

JIYUAN SELECTS KOCKS – 25TH KOCKS BLOCK SUPPLIED TO CHINA

Henan Jiyuan Iron & Steel Co. Ltd. is a notable producer of Specialty Steels located in China.

Thanks to the successful installation and operation of a KOCKS RSB® 370/4 in 2008, Jiyuan I&S recently decided to install a RSB® 5.0 of the newest generation for its new SBQ mill. The commissioning of the RSB® 300++/4 is scheduled for the 2nd quarter of 2020.

Special feature of this order: **It is the 25th KOCKS block in China.** ■

1 Modern production flow of 3-roll stands in the KOCKS workshop in Bremen.

2 3-roll RSB® 370/4 in 5.0 design and 4D EAGLE® operating at Maanshan I & S, China



CHARTER STEEL'S CHOICE 4TH INVESTMENT IN KOCKS TECHNOLOGY

Charter Steel, Ohio is a renowned American supplier of special bar quality steel (SBQ) products to customers around the world.

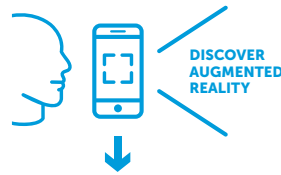
Charter Steel is in process of commissioning a new Special Bar Quality (SBQ) straight bar rolling mill adjacent to its existing coil mill and steelmaking operations in Cleveland/USA.

The highly automated rolling mill features KOCKS sizing technology – including the KOCKS 4D EAGLE® profile gauges that provide feedback to the KOCKS SCS® (Size Control System). Thanks to this combination, Charter Steel will benefit from real-time optimization of rolling conditions and best product tolerances.

” *We have utilized KOCKS sizing technology with great success and satisfaction in our rolling facilities in both Ohio and Wisconsin since 2002. Our decision to utilize their leading edge equipment again for this expansion was once again based on a superior and unique approach that will help Charter Steel continue to differentiate itself in the market with higher levels of both product quality and manufacturing flexibility.*

Tim Lorge | President, Charter Steel

Charter Steel operates in total four Kocks blocks in three different sizes. ■



POSCO CONTINUES TRUST IN KOCKS INCREASED AUTO- MATION DEGREE RESULTS IN MORE PROFITABILITY

POSCO, the first integrated steel mill in Korea, is one of the most competitive steel makers in the world. As a world supplier, POSCO currently conducts business in over 50 countries around the world.

The KOCKS 5.0 designed RSB® will replace the existing KOCKS Finishing block in POSCO's bar mill, which was installed in 1995. An integrated Size Control System (SCS®) will allow real time adjustments of the operating parameters of the rolling block. The light section measuring gauge 4D EAGLE® also is included in the scope of supply. By an increased automation degree of the rolling mill POSCO will benefit from higher process monitoring capabilities and faster adjustments. As a result: increased productivity and profitability! ■



AUTONOMOUS ROLLING THE GREATEST DREAM OF A ROLLING MILL MANAGER





” On behalf of our entire team I would like to express my deepest respect and appreciation for the great work of KOCKS! We never could have reached our goals without your intelligence and great support!

YuSheng Wei | Director,
Walsin Lihwa Corp., Taiwan



WALSIN LIHWA'S TAILORMADE BLOCK STRONG VISION WITH WIDER RANGE OF STEEL GRADES

Since the foundation in 1966 in Taiwan, Walsin Lihwa, has become a leading manufacturer of specialty steel and copper in the Greater China region.

A main strategic goal of Walsin Lihwa was to increase their product portfolio with additional material grades, like ferritic stainless steel. The challenge was to integrate a pure reduction block downstream of an existing High Reduction Mill (HRM) in an area with very little available space. Walsin's aim was to add a smooth deformation process to produce perfect surface quality and the best possible mechanical properties. The engineers of KOCKS gave a reliable technological answer with its tailor-made 3-roll 500 heavy duty (++) block which has been a great success from the very first bar.

Even with a high degree of customization, KOCKS confirmed all credit to its reputation for reliability in terms of delivery on time, on target and on budget. KOCKS realized in this project full productivity only one day after the start of the commissioning period. Moreover, Walsin Lihwa achieved significant production increases. Based on this success, Walsin selected the KOCKS 3-roll technology (RSB® 370++/4 in 5.0 design) as a key process in their brand new SBQ rolling mill installed at Walsin Yantai, China. ■

SIDENOR STRENGTHENS ITS COMPETITIVE- NESS BY HIGH ADDED-VALUE PRODUCTS

Sidenor Aceros Especiales S.L.

(Sidenor) is the biggest special steel producer in Spain and one of the largest in Europe for special steel long products and of forged and cast pieces. Sidenor has one of the largest R & D centres in the steel industry in Europe.

Without a doubt, the new KOCKS RSB® is one of the highlights of the modernization project. The RSB® 435++/5 is based on the newest 5.0 generation and includes all of the most modern features available: Remote control (RC), Size Control System (SCS®), the 4D EAGLE® as well as a quick stand changing system and a quick roll changing concept. It is also covering Sidenor's complete size range from 20 mm to 120 mm diameter. The project execution will be completed until end of 2020.

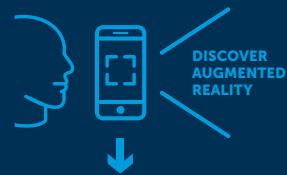
While similar 435++ RSB®s have been installed in recent years in countries with a strong automotive industry such as Japan and the US, the new KOCKS 3-roll block is the first of its kind in Europe.

Clearly, an RSB® with this size range opens up great possibilities not only in Europe. ■

STRATEGIC INVESTMENT

KOCKS DELIVERS **HIGHEST ROI** *AND LONG-TERM* **INVESTMENT** **SECURITY**

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Rötger Teyke
Managing Director
Commercial

An investment decision for a KOCKS block brings the highest ratio of profit to total investment costs.

With a KOCKS investment, steel producers will realize the best long-term investment security: A customer who makes a strategic investment decision for KOCKS will secure his competitive leadership for the lifetime of the KOCKS equipment.

Our vision „**Know-how for tomorrow**“ underlines this claim.



1

KOCKS equipment, which we deliver today, includes all relevant features for long-term sustainable competitiveness.

Typically KOCKS 3-roll technology blocks have been successfully operating for more than 25 years and still (!) surpass today's market requirements. Thus, an investment in KOCKS is an intergenerational long-term investment.



2

With KOCKS our customers will realize the highest ROI. It is not the investment price which determines ROI in the long term. KOCKS customers will maximize their ROI in the long run by:

+
A more valuable product mix with a **higher average selling price**.



price

+
A reliable, best in class process leading to the highest mill availability and utilization in combination with the **lowest operating costs**.



costs

+
The **shortest ramp up curves** leading to immediate production and immediate profit after start up.



+
Investment projects that are – in the KOCKS world – always **realized on target, on budget and on time**.

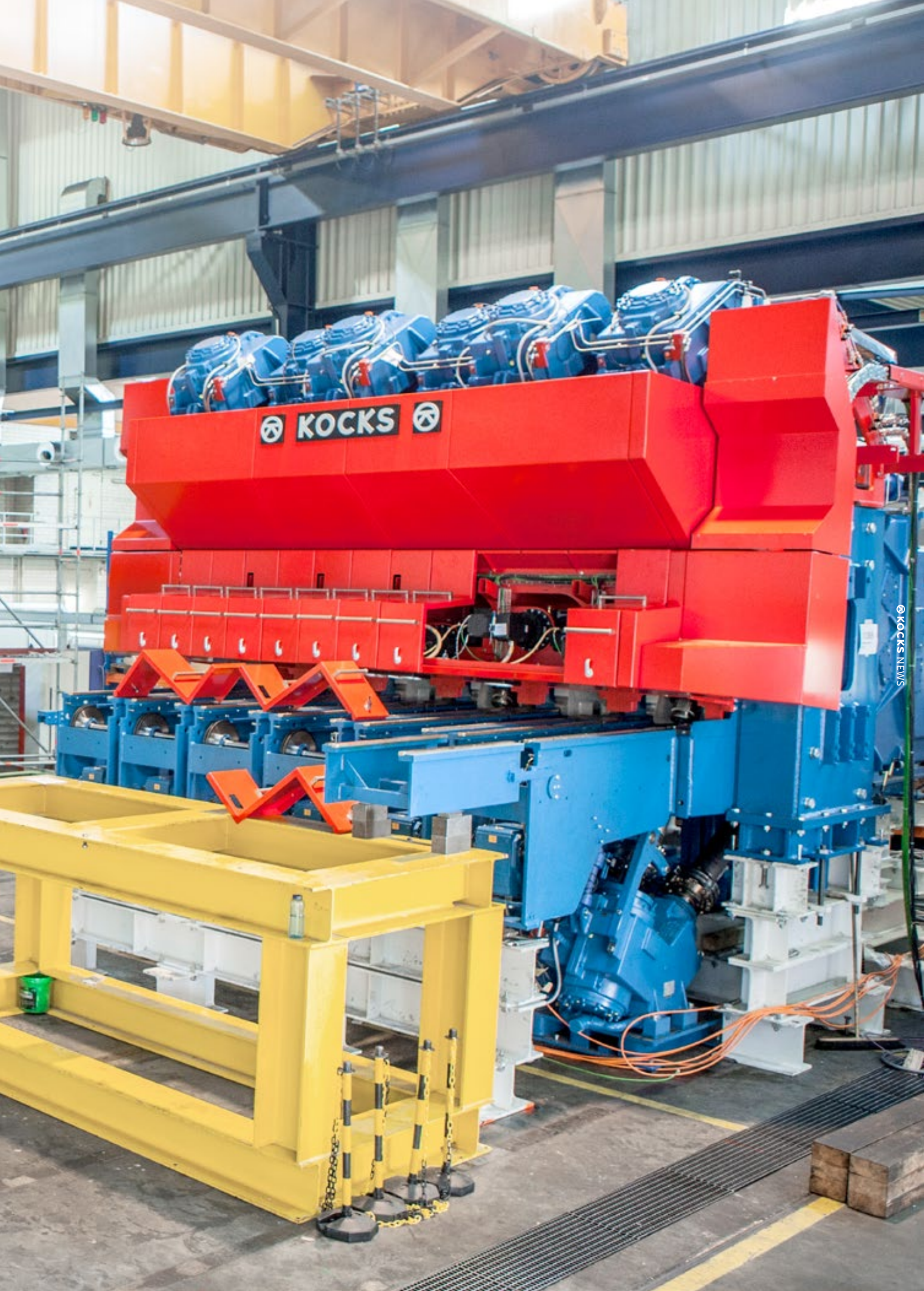


AUTOMATION

DIGITALIZATION AT KOCKS EMPHASIZES FUTURE RELIABILITY

We at KOCKS are strongly investing in ongoing digitalization of our sizing mills. Stand and guide management, preventive and predictive maintenance supervision are fundamentally simplified. Thanks to digital tracking and analysis, KOCKS can further optimize production parameters of its proven, mature equipment.

Customers will benefit from our reliable process transparency 4.0 resulting in the best tolerances and highest efficiency. 'Be ingenious' is a strong value in our KOCKS world and stands for meeting the customer needs of tomorrow. ■



INDUSTRY 4.0 *OPENS UP* NEW POSSIBILITIES

WORKFLOW ASSISTANCE WILL SUPPORT OPERATORS IN FUTURE

For more than 20 years KOCKS is constantly further developing and adapting the software for operating the Sizing Blocks in order to simplify the operation and pre-preparation of 3-roll stands and 3-roller guides. Software programs such as the TUMICON Mill Manager for stretch reducing blocks (SRB®) and the BAMICON Mill Manager for Reducing & Sizing Blocks (RSB®) are used as calculation and management tool for product, calibration and roll data for the KOCKS blocks.

In the sense of Industry 4.0 the well proven software tools also have to undergo a critical review to adapt to today's customer's requirements and further optimize / combine experience with state-of-the-art philosophies of function and operation.

The result could be less effort in production planning and preparation, which has a direct positive influence on the return on investment. This will make the required working time of users much more efficient.

Currently we at KOCKS are reviewing the current software based on a holistic approach: A workflow-oriented assistance system takes over the tasks of today's software applications and also covers all work preparation steps around the Sizing Blocks.

Further modular software components that can be combined and will cover process simulation, maintenance assistance and data acquisition.

The impressive simplicity of operation will make operators' work in production planning much more efficient. In addition, the quality is increased by reproducible workflows.

In short: potential sources of error are reduced by smart software upgrades. New product generations will stand for simplicity, logic and time savings in workflows:





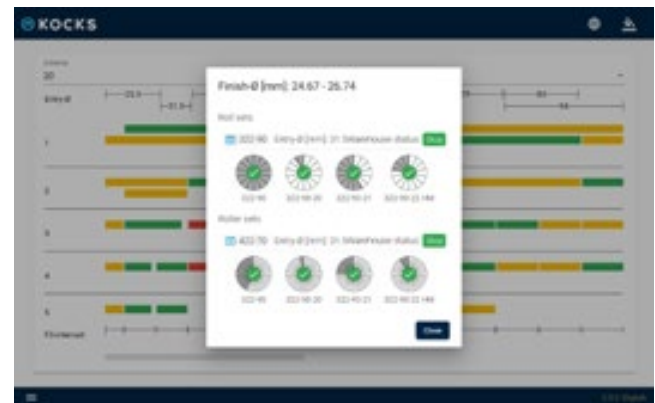
The future systems will carry out the technological calculation and planning of the work steps for the preparation of the KOCKS Sizing blocks automatically. Of course a well-arranged graphic display is required, where the workshop manager can see workload for the current production preparation as well as bottlenecks in tool availability with just a few clicks.

We at KOCKS are taking the Industry 4.0 approach very seriously and we are currently working in close cooperation with our customers on the next software generation – coming soon!

Smart designed interfaces, automatic production parameter calculation and automatic tool selection can make processes easy to handle with just a few clicks on touch panels – and, if required, with optional assistant function: Perfect for all operators from trainee to expert.

Work steps are divided into individual tasks with the aid of a workflow-based assistance system and made available as terminals close to the respective workstation – e.g. in the workshop, on the rolling line or in planning offices.

A fundamental advantage in the digital world is platform independence. Thus new software generations need to be based on browser applications which also support touch panels in the production area, almost all current PCs, tablets or smartphones can be used for operation. ■



BIG DATA IN OUR KOCKS WORLD

CORRELATION LEADS TO OPTIMIZATION

In times of Big Data, causal relationships are less important than the detection of correlation for an efficient control of processes. Thanks to our vision 'Know-how for tomorrow', data evaluation, transparency and real-time capability play an increasingly important role in our KOCKS technology.

This is the vision path on which KOCKS is walking: SCS® in combination with the 4D EAGLE® and 4D PANTHER® – these are current KOCKS answers for autonomous rolling. ■

WORKSHOP 4.0

KOCKS launched its Strategy KM2020 ('KOCKS Manufacturing 2020') already in 2014. By this foresighted strategic decision to integrate Industry 4.0 into our manufacturing processes as quickly as possible, we stay competitive and strengthen our trust in German manufacturing.

By using these potentials of Industry 4.0 applications, we at KOCKS deliver our core components along with our quality philosophy "Made in Germany". Industry 4.0 means higher efficiency, shortened product cycles, accelerated innovation capability and expanded product portfolios.

KOCKS WORKSHOP AS A TECHNOLOGICALLY ADVANCED SHOWCASE

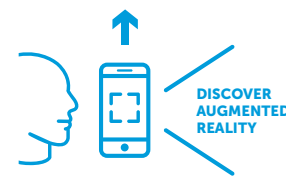


MADE BY KOCKS

STANDS FOR CUTTING-EDGE TECHNOLOGY AND FOCUS ON GERMAN QUALITY.

In our own KOCKS workshop at Bremen in Northern Germany, we continue to constantly invest in technologically advanced manufacturing. In our latest modernization, it was our decision to take the path of value-added integration of digitalization in reliable processes.

This major boost by digitalized advanced technology 4.0 was driven by our strong KOCKS belief in reliability in operation and processes as well as our ingenious thinking beyond what already exists. Our Industry 4.0 strategy KM2020 is helping us to cultivate relationships with our customers: We deliver better products, faster and more efficiently, with a strong price-performance ratio and a highly competitive product for our customers. Furthermore KOCKS customers also can rely on our highly-trained and motivated staff with best results for his KOCKS block.



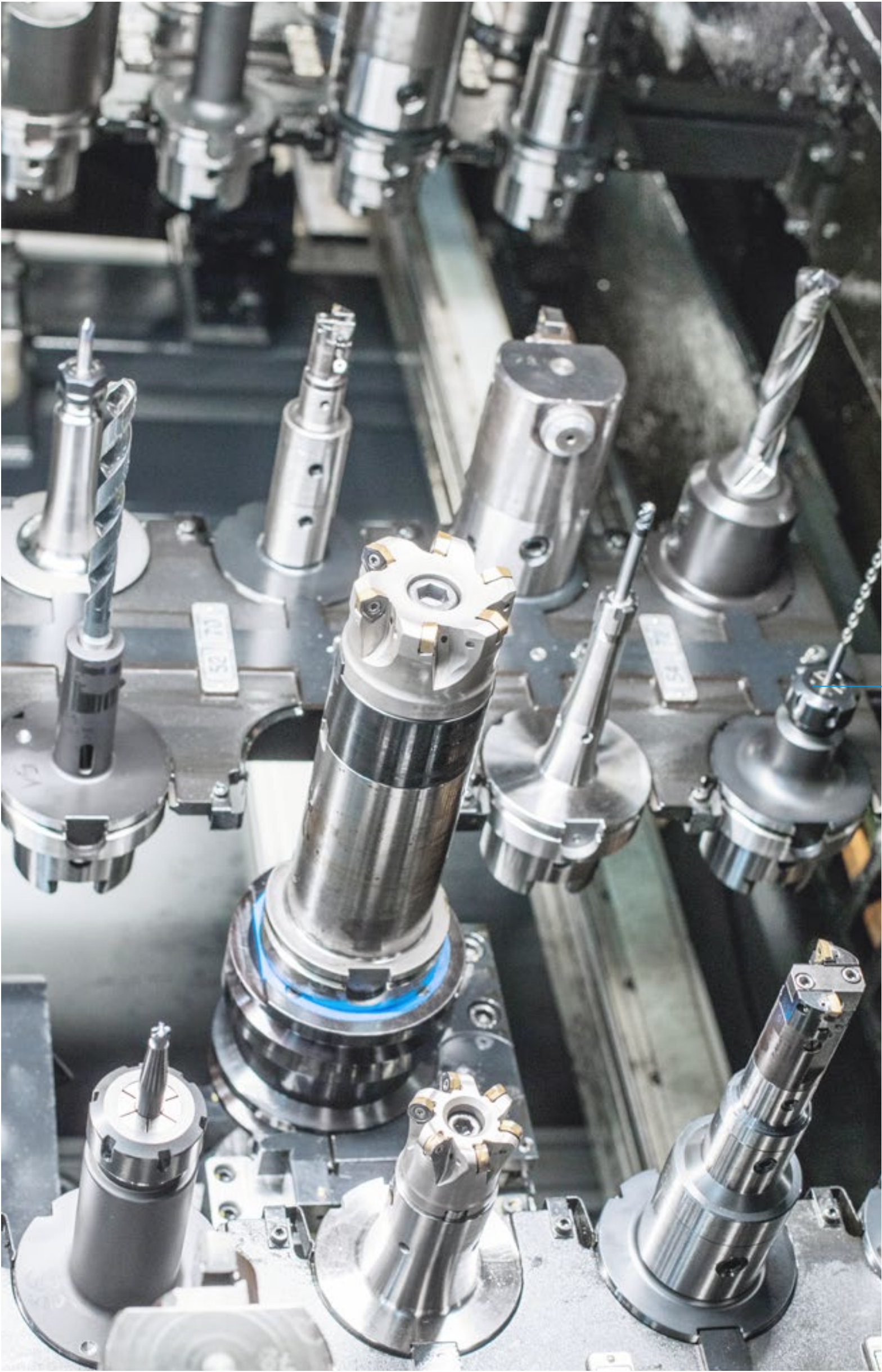
The benefit of reliability makes us believe in 100% German engineering and the manufacturing of the core components of our KOCKS blocks in our own workshop in Bremen.

KOCKS reliability comes from decades of experience and a special KOCKS 'open mind' attitude of the people who work for us all over the world. So our workers at the machines in Bremen are open to the topic Industry 4.0 and have found a strong access to the KOCKS workshop 4.0 upgrade.

KOCKS Manufacturing 2020 is one of the central pillars of our strategy for future success: To upshift more efficient processes well-founded in an attitude of reliability and long-lasting experience. ■



The turning and milling center, Mazak Integrex 1060, uses up to 250 tools





Ingenious thinking
beyond what already
exists is a strong part
of our KOCKS spirit.

»MAKING THINGS EVEN BETTER«



»BEING MINDFUL TOWARDS THE CUSTOMER«





At KOCKS we encounter an appreciably different culture of candor and honest reliability, as well as a great power of endurance.





All KOCKS employees focus their personal energy on our customers and their specific processing and quality needs. This is the way that we are creating tailor-made solutions for our customers.





**»WE KEEP
OUR PROMISES«**

KNOW-HOW FOR TOMORROW

»*IT'S OUR VISION
TO GO WITH GREAT
IDEAS FAR BEYOND
THE EXISTING IN
ORDER TO CREATE
A MORE RELIABLE
AND A MORE HONEST
WORLD OF STEEL
OF TOMORROW.*«

A strong KOCKS-vision, honest KOCKS-values and a consistent KOCKS-quality strategy make us a reliable partner for our worldwide customers.

#INGENIOUS

Engineering as a way of making things even better: Reliability pushed forward by Industry 4.0. This is the reason why our customers say: "KOCKS is an intergenerational long-term investment".

#UNIQUE

It's more than proven technology that makes us unique: We keep our promises! Customers can count on realizing their investment projects on target, on time and on budget.

#FOCUSED

Focus means being mindful of the customer and creating tailor-made solutions. We are proud of our customers' strong references and their belief that: "This is where we make the quality".



4D PANTHER®

A bald eagle is shown in flight, its wings spread wide, against a dark blue background with a subtle grid pattern. The eagle's head is white, its beak is yellow, and its body is dark. The text "MASTERS OF ULTIMATE PERFECTION & PERFECT VISION" is overlaid in white, bold, sans-serif font.

MASTERS OF ULTIMATE PERFECTION & PERFECT VISION

© KOCKS NEWS

4D EAGLE®

MASTER OF ULTIMATE PERFECTION

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4D PANTHER®





The panther is a power animal and has sharp senses. Panthers are masters of perfection: They can estimate distances well and see at night, they also have sharp ears and a particularly strong sense of smell. With its black fur, a panther moves safely in the darkest night and finds its way safely to its destination. Because a panther can run at high speed, it holds the qualities of quick and decisive action.

IMAGINE YOU HAVE EXTRAORDINARY...

... **surface inspection** that reduces surface defects as a huge cost factor on SBQ bar, wire rod and seamless tubes: KOCKS created the 4D PANTHER®, a laser light sectioning technology that goes far beyond existing systems in order to meet the expectations of the steel producers of tomorrow.

The superiority of this technology is the unrestricted reliability which is based on:

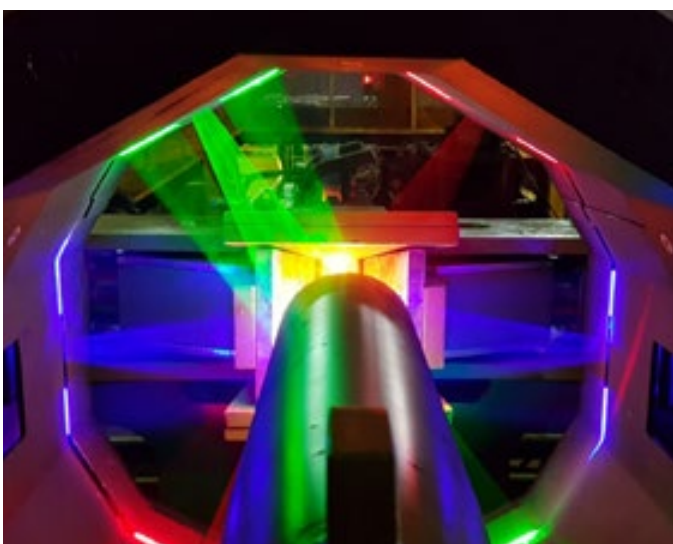
- + An **inline hot surface inspection** for hot rolled bar, wire rod and seamless tube (round profiles),
- + A **complete 3D-reconstruction** of the rolled surface. The software is thus able to safely detect even the smallest surface defects.
- + A **100 percent inspection** with zero false positive rate. Means: there are no false positives that create doubt in the mind of the operator.

In many rolling mills, surface defects can be found in average on 3 percent of the total production. In a plant with an annual production of 600,000 tpy this amounts to a loss of approximately 1.8 Mio EUR or more. This results in additional machining costs and reduced yield.

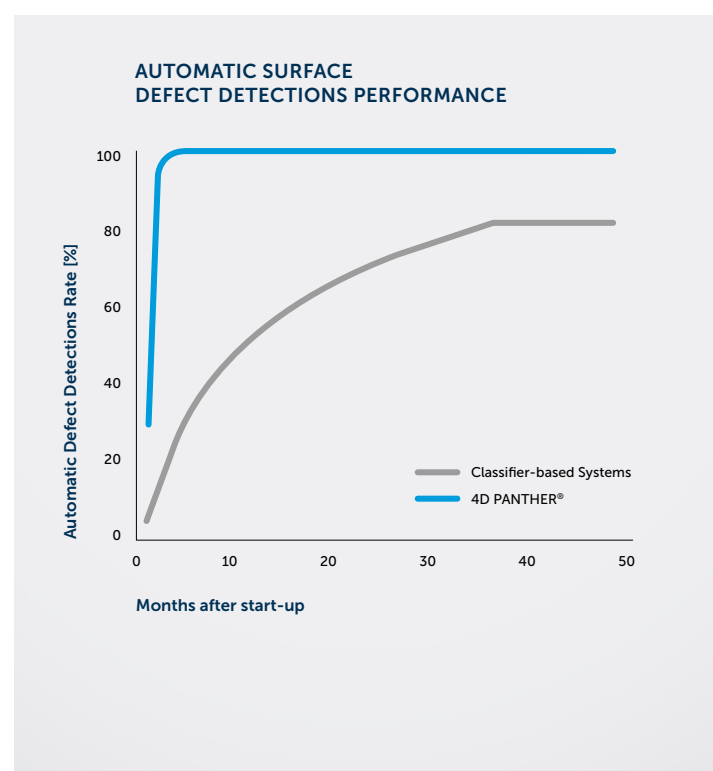
Thanks to the technological abilities, the 4D PANTHER® is able to identify a problem and allow correction of the rolling conditions. Customers benefit from avoiding returns as a cost, time and dissatisfaction factor. ■

4D PANTHER® LEARNING CURVE

In the following graph, the learning curve of the 4D PANTHER® is shown. Compared to classifier-based systems it allows an immediate ramp-up of the surface detection system. So no time or capacity is wasted with training the system. The 4D PANTHER® immediately gets the work done.



4D PANTHER® based on laser light sectioning technology





4D PANTHER® | Main Features

- ⊕ Full 3D reconstruction of the rolled surface
- ⊕ 100% surface inspection with zero false positive rate
- ⊕ Scanning with up to 50.000 Hz
- ⊕ 4D PANTHER® detects surface defects without training
- ⊕ Automatic alarm when surface "events" exceed dimensions defined by the operator

4D PANTHER® | Main Benefits

- ⊕ 100% surface quality inspection to avoid end customer quality claims
- ⊕ Continuous process improvement through deeper understanding of the relationship between pre-material quality and rolling mill practice
- ⊕ Faster "lessons-learned" (real time data)
- ⊕ Higher yield and profitability
- ⊕ Increased satisfaction of end customer

The 'eagle eye' epitomizes superlative vision. Birds of prey have the best eyesight evolution has been able to achieve. The temporal resolution of an eagle's eye is far superior to that of the human eye:

The human eye constructs movement out of a series of only 25 'stills' a second, whereas the eye of a bird of prey sees around 150 images a second.



MASTER OF **PERFECT VISION**



4D EAGLE®

THE SUPERIOR PROFILE MEASUREMENT SYSTEM



The 4D EAGLE® meets the stringent requirements of modern rolling mills for highest measuring accuracy and frequency.

In recent years, as well as being a leading manufacturer of tube, wire rod and bar rolling mills, KOCKS has become a provider of integrated automation and software solutions for long product rolling mills. With this the need for the development of a trendsetting measuring gauge as a perfect complement to the Size Control System (SCS®), and in addition as a stand-alone device for long product production was identified.

In AUTOMATION W + R, experts in surface inspection and measuring technology, KOCKS found an excellent partner to jointly develop a high resolution measuring gauge based on the laser triangulation light section measuring principle.

The 4D EAGLE® integrates the newest technologies and meets the high requirements of modern rolling mills for highest measuring accuracy and frequency. In this sense, the 4D EAGLE® is suitable behind the KOCKS RSB® or it can be applied stand-alone as a quality ensuring device in the long product mill. Applications can be round bars, wire rods, hexagons, flat, square, tubes and other long products. The monitoring and the subsequent display of the complete surface of the bar allows the detection of dimensional variations of the rolled product. ■

4D EAGLE® | Special Features

- + Provision of accurate guiding concept with remote-controlled height adjustment and water strippers
- + electronic cabinet integrated
- + Measuring cell is fully sealed and resistant against scale, water and dust
- + Stainless steel housing to ensure reliable long-term operation
- + No process water consumption, cooling concept with closed-loop water circulation
- + System software allows statistical evaluations, calculation of cold-values, process capability and data archiving functions, and optional integration of length and temperature measurement

HIGH-PERFORMANCE GAUGES *FOR* HIGH QUALITY PRODUCTS *AT VALBRUNA*



KOCKS is the key supplier for rolling mill technology in the field of quality steel and set the goal to promote the development of new products, like the KOCKS gauges, with creativity and innovation.

As a leader in the production of special steel and alloys, Acciaierie Valbruna from Bolzano, Italy, requires the highest standards concerning tolerances and surface quality. With the installation of two 4D EAGLE® profile gauges and a 4D PANTHER® surface inspection system, Valbruna is able to have information about the tolerances due to the full body profile measurement and also a 100% inspected surface of the material.

The leading steel producer, Acciaierie Valbruna, is a private Italian company and is focused on round and hexagonal bars, bar-in-coils and wire rods which are utilized in varied industrial sectors such as food and pharmaceutical, aerospace, automotive, chemical and petrochemical industries, construction, energy, medical, and many others.

With the installation of two KOCKS 4D EAGLE® profile gauges – operating with the light section principle – Valbruna now receives complete bar profile information. Due to the high thermal stability of the measuring cell a reliable profile measurement is given even under extremely unsteady operating conditions.

Because of the high value products that Valbruna offers to the market, either treated further inline or sold under as-rolled conditions, they decided in July 2017 to award KOCKS the contract for the supply of a 4D PANTHER® surface inspection system, which provides the capability of a 100% inline detection of surface defects with zero false positive rate.

In addition, it offers an excellent basis for the development of a greater knowledge about impacts on quality originated from steelmaking and rolling mill practice. Thus, a successful working pattern can be learned and applied.

Through the deliberate concept of data processing and its visualization on the HMI the operators were quickly familiar with the data provided as well as their interpretation. Especially the surface inspection system, operating and analysing in real time, informs the operator immediately in case of a detected defect so that they are able to react quickly.

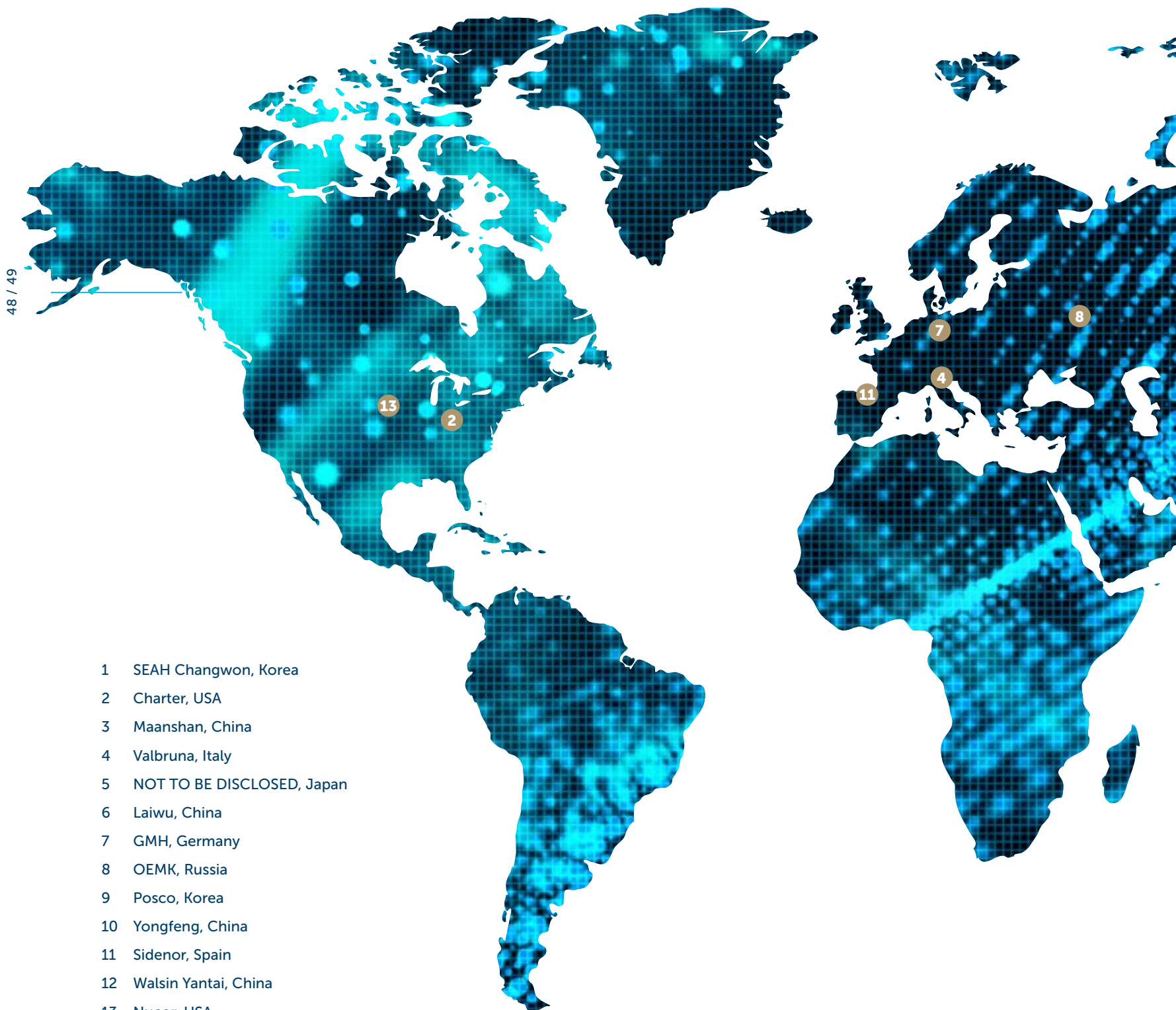
All data is stored in a database, which afterwards allows an offline analysis of historical data by means of the reconstructed surface. All inspection results are referenced by length along the as-rolled product to allow an easy review of points of interest.

Any defect issues or patterns can be assigned to upstream equipment if applicable. The visualization and the user interface respectively consist of

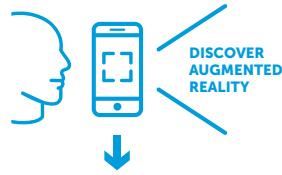
- + a LIVE VIEW to visualize the actual bar with markers for detected defects,
- + an ARCHIVE VIEW with different tabs to visualize the data base entries and results of the defect detection,
- + and a DEFECT VIEW to visualize the detected defect on a reconstructed surface.

The outstanding features of the KOCKS gauges will help Valbruna to efficiently improve the product quality and to ensure the company's commercial success. ■

4D EAGLE® *CASES & REFERENCES*



- 1 SEAH Changwon, Korea
- 2 Charter, USA
- 3 Maanshan, China
- 4 Valbruna, Italy
- 5 NOT TO BE DISCLOSED, Japan
- 6 Laiwu, China
- 7 GMH, Germany
- 8 OEMK, Russia
- 9 Posco, Korea
- 10 Yongfeng, China
- 11 Sidenor, Spain
- 12 Walsin Yantai, China
- 13 Nucor, USA



Günther Schnell
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MAANSHAN – FIRST EAGLE LANDS IN CHINA

Maanshan Iron & Steel Co., Ltd. ranks among the 15 biggest steel producing companies in the world and follows consequently its spirit of 'pioneering, innovation and creation'.

Masteel has successfully commissioned the light section measurement gauge 4D EAGLE®. The scope of supply included additionally the RSB® 370++/4 with SCS® (Size Control System) and TMR (Thermo-Mechanical-Rolling). **A KOCKS-Megastreet!**

The KOCKS 4D EAGLE® allows super precise measurements. With this technology the highest customer demands can always be satisfied, while even further increasing process transparency. ■

KOCKS 4D EAGLE® SUCCESSFULLY COMMISSIONED AT GMH

Georgsmarienhütte [GMH] GmbH, Germany is one of Europe's leading providers of steel bars, crude steel and bright steel. GMH-products are made using quality and high-grade structural steel, which they achieve on the basis of their high-tech production technology.

GMH has successfully commissioned the KOCKS 4D EAGLE® laser sectioning measurement gauge at the exit of an existing KOCKS RSB® 370/6.

By this technology GMH increases its reliability and consistency of the hot bar profile measurement under ever-changing production conditions. Process transparency is strongly improved: Rolling defects and form deviations are auto-detected. The quality of the finished product is super precise. ■



IMPRINT

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**INGENUITY AND
ASTUTE THINKING AHEAD –
BEYOND WHAT ALREADY EXISTS
– IS A STRONG PART OF
OUR FUTURE-ORIENTED
KOCKS SPIRIT.**






WE BELIEVE **IN GERMAN ENGINEERING**

Our core equipment must withstand extraordinary forces to work with extreme precision: KOCKS 3-roll technology determines the quality of the hot-rolled SBQ bars and tubes.



AND GERMAN MANUFACTURING STANDARDS.



Our customers can
rely on absolutely
reliable processes,
technically
forward-looking
performance
features and a
competitive end
product.

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