

HICON®

EBNER Journal for Progress in Industrial Furnace Technology.



YEARS OF **EBNER** IN MOTION



EBNER.

Ladies and Gentlemen,
Esteemed readers of the
HICON® Journal,
Dear friends and colleagues.

As we move proudly and purposefully towards a point in our future lives, we must never forget that we are leaving the *now* at the same speed. For 70 years, products that have been heat treated in **EBNER** industrial furnaces have determined our constantly growing expectations in terms of quality and innovation. Whether in the automotive, aerospace, rail transport, or ship-building industry, the use of materials heat treated by **EBNER** equipment has ensured constant improvement to products.

If change is the only constant in our lives, then movement is a constant of progress. In this regard, I would like to use this year's 70th anniversary of our company as an opportunity to invite our customers throughout the world to visit us here in Linz, and so offer them a stage upon which the future and the past meet.

Under the motto "70 years of **EBNER** in motion", a mutual exchange of ideas and visions will take place from September 11 - 13, 2018, accompanied by a series of high-caliber international speakers and presentations. Our theme will be the future challenges to be faced by manufacturers in the steel, aluminum and copper base metal industries.

The focus will be on the topic of mobility throughout the entire value-added chain, taking into consideration a variety of issues like digitalization, sharing models and virtual reality.

The greatest goal of this event is, however, to help us supply our customers better, faster and more efficiently



with innovative and high-quality facilities, facilities that keep them ahead of the competition and help them meet the demands of future markets.

Seventy years of innovative thought and action are behind us, but **EBNER**'s success story will continue to be written by people of innovative spirit and vision, paired with the long-term trust of our customers in state-of-the-art **EBNER** technology and **EBNER** quality.

I am eagerly looking forward to illuminating, trendsetting and thought-provoking discussions with each of you at our 70 year celebration.

Until then, I wish you all the best and continued success.

Yours sincerely,

Robert Ebner

P.S.: At **EBNER**, we are in constant movement and we constantly strive for progress. For this reason I am proud to be able to present a global first at the Wire Düsseldorf trade fair (April 16 - April 20, 2018).

We have developed a revolutionary improvement to the charging process for wire coils, which can increase the efficiency of bell annealer facilities for wire by over 7 %!

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25 years young

Expansion and modernization at MUBEA.



KARL WOHLFART

EBNER news
from Germany

For over 25 years, Muhr und Bender (MUBEA) has been operating an EBNER HICON/H₂® bell annealer facility to heat treat steel strip in Attendorn, Germany. Expanding this facility by adding a workbase and a heating bell was combined with a modernization of the old facility.

In a nutshell, heating up and cooling down have always been the two steps required for the heat treatment of steel strip. However, the details have changed considerably over the past 25 years.

Consumption is lower, throughputs are higher, processes have been optimized and, of course, procedures have become increasingly automated and digitalized. As the global technology leader, EBNER has pushed many of these innovations forward. When MUBEA began planning for the expansion of its older but still fully-functional facility, it was clear that the interaction between different generations of tech-

nology would be a key issue. If you have ever tried to connect an old printer to a new computer, you understand the issue!

EQUIPMENT AND UPGRADES

In its final form, the order comprised not only new equipment, but also an upgrade to the facility's process control technology conforming to both the newest safety standards and the current EC machinery directive.

THE FOLLOWING MEASURES WERE PLANNED

- » Replacement of S5 control technology with S7
- » Additional automation of process sequences
- » Retrofitting of automatic utility couplings for all flammable utilities
- » Optimization of purging systems with improved supervision technology
- » Controlled process atmosphere supply to reduce atmosphere consumption





After 25 years of service



Brand new

In addition to the above, a new **VISUALFURNACES®6** Process Control System (PCS) was installed to control the entire facility. To optimize heat treatment, a variety of software modules are offered for VF6.

MODULES INSTALLED AT MUBEA

- » TreatPerfect
- » WebPerfect
- » OperatePerfect

INSTALLATION WITHOUT STOPPING PRODUCTION

Although installation and commissioning had to be completed without shutting down the old facility, the new systems went into operation on schedule. This required a great deal of planning before installation began, and could only be achieved through close cooperation between **EBNER** and the customer.

With successful completion of the upgrade, the customer will have a modern **HICON/H₂** bell annealer facility available for many years to come.



FUTURE COOPERATION

EBNER has also received an order to expand the TRB (tailor rolled blanks) **HICON/H₂** bell annealer facility at MUBEA's works in Kentucky, USA, by four additional workbases. This facility will start production in February, 2019.

www.mubea.com

TREATperfect®

Variable heating, cooling and purge times suitable for the material to be processed are calculated automatically, supervised during operation and corrected if needed.

WEBperfect®

The ideal add-on to enable current production data to be viewed from a customer's PC. A tabular overview of workbases with process data, the display of currently-outstanding alarms and access to archived data provide rapid assessment of the status of the facility.

OPERATEperfect®

Based on the standardized OEE (Overall Equipment Effectiveness) reference data system, downtimes are systematically recorded, assessed and used for calculating facility efficiency.





Cooling bell

High-quality high-tensile bolts

For a greenfield project, Russia's ZVK Bavel chose the market leader in heat treatment facilities.



REINHARD LEITHNER

EBNER news
from Russia

In 2012 Bavel, a manufacturer of bolts and fasteners, decided to build a new plant to produce high-tensile fasteners in Ryazan, Russia - about 180 km (112 mi) southeast of Moscow. In order to ensure the quality of the end product, only top manufacturers like EBNER were selected to supply the production facilities.

In 2012, a brand-new plant was built in Ryazan, Russia to manufacture high-tensile fasteners from hot-rolled wire. Quality heat treatment of the material is key: the most exact temperature tolerances must be maintained to ensure that the nuts, bolts and other fasteners can fulfill their intended role in structural steelwork and high-rise construction.



Heating bell



A quality product thanks to EBNER heat treatment

MARKET LEADERSHIP MEANS TRUST

When looking for suppliers for their production facilities, Bavel insisted on only working with market leaders and companies with top reputations. For this reason an order was placed with EBNER to supply a gas-fired HICON/H₂® bell annealer facility to heat treat steel wire.

The facility comprises two workbases, one heating bell, one cooling bell and supplemental equipment. Efficiency and facility automation are supported by the VISUALFURNACES®6 process control system.

RECORD-SIZE FACILITY

The HICON/H₂® bell annealer facility has a clear inside diameter of 4.4 m (14'5") and a clear inside height of 4 m (13'1"), making it by far the largest bell annealer for steel wire ever installed in Russia. This resulted in a particular challenge when shipping the facility components to Russia, which was organized by Bavel.

Installation and commissioning of the facility went smoothly. Since the end of 2015, the facility has been operating to the fullest satisfaction of the customer, producing wire with a perfectly spheroidized microstructure for optimal downstream processing.

The potential to extend the facility by an additional workbase was taken into account in the layout, meaning that annealing capacity can be easily expanded should production demands increase.

EBNER would like to thank Bavel for the excellent cooperation. We take pride in having contributed to the new works in Ryazan with our heat treatment facility.

www.bavel.ru

The new plant



Precision cold rolling meets precision heat treatment

The tradition of precision and quality continues thanks to newest EBNER facility.



SIEGFRIED HEHENBERGER

EBNER news
from Spain

When nothing but the best technology will do, customers all over the world turn to EBNER. The same is true for Arania, the Spanish steel strip manufacturer.

Arania SA, a traditional company with more than 75 years of experience in manufacturing cold rolled steel strip, is located on Spain's northern coast, near Bilbao. Like EBNER, Arania relies on highest quality, safety and trust throughout the value-added chain.

Facility in operation



INCREASING DEMAND

For 20 years, Arania has been operating a HICON/H₂® bell annealer facility to heat treat cold rolled steel strip coils, both high and low alloy. Arania was one of the first companies in Spain to switch to innovative hydrogen annealing technology, which was quite new at the time. The profitable results of this future-oriented decision are still felt to this day.

The first workbases were designed for a net charge of 43 t (47 USt), but increasing demand, particularly from the automotive supply sector, led to a series of expansions, each bigger than the last.

After several expansion phases with workbases designed for 72 t (79 USt) charges, the two newest expansion phases are designed for 82 t (90 USt) charges. The workbase diameter has also been increasing: the installation of a new rolling mill allows larger coils of harder and thicker materials to be produced.

Arania sees EBNER as a partner just as interested in precision and quality as they are. The EBNER

HICON/H₂® bell annealers precisely heat and cool the steel strip in hydrogen atmosphere to create best mechanical properties and a bright surface finish. The annealing program is chosen based on each alloy in order to ensure the required characteristics are efficiently and reliably achieved.

SERVICE AND UPGRADES

Arania is not just a good customer for equipment, they also insist on an annual service visit by the EBNER team. Expert maintenance and timely upgrades help a facility keep operating as good as new for decades. Future process optimization is in good hands with Arania's partnership with EBNER.

STRENGTHENED MARKET POSITION

Arania's customers value the fact that only the most cutting edge technology is used to produce the steel strip. This allows Arania to offer a competitive product while remaining flexible for its customers.

The newest EBNER facility strengthens Arania's position as a quality steel strip manufacturer on the European market.

EBNER is looking forward to the next project together.

araniasa.com/en

Facility overview



Giants of the wire industry visit Austria

EBNER hosts the annual membership meeting of the German wire association *Eisendraht- und Stahldraht-Vereinigung e.V.*



KARL WOHLFART
EBNER news
from Austria

The *Eisendraht- und Stahldraht-Vereinigung e.V.* (ESV) is an association of wire manufacturers producing unalloyed carbon steel wire and finished wire products which meets once a year. **EBNER**, a guest member of the association, had the honor of inviting the members to Linz in the summer of 2017.

EBNER's **HICON/H₂**® bell annealer technology has revolutionized the heat treatment of drawn and hot-rolled steel wire coils. The introduction of high con-

vection and 100 % hydrogen process atmosphere has made **EBNER HICON/H₂**® bell annealers the global technology leader.

Over 400 **HICON/H₂**® workbases process more than 4 million metric tons of steel wire per year, meeting the strictest quality standards at more than 100 companies around the world. The system behind the success of **HICON/H₂**® technology lies in the concentration and integration of expertise at **EBNER**. This ranges from

The river boat picturesquely docked near the Ars Electronica Museum



Robert Ebner personally guides our guests on a tour of the workshop

research & development, engineering, manufacturing and installation on through to commissioning and customer services. Guests who attended the membership meeting were able to judge **EBNER**'s competencies for themselves as they toured the company.

The German ESV association was founded in 1994 in a merger of the *Eisendraht* (iron wire) and *Stahldraht* (steel wire) associations. Its goal is to safeguard and promote the commercial, technological, and economic interests of both of these branches of the wire industry. Around 60 people from 30 different companies, including many long-time **EBNER** customers, accepted the invitation to Linz. One of the main topics of discussion was Industry 4.0, with **EBNER** making a presentation about its activities in this area. A tour of **EBNER** fea-

tured the quality of the **EBNER** workshop, the FUTURE LAB and the company museum. A visit to voestalpine's steelworks and an enjoyable boat ride along the Danube River rounded out the two-day meeting.

With the WIRE Düsseldorf trade fair on the horizon, **EBNER** hopes to see our colleagues from the ESV again soon - and to again have the chance to discuss new and interesting developments with them!

www.drahtverband.org



Barbara Ebner (right) enjoys the river cruise with our guests



The speed of progress

EBNER upgrades a hot-dip galvanizing line at voestalpine Stahl GmbH in Linz.



WOLFGANG SCHAUER

EBNER news
from Austria

The rebuild of a galvanizing facility at voestalpine's works in Linz, Austria was a challenge: an ambitiously tight schedule called for a bare minimum of facility downtime.

Only 20 days were scheduled for the main phase of the rebuild, but EBNER's specialists – ably assisted by the team from voestalpine – managed to complete the required work in just 15 days.

DECADES-LONG RELATIONSHIP FURTHER STRENGTHENED.

The automotive industry's demand for high-strength steels made it necessary to increase the throughput of an existing facility – voestalpine's hot-dip galvanizing line 4.

However, as the facility's production capacity was urgently required, a long downtime period for rebuild work was out of the question. The project called for no more than 20 days' downtime for the extensive modification work. EBNER accepted the challenge.

To meet the deadline, a series of meetings was held to create a detailed installation schedule – every element was carefully planned. The excellent cooperation between every member of the voestalpine and EBNER teams cannot be overstated!

THE PROJECT WAS BROKEN DOWN INTO THREE MAIN PHASES

1. Preparation/pre-assembly, with facility in operation
2. Shutdown phase
3. Remaining work with facility back online



Safety first

While the facility was offline in the shutdown phase, all the new components of the processing line were installed and tested. This included a new inductor and 28 new radiant tubes for the heating system, a new cooler, extensive work on the measuring device lead-throughs, utility pipework, and more.

WORK CONTINUED AROUND THE CLOCK IN SHIFTS

Up to 80 technicians were needed on-site at a time to make sure the rebuild was completed in less than 20 days. The galvanizing line was brought online again after only two weeks, with startup followed by commissioning and fine tuning the new facility components.

Along with increased efficiency, this upgrade provides the customer with a technological improvement of the heat treatment process, improving the quality of the end product. Re-commissioning the rebuilt galvanizing line ahead of schedule meant significant cost savings for the customer. With EBNER on the job, steels from voestalpine really do remain one step ahead.

www.voestalpine.com

voestalpine Linz



© Christian Wirth / Wikimedia Commons



New facility and material

Tides of Change

Facility upgrade along the Qiantang River.



PU ZHIGANG
EBNER news
from China

The Qiantang River is famous for having the world's largest tidal bore. Tourists have flocked to the area for centuries to witness the tide moving up the river as a wave up to nine meters high at an incredible

40 km per hour (25 mph). The speed of the tide is matched by the speed of the last several years of progress and development at Zhejiang Rongxin Steel Strip.

Zhejiang Rongxin is a privately-owned company, specializing in special steel manufacture and located in Haining, in eastern China, on the Qiantang River.

Established in October 2003, Zhejiang Rongxin originally had only 40 employees on staff with an annual throughput of just 1,000 tons (1,100 USt) of steel strip. The final products mainly comprised stamping hardware for the middle and low end sectors.



FAST GROWTH

After just a few years' development, Rongxin currently employs over 200 people, with an annual throughput of 60,000 tons (66,000 USt). Sales have reached RMB 350 million with many well-known customers such as FAW-Volkswagen, Changchun Yidong Clutch Co., Ltd and others. With growth this fast, it's not surprising that the need to expand processing capacity soon became critical.

In 2016, Rongxin placed an order with **EBNER** for a **HICON/H₂**® bell annealer facility with six workbases. The ability to use 100 % hydrogen as process atmosphere was key in increasing high end market share and becoming more competitive.

INCREASED THROUGHPUT WITH EBNER FACILITY

After installation and commissioning, the brand new **HICON/H₂**® bell annealer facility went into operation in January 2018, to the customer's satisfaction. In 2018, Rongxin plans to achieve a target throughput of 70,000 tons (77,000 USt).

Zhejiang Rongxin will continue to upgrade its facilities, with a goal of increasing annual throughput to 90,000 tons (99,000 USt) in the near future. This future expansion has already been taken into consideration in the planning of the existing facilities, for example in the layout of the utility supplies.

With **EBNER**'s state-of-art technology and 70 years of experience, we fully support Rongxin's future plans.

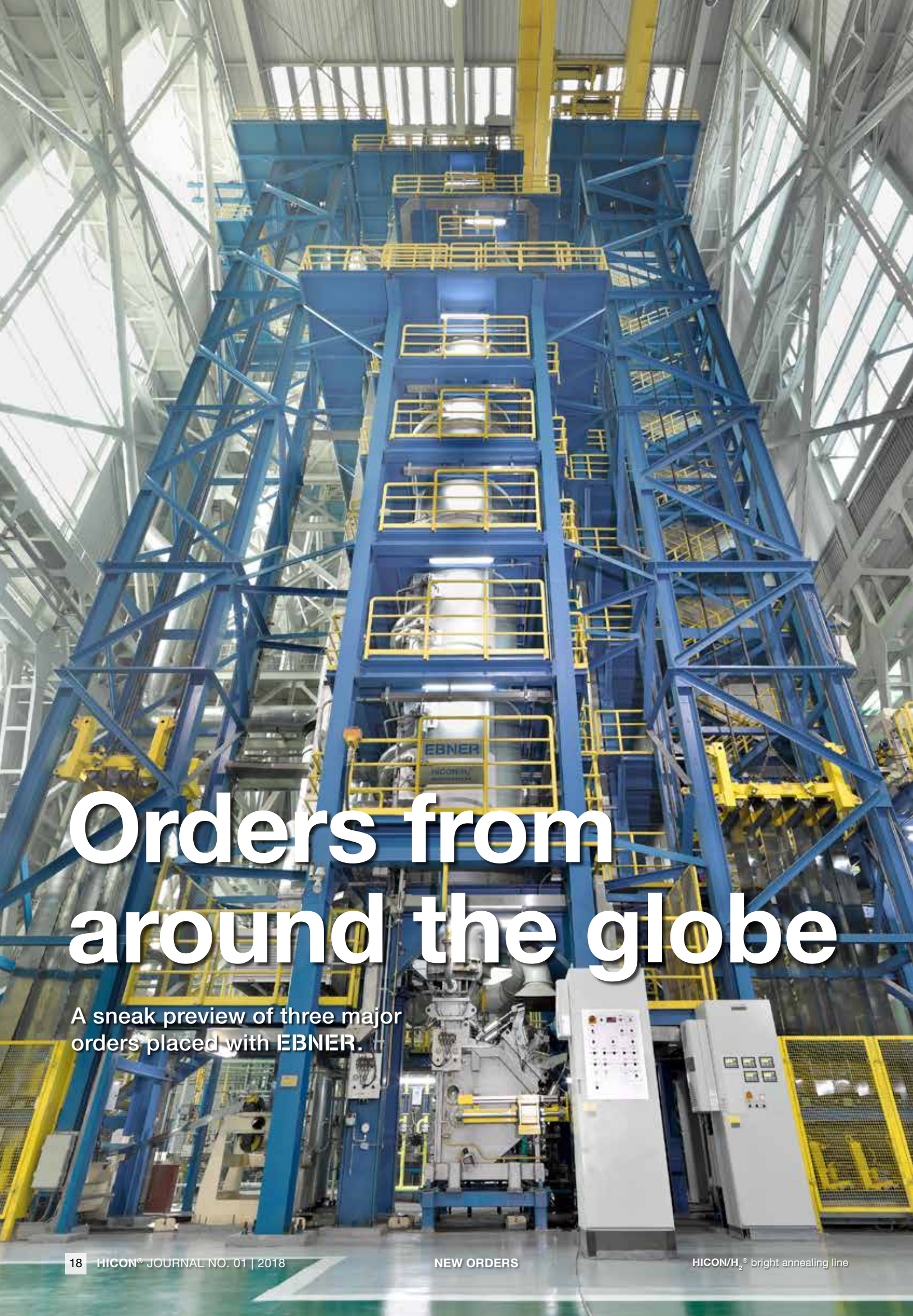
FACILITY DATA

Max. net charge per workbase	70 t (77 USt)
Max. coil diameter	1,900 mm (6'2")
Strip thickness	2 - 10 mm (0.08 - 0.39")

King Qian shooting the tidal bore



© PromoteMyCity / Wikimedia Commons



Orders from around the globe

A sneak preview of three major orders placed with EBNER.

POONGSAN SPECIAL METAL CORPORATION ORDERS HICON/H₂® VERTICAL BRIGHT ANNEALING LINE

In summer 2017, Poongsan Special Metal Corporation placed an order with **EBNER** for a **HICON/H₂®** vertical bright annealing line to bright anneal stainless steel strip for their new plant in Incheon.

The order for the **HICON/H₂®** facility includes the heat treatment section as well as peripheral equipment and the process control system. A hydrogen regeneration unit that was supplied in 2015 will be integrated into

the new processing line and strip handling provided by a local contractor will complete the setup. Poongsan Special Metal replaces three existing horizontal annealing lines with this facility, which will be available for production from August 2019.

Poongsan Special Metal is known for its high quality products, which it supplies to the automotive and electronics industries, among others.

VOESTALPINE STAHL GMBH INVESTS IN ADDITIONAL HIGH-TEMPERATURE ANNEALING CAPACITY

In the second quarter of 2017, one year after the successful commissioning of a **HICON/H₂®** bell annealer facility, voestalpine Stahl GmbH of Linz, Austria placed an order with **EBNER** for an additional four high-temperature workbases.

These workbases will again be equipped with the integrated atmosphere cooling technology patented by **EBNER**. The new facility will mainly be used to heat treat electrical strip, and will be integrated into the existing bell annealer facility layout.

HICON/H₂® bell annealer facility to heat treat steel strip coils



EBNER RECEIVES AN ORDER FOR A HICON® FLOATER FURNACE FROM CHALCO RUIMIN CO. LTD.

Chalco Ruimin Co., Ltd. is a part of Aluminum Corporation of China (Chinalco), one of the world's largest aluminum producers.

EBNER will supply a complete heat treatment section, which incorporates a solution heat treatment furnace and a combined water/air quench, as well as a reheat furnace to provide the desired strip temperature at the take-up unit. A water recooling system and all electrical equipment, including a Process Control System (PCS) for the heat treatment section, round out the scope of supply for the 100,000 tpy facility. The completed facility will carry out its first production anneals in the first quarter of 2019.

HICON® floater furnace facility for aluminum strip



NEWS

HICON®
Journal is
also available
by email!

Trade fairs. Conventions.

Apr 16 - 20, 2018	WIRE	Düsseldorf	DE	Booth No.	10C42-06
May 7 - 10, 2018	AISTECH	Philadelphia, PA	US	Booth No.	2631
May 15 - 16, 2018	WIRE EXPO NASHVILLE	Nashville, TN	US	Booth No.	511
July 11 - 13, 2018	ALUMINIUM CHINA	Shanghai	CN	Booth No.	1G20,W1

Sept 11 – 13, 2018 – 70 YEARS OF EBNER

Sept 26 - 29, 2018	WIRE / TUBE CHINA	Shanghai	CN	Booth No.	tba
Oct 9 - 11, 2018	ALUMINIUM DÜSSELDORF	Düsseldorf	DE	Booth No.	10 E 15
Oct 17 - 19, 2018	INDOMETAL	Jakarta	ID	Booth No.	tba
Oct 23 - 26, 2018	EUROBLECH 2018	Hannover	DE	Booth No.	27 F 166

We look forward to seeing you there!

New orders

CHALCO RUIMIN CO., LTD.	CN	HICON® floater-type furnace facility for aluminum strip
AISHA STEEL MILLS LTD.	PK	HICON/H₂® bell annealer facility for steel strip coils
POONGSAN SPECIAL METAL CORP.	KR	HICON/H₂® vertical bright annealing line for CrNi steel strip
THYSSENKRUPP MATERIALS PROCESSING LAMINCER S.A.	ES	HICON/H₂® bell annealer facility for steel strip coils
ZHEJIANG LONSEN STEEL STRIP CO., LTD.	CN	HICON/H₂® bell annealer facility for steel strip coils
STEEL TECHNOLOGIES LLC	US	HICON/H₂® bell annealer facility for steel strip coils
GIEBEL KALTWALZWERK GMBH	DE	HICON/H₂® bell annealer facility for steel strip coils
HUGO VOGELSANG GMBH & CO. KG	DE	HICON/H₂® bell annealer facility for steel strip coils
XINYU IRON & STEEL GROUP CO., LTD.	CN	HICON/H₂® bell annealer facility for steel strip coils
AVON ISPAT & POWER LIMITED	IN	HICON/H₂® bell annealer facility for steel strip coils
DONGKUK INDUSTRIES CO., LTD.	KR	HICON/H₂® bell annealer facility for steel strip coils
WÄLZHOLZ NEW MATERIAL (TAICANG) CO., LTD.	CN	HICON/H₂® bell annealer facility for steel strip coils
BRASMETAL WÄLZHOLZ S.A.	BR	HICON/H₂® bell annealer facility for steel strip coils
C.D. WÄLZHOLZ GMBH	DE	HICON/H₂® bell annealer facility for steel strip coils
ISL INTERNATIONAL STEELS LIMITED	PK	HICON/H₂® bell annealer facility for steel strip coils
MUBEA TAILOR ROLLED BLANKS LLC	US	HICON/H₂® bell annealer facility for steel strip coils
HUGO VOGELSANG GMBH & CO. KG	DE	HICON® hardening and tempering lines for steel strip
CHENGDU SHIRUN AUTO PARTS CO., LTD.	CN	HOTPHASE® roller-hearth furnace for steel press hardening blanks
GLOBAL SPECIAL STEEL PRODUCTS S.A.U.	ES	HICON/H₂® bell annealer facility for steel wire coils

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