

CONSISTENT ALUMINUM QUALITY – AT HIGH PRODUCTION RATES

Aluminum processing and finishing lines

ANDRITZ



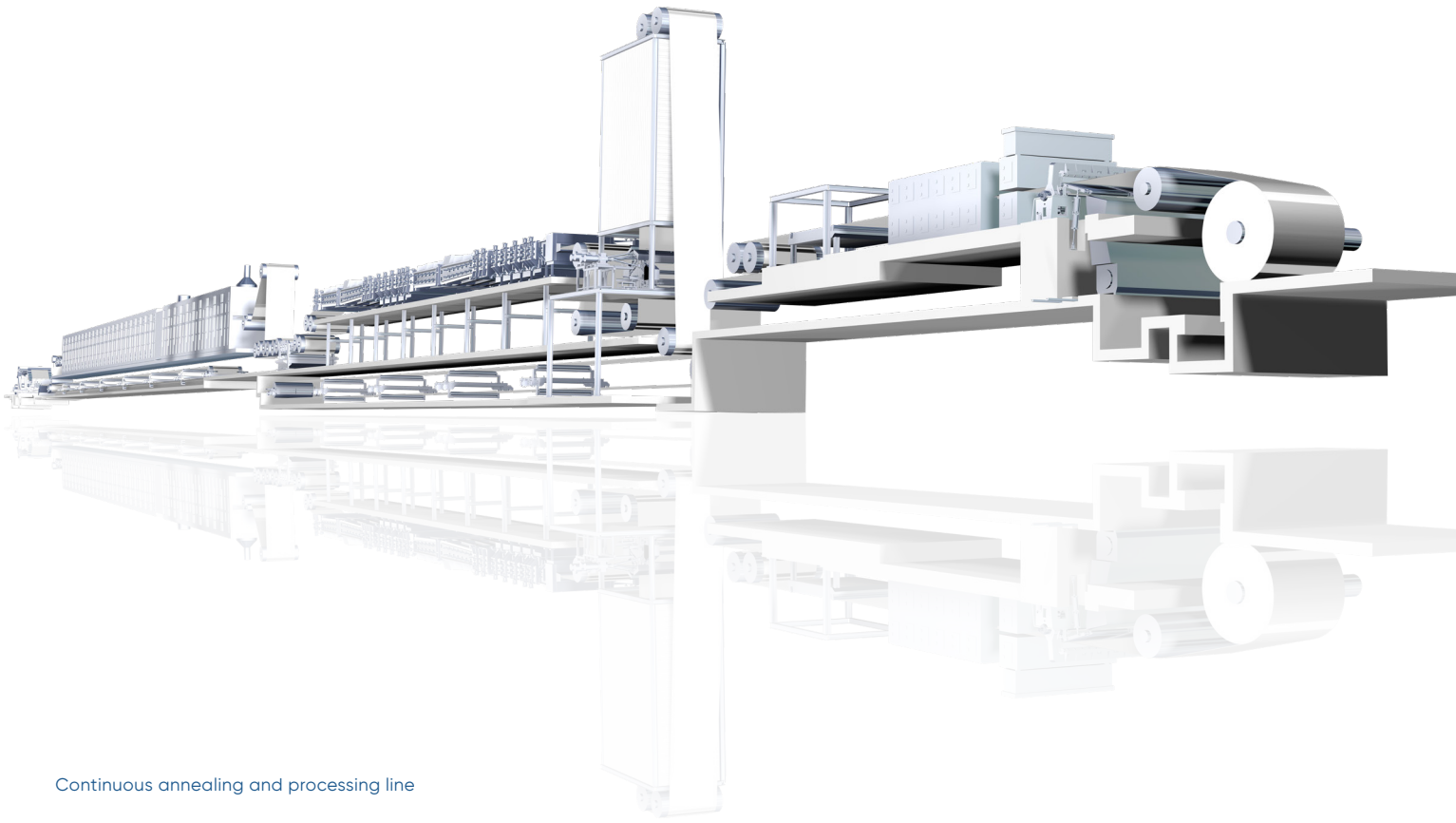
Continuous annealing and processing line for automotive sheets

Lightweight aluminum trends for the automotive, aerospace, and defense industries

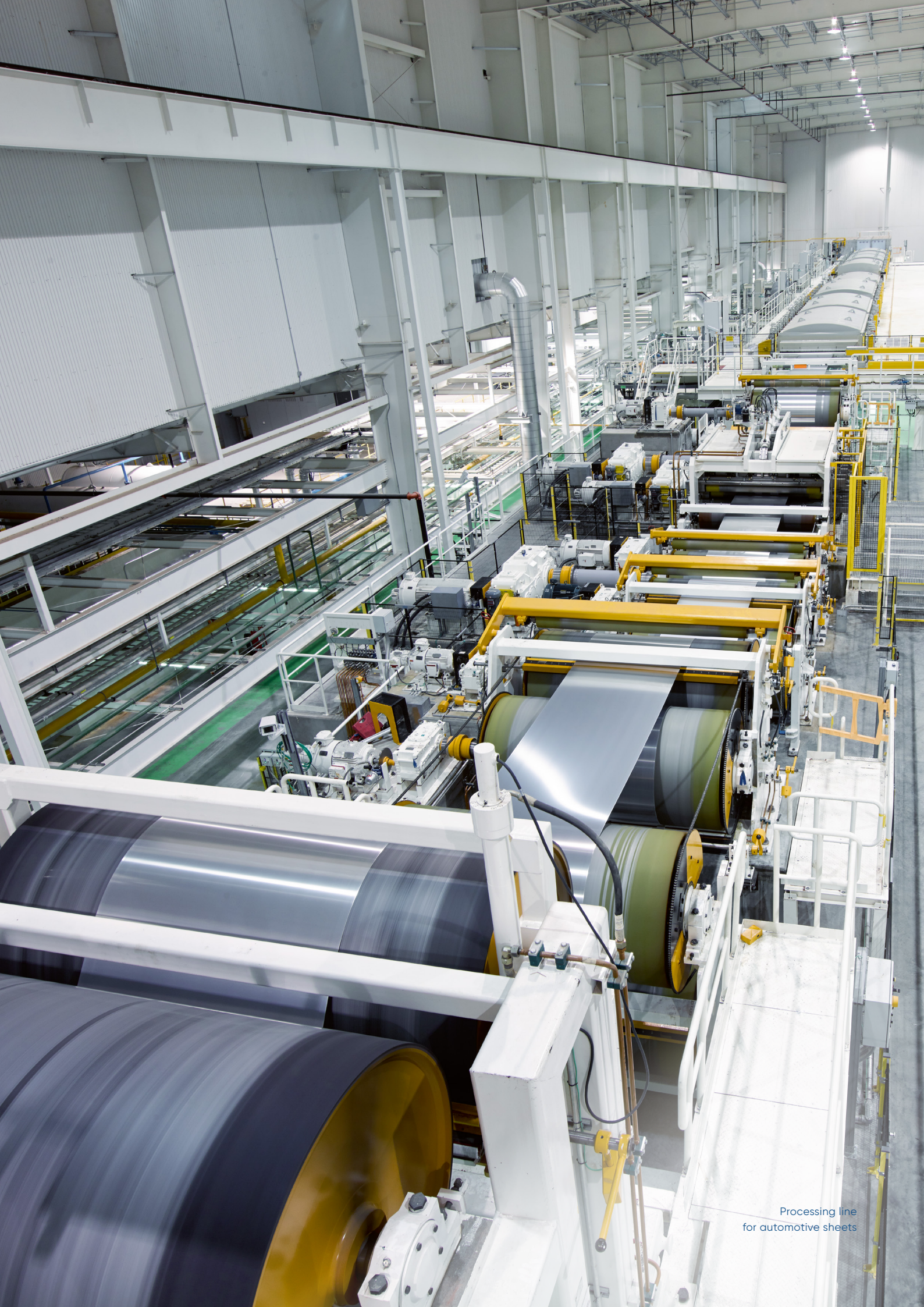
ADVANCED MATERIALS OF FIRST-CLASS QUALITY

Automobile manufacturers are moving to make cars lighter, to reduce weight and CO_2 emissions, and to extend the range of electric vehicles. Different aluminum alloys provide excellent properties for deep-drawing and high strength for crash performance. First-class corrosion resistance and its efficient recyclability are additional benefits of using aluminum for car bodies and panels. The excellent properties of the aluminum are also valued by the aerospace and defense industries. In addition, aluminum has established itself as the best material for food and beverage cans, solar technology, and in the construction industry.

ANDRITZ offers and continues to develop technology for high-quality aluminum sheet, with first-class mechanical properties and surface pre-treatment according to automotive customer specifications.



Continuous annealing and processing line



Processing line
for automotive sheets

Continuous annealing and processing lines: All processes from a single source – a fully integrated line

HIGH PRODUCTION CAPACITIES AND FULL AUTOMATION

The continuous annealing and processing line (CALP) combines two processes in a single, fully automated line: heat treatment and surface treatment. Another option is two separate lines: a continuous heat treatment line (CHTL) and an automotive surface treatment line (ATL).

Heat treatment of aluminum alloys, annealing (O) or solution heat treatment (T4, T6), requires high temperatures above 500° C close to the melting point of aluminum alloys. In the floating type furnace, the strip is guided through at minimum strip tension.

ANDRITZ has demonstrated excellent strip guiding capabilities in our reference lines and is one of the few suppliers capable of providing all processes required for aluminum strip from a single-source.

The entry section operates fully automatically, with optimized scrap handling. The strip head and tail are joined using the well-established stitching technology. Our proprietary form-fit bending machine feeds a flat strip to the floating furnace. Annealing and heat treatment are followed by water quenching, which allows production of high-strength and high-ductility alloys suitable for heat treatment. Air quenching returns the coils to room temperature. ANDRITZ tension levelers are available with steel cassettes or PU rolls and level the quenched strip effectively at controlled elongation rates.

In the exit section, the strip surface is inspected automatically and marked according to OEM requirements. The ANDRITZ recoiling temperature model controls the pre-aging furnace and the temperature at the recoiler. The level 2 system provides set-points for all process sections as well as the electrostatic oiler. Oil and hot melt (dry lube) film thicknesses are monitored online. The exit section operates fully automatically using the high-speed exit shear to cut samples or for production of daughter coils.

Many years of experience provided by our engineers, the continuous further developments in our technologies, and the comprehensive, certified quality management system are proof of ANDRITZ's leading role in the world market. Core components are developed in-house and manufactured at the company's own facilities. Our specialties are complete customized plants as well as extension or modernization projects. Our experienced on-site supervision and commissioning teams manage greenfield, brownfield, and turnkey installation and commissioning. Our experts provide operator training and assistance to ramp-up production efficiently within tough time schedules.

TECHNICAL DATA

Material	Aluminum and aluminum alloys
Strip thickness	0.2-5.0 mm
Strip width	800-2,350 mm
Line speeds	120 m/min. max. in processing section 200 m/min max. in entry and exit sections

HIGHLIGHTS

- Full automatic entry and exit section
- Stitcher with integrated lubrication
- References with high-capacity floating furnace
- Excellence in surface treatment technology
- Recoiling temperature model

Automotive surface treatment lines: Perfection in surface treatment technology

PERFORMANCE IN PAINTABILITY, WELDABILITY, AND CORROSION RESISTANCE

Automotive sheet requires cleaning (degreasing), pickling (de-oxidizing), and conversion (passivation). All of these processes are integrated into the CALP line and react with high flexibility to the changing line speeds determined by the heat treatment furnace. Another option is a stand-alone automotive surface treatment line (ATL). Different demands for final surface properties by the OEMs worldwide require the right process technology.

ANDRITZ provides spray, immersion, and roll-coater technology.

The degreasing section requires spray technology for excellent cleaning performance. Spray or immersion treatment is available for the pickling process. The coating weight in spray and immersion conversion sections is controlled by flexible contact times. The roll-coater controls the wet film thickness, which is dried and bonded to the strip surface in the subsequent Peak Metal Temperature (PMT)-Dryer. Our level 2 automation



Spray pickling and conversion section

system enables automatic selection of the required surface treatment process and provides it with the optimum set-points to achieve high-performance pickling and conversion.

ANDRITZ has minimized environmental impact with a highly efficient rinsing section design, improved bath maintenance (filter, oil separator, and membrane technology), and closed loop technology using reverse-osmosis and ion-exchange. Any remaining waste water streams are treated in our state-of-the-art waste water treatment plants.

HIGHLIGHTS

- Highly efficient degreasing and cleaning process
- Flexible pickling control by contact time
- Alcoa 951 pre-treatment references
- Accurate and uniform application of conversion layer
- Fast and automatic conversion product change
- Easy spray bar removal
- Quick squeeze roll changing
- References with stainless steel and polypropylene treatment tanks
- Waste water treatment
- Utility supply (DI water, hot water boiler)



Arconic 951 immersion treatment

Multi-function lines for aluminum strip: Recoiling, edge trimming, tension leveling, slitting, and inspection

DIFFERENT PROCESS STEPS – ALL IN ONE LINE

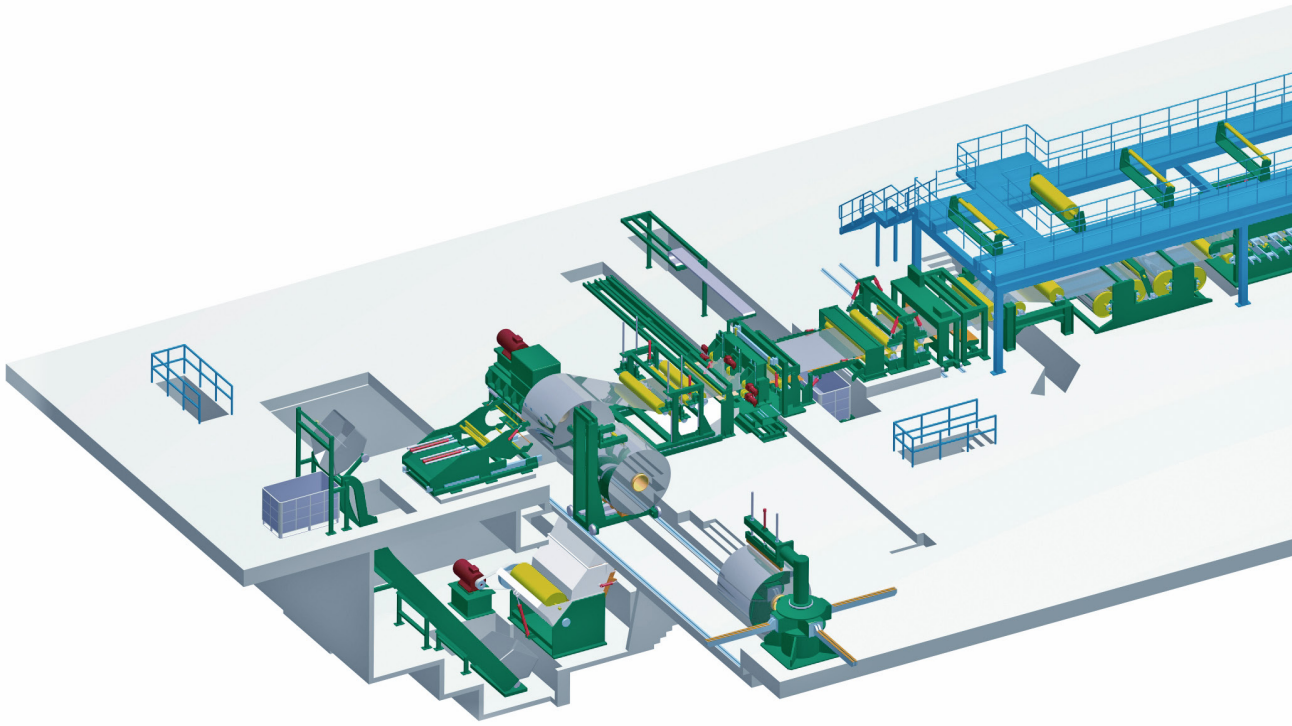
Different process steps are needed in the production of finished aluminum strip in order to meet the demands of the market. The new ANDRITZ multi-function plant meets these demands.

Recoiling, edge trimming, tension leveling, inspection, and slitting in one line: High throughput and multiple functions are not a contradiction in terms here. These stringent demands can be met with an intelligent layout of the individual functions within the overall plant. From manual inspection to automatic surface checking, from edge trimming to slitting, from leveling of the leading strip end to precision tension leveling. All this at strip speeds of up to 1,000 m/min.

Perfected plant engineering technology with intelligent automation solutions from a single source. The plants we have supplied worldwide are proof that we meet our customers' demands with custom tailoring.

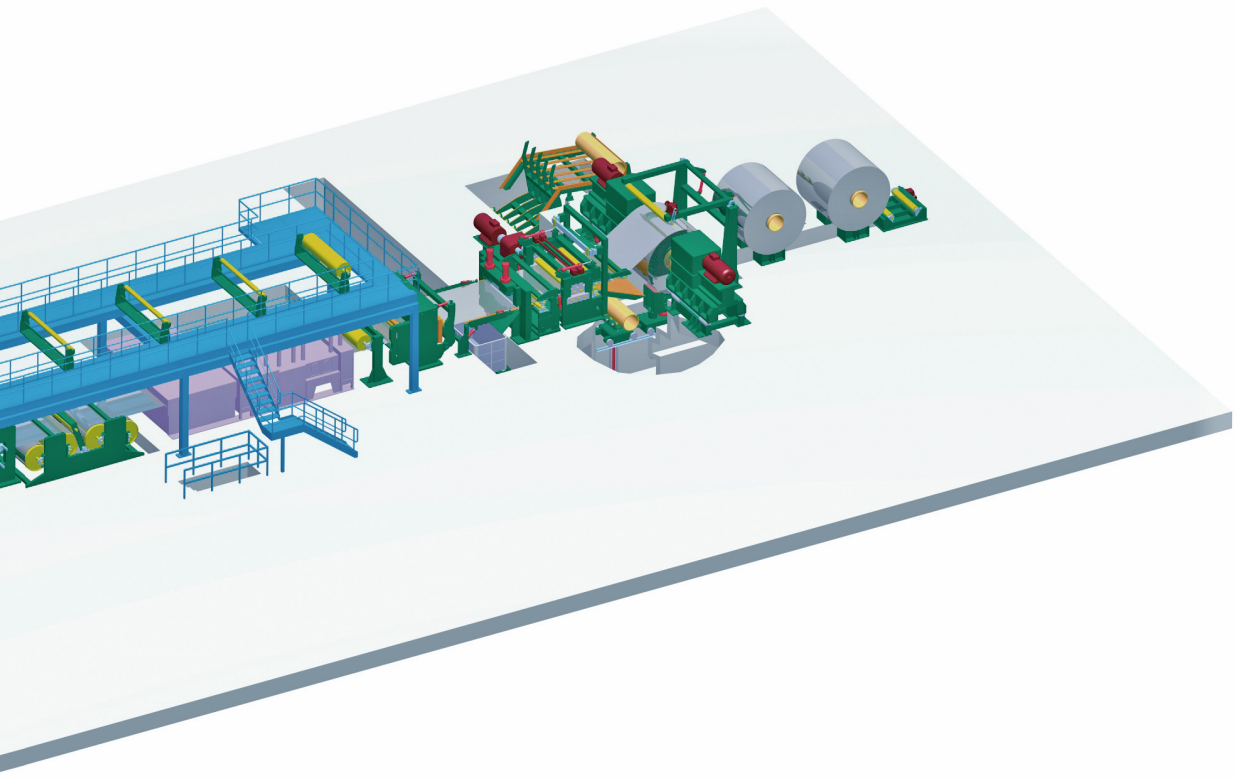
TECHNICAL DATA

Material	Aluminum and aluminum alloys
Strip thickness	0.15–3.5 mm
Strip width	800–2,650 mm
Coil diameter	2,800 mm max.
Coil weight	30,000 kg max.
Plant operating speed	1,000 m/min. max.





Coiler area of an edge trimming, slitting, and tension leveling line



Tension leveling and finishing line

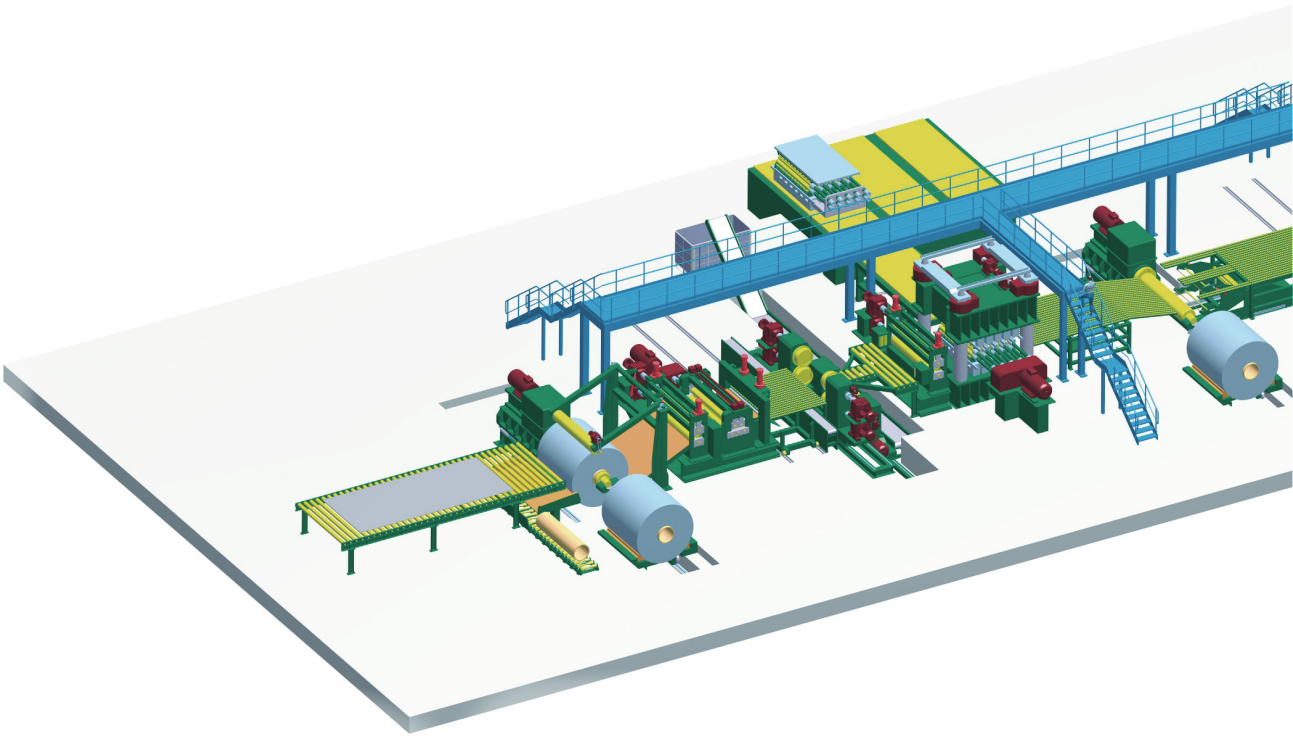
Cut-to-length lines for aluminum strip: Edge trimming, recoiling, precision leveling, and cutting to length to meet the highest standards

Aluminum sheets and strip for industrial applications and for the aeronautical industry are cut to the required shape on ANDRITZ cut-to-length lines. These lines can process coils or plates with a strip width of 2,850 mm, up to 24 m in length, and with strip thicknesses of 0.8-15 mm.

The lines are equipped for edge trimming, recoiling, precision-leveling, and cutting-to-length processes with all the necessary units, such as decoilers, edge trimming shears, precision-leveling machine with exchangeable cassettes, recoilers, cut-to-length shears, or vacuum transfer stacking system.

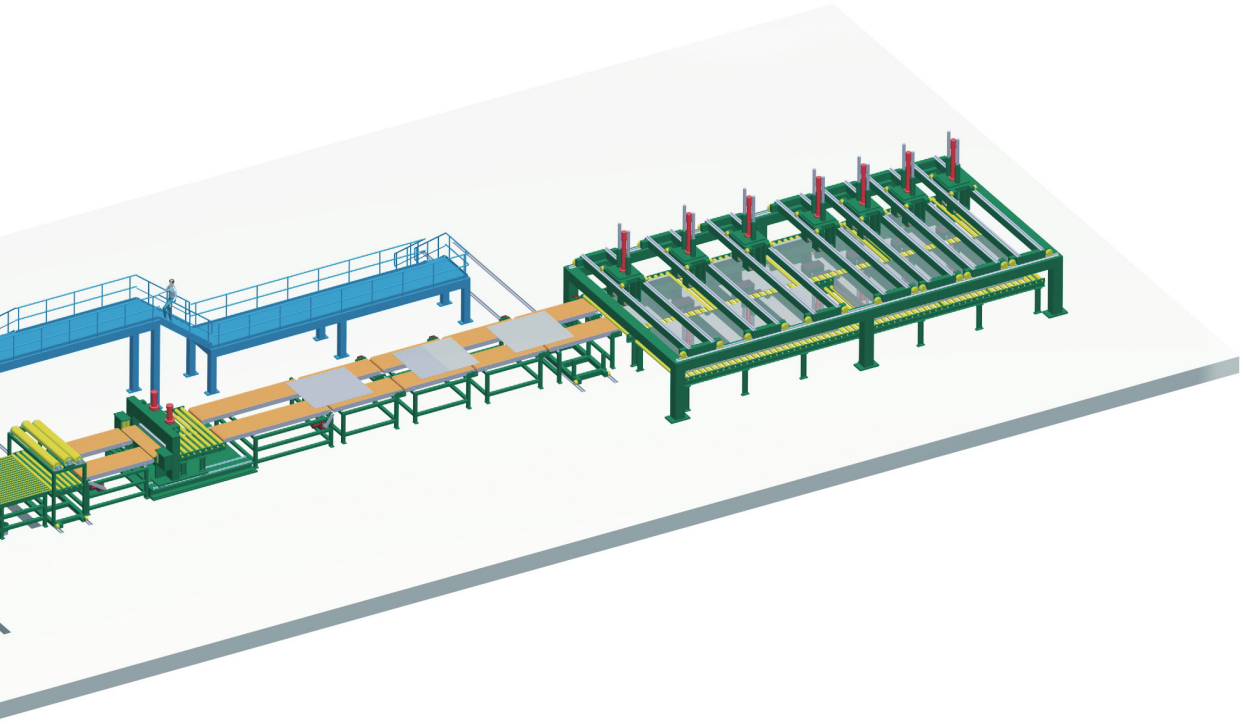
TECHNICAL DATA

Material	Aluminum and aluminum alloys
Tensile strength	max. 500 N/mm²
Strip thickness	0.8-15.0 mm
Strip width	900-2,850 mm
Coil outer diameter	1,100-2,200 mm, with and without sleeves
Coil inner diameter	610 mm
Coil weight	22,000 kg
Sheet length	1,000-15,000 mm
Stack height	1,500 mm max.
Stack weight	10,000 kg max.
Plant operating speed	30 m/min. max.

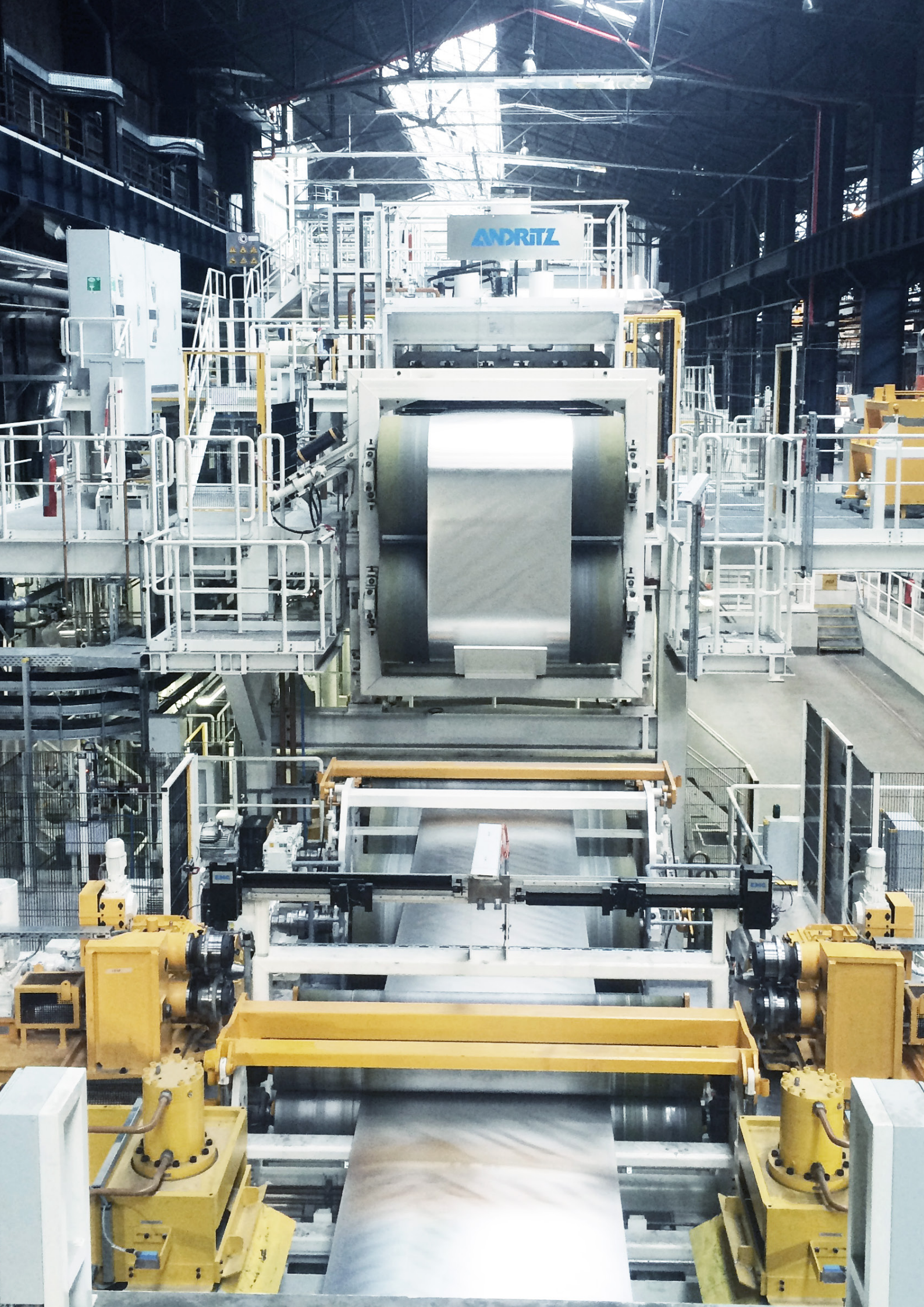




Multi-blanking line with automatic knife changing for the slitting shears



Cut-to-length line


ANDRITZ

Electrical and automation equipment for the metals industry

COMPLETE PROCESS AUTOMATION AND PRODUCTION OPTIMIZATION

ANDRITZ supplies complete electrical equipment with drives, automation systems, instrumentation, level 2 systems, and all the required technological control systems (TCS).

The close cooperation between mechanical, process and electrical/automation engineering at ANDRITZ has proved to be a very big advantage.

Precise and comprehensive knowledge of the line and process technologies combined with many years of practical experience have resulted in ingenious solutions enabling our customers to produce top-level products in terms of quality and productivity.

DATA ANALYTICS, MATHEMATICAL MODELS, AND SIMULATION

- Production optimizer: production planning tool for optimizing the material sequence
- Plant simulation (ghost coiling, 3D line simulation, virtual operator training)
- Fully automatic entry and exit section
- Fully integrated exit strategy
- AFC – Advanced Furnace Control
- Recoiling temperature model
- Data analytics for process optimization
- Predictive maintenance system

HIGHLIGHTS

- Complete automation systems for strip transport and process control
- Manufacturing Execution System (MES) & Mill Management System (MMS): Level 2 system with coil tracking function, model integration, Primary Data Input (PDI) system, roll management, different reporting and management functions, interface to level 3 system
- Platform-independent level 1 software (Siemens, Rockwell, ABB, B+R, Yokogawa, ...)
- Multi-drive systems for low-voltage and medium-voltage drives with common DC bus
- System integration for instrumentation and package unit
- Automatic mill gauge control (AGC)
- Remote maintenance
- Production assistance

YOUR BENEFITS

OPERATOR TRAINING

SMART COMMISSIONING

PRODUCTION OPTIMIZATION

PROCESS OPTIMIZAITON

PREDICTIVE MAINTENANCE


DEMAG 35 TON
WIP AFTER COMPLETION

Experience and excellence worldwide

A FEW OF OUR REFERENCES

Customer	Reference	Capacity
Nanshan Aluminium, Longkou, China	Continuous Pre-Treatment line	150,000 t/a
Nanshan Aluminium, Longkou, China	Continuous Heat Treatment line	100,000 t/a
Steel Dynamics Inc., MS, USA	Continuous Annealing and Process line	147,000 t/a
AMAG rolling, Ranshofen, Austria	Surface Treatment and Pickling line	30,000 t/a
ELVAL Aluminium, Oinofita, Greece	Lacquering Line No. 2	100,000 t/a
Hindalco Industries Ltd, Hirakud, India	Tension Leveling Line & Degreasing Line	150,000 t/a
Nanshan Aluminium, Longkou, China	Continuous Heat Treatment line	100,000 t/a
Nanshan Aluminium, Longkou, China	Continuous Pre-Treatment line	100,000 t/a
Constellium, Singen, Germany	Extension of annealing line 8	15,000 t/a
AMAG rolling, Ranshofen, Austria	Extension of annealing line	15,000 t/a
Aluminum producer, IA, USA	Automotive treatment line	100,000 t/a
Aluminum producer, IA, USA	Continuous heat treatment line	100,000 t/a
Aluminum producer, TN, USA	Continuous heat treatment line	150,000 t/a
Constellium-UACJ, KY, USA	Cont. annealing and processing line	110,000 t/a
Constellium, Neuf-Brisach, France	Cont. annealing and processing line	110,000 t/a
Aluminum producer, KY, USA	Cont. annealing and processing line	170,000 t/a
Weihai Haixin New Material Co, China	Recoiling and trimming line	265,000 t/a
Constellium, Neuf-Brisach, France	Completion line	110,000 t/a
Aluminum producer, IA, USA	Slitting line	150,000 t/a

ANDRITZ METALS

ANDRITZ Metals Processing is a global leader in providing cutting-edge solutions for the production and processing of cold-rolled strip made of carbon steel, stainless steel, aluminum, and other non-ferrous metals. Our innovative technologies and comprehensive services ensure that we support our customers at every stage of the plant life cycle, from initial setup to ongoing maintenance and optimization.

We combine our deep industry expertise with advanced automation and digitalization to help our customers achieve peak performance and sustainable growth. Our service business is dedicated to maximizing the efficiency and longevity of your equipment, ensuring you stay ahead in a competitive market.

ANDRITZ. FOR GROWTH THAT MATTERS.

AUSTRIA
ANDRITZ AG
p: +43 50805 55401
aluminum.processing@andritz.com

USA
ANDRITZ Metals USA Inc.
p: +1 724 597 7813
aluminum.processing@andritz.com

INDIA
ANDRITZ Technologies Pvt. Ltd.
p: +91 33 4602 7958 59
aluminum.processing@andritz.com

GERMANY
ANDRITZ Metals Germany GmbH
p: +49 2372 54 389
aluminum.processing@andritz.com

CHINA
ANDRITZ (China) Ltd.
p: +86 21 3108 9306
aluminum.processing@andritz.com

ANDRITZ.COM/METALS

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