

ANDRITZ CAPITAL MARKET DAY 2021

METALS







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SEPTEMBER 15, 2021

ANDRITZ
ENGINEERED SUCCESS

REVIEW CMD 2019: ROADMAP 2020-2022



TARGET	STATUS
<ul style="list-style-type: none"> Focus on light-weight materials for automotive applications: <ul style="list-style-type: none"> AHSS (Advanced High-Strength Steel): Galvanizing lines Aluminum: Continuous annealing and processing lines Tailor welded blanks: laser welding and ablation 	<ul style="list-style-type: none"> AHSS market leader Market down Market leader <p style="text-align: right;">  Achieved </p>
<ul style="list-style-type: none"> High strength and special materials for aerospace, etc.: heat treatment furnaces 	<p>Market down (COVID)</p> <p style="text-align: right;">  Ongoing </p>
<ul style="list-style-type: none"> Use synergies with Schuler (e.g. railway wheels) 	<p>Joint projects & orders</p> <p style="text-align: right;">  Achieved </p>
<ul style="list-style-type: none"> Focus on reducing cost overruns and negative project deviations 	<p>Positive EBITA since 2019 -> constantly improving</p> <p style="text-align: right;">  Achieved </p>
<ul style="list-style-type: none"> Push share of service 	<p>Increasing, except for 2020 (Covid)</p> <p style="text-align: right;">  Ongoing </p>
<ul style="list-style-type: none"> Business volume of around 700 MEUR and EBITA margin of 6-7% are targeted 	<p>Confirmed</p> <p style="text-align: right;">  Achieved </p>

ANDRITZ PROVIDES LEADING SOLUTIONS FOR THE CURRENT MEGATRENDS



Decarbonization



- E-Mobility
- Laser Welded Blanks
- 3rd Generation High Strength Steel
- Silicon Steel

Circular Economy



- ZEMAP
- ZEHAP
- ...

Digitalization



- Asset Performance Management
- Autonomous Operation
- Industrial Cyber Security

ANDRITZ PROVIDES KEY TECHNOLOGIES TO ENABLE DECARBONIZATION IN AUTOMOTIVE



Decarbonization



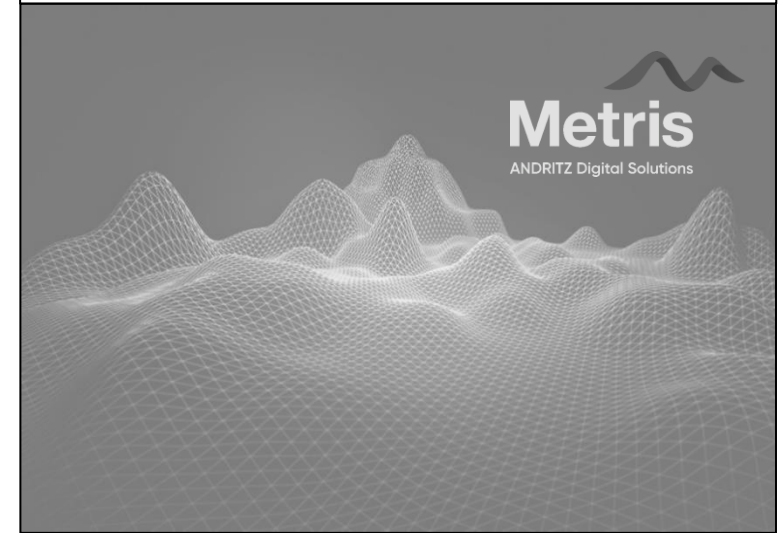
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ANDRITZ FURNACE TECHNOLOGY DRIVES DEVELOPMENT OF NEW GENERATION STEEL



News and media

Inauguration of Fortiform[®] furnace at ArcelorMittal Gent



ArcelorMittal

2nd Gen PHS
Launching Usibor[®] 2000 and Ductibor[®] 1000

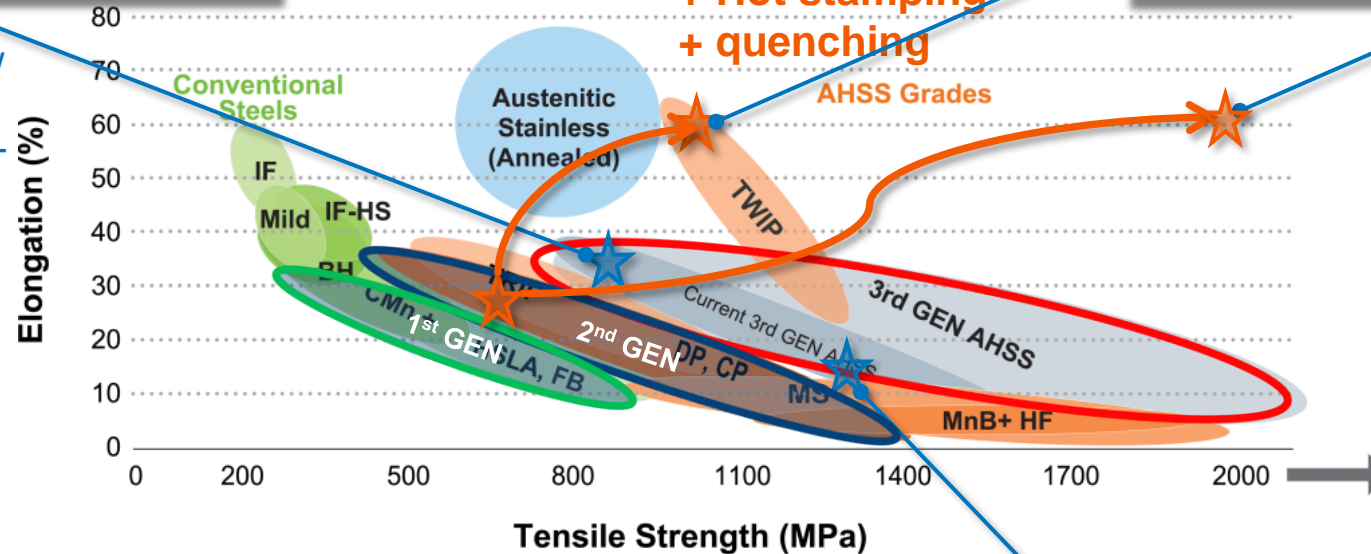


ArcelorMittal

Popular Usibor[®] and Ductibor[®]
PHS automotive offer set to expand

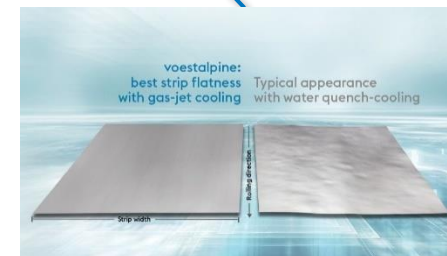
1st sellable strip of this new generation steel grade done on ANDRITZ furnace - 2018

Best gas jet cooling efficiency available on the market



Biggest worldwide capacity for this product & coating achieved with ANDRITZ furnace

Source: WorldAutoSteel



The only one able to use gas jet cooling for these high strength grade at voestalpine (ANDRITZ proprietary technology)



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Annealing of
3rd Generation
AHSS

LATEST INNOVATIONS FOR CONTINUOUS GALVANIZING LINES

Market leading solution for annealing and galvanizing of AHSS grades

- High-quality solution to achieve homogeneous material properties.
- The direct-fired furnace allows exact control of the atmospheric conditions and pre-oxidation of AHSS grades as well as a high-performance strip cleaning effect
- The differential rapid jet cooling technology sets new standards with highest cooling rates and low hydrogen content.
- Available for a wide range of products, including 3rd generation AHSS, such as Q&P grades
- Major customer references: voestalpine, ArcelorMittal, Nucor, thyssenkrupp

KEY SUCCESS FACTOR

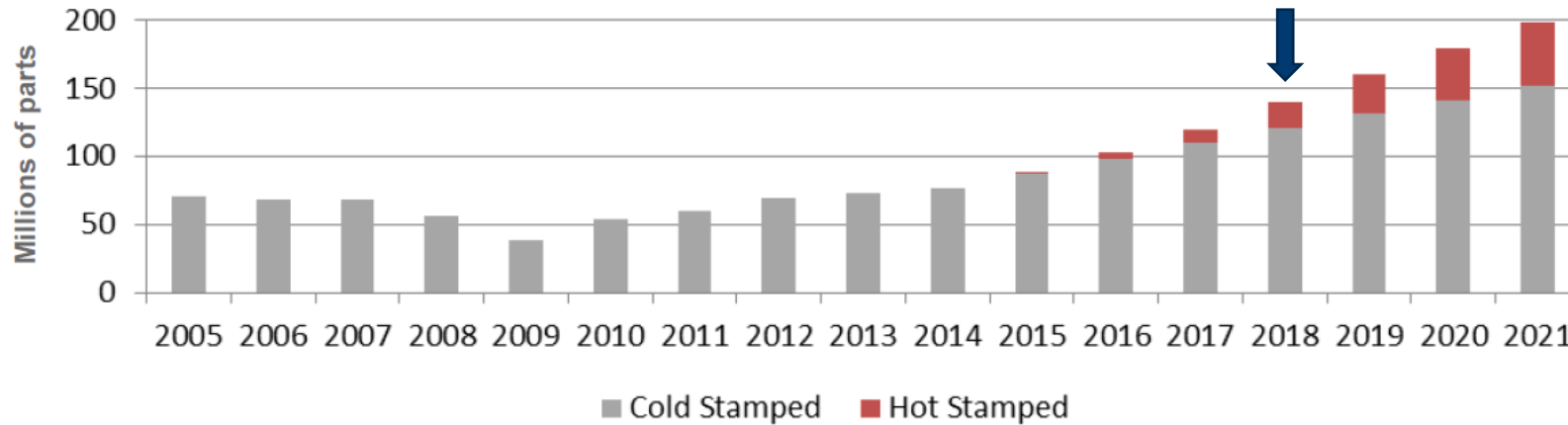
Outstanding references with world-leading process technology.

ANDRITZ SUPPLIES KEY TECHNOLOGIES FOR LATEST GENERATION TAILORED BLANKS



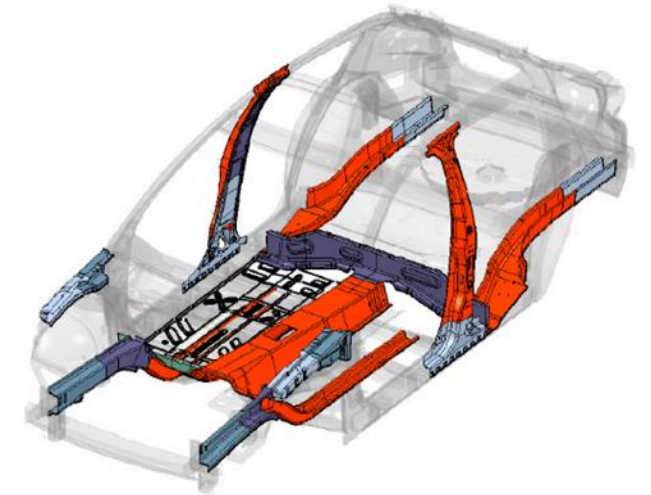
Cold and hot stamped Tailored Blanks in NAFTA

Forecasted Growth



2016 average: **4.5 cold stamped welded blanks per vehicle in NAFTA**

- **Cold stamped parts/vehicle are forecasted to increase to 8 applications per vehicle by 2021**
 - While the number of applications is forecasted to increase, the mix of parts will change from being predominantly door inner to rails and under-body components with shorter welds
- **Hot stamped parts/vehicle are forecasted to increase to 2.5 applications per vehicle by 2021**
 - The growth forecast ranges from a 100% increase in total applications in the pessimistic scenario (start: 2016) to a 240% increase in the optimistic scenario.



Source: Arcelor Mittal



3RD GEN AHSS ARE EXCLUSIVELY PRODUCED ON ANDRITZ FURNACES AND ANDRITZ LWB LINES



voestalpine
ONE STEP AHEAD.
branded products

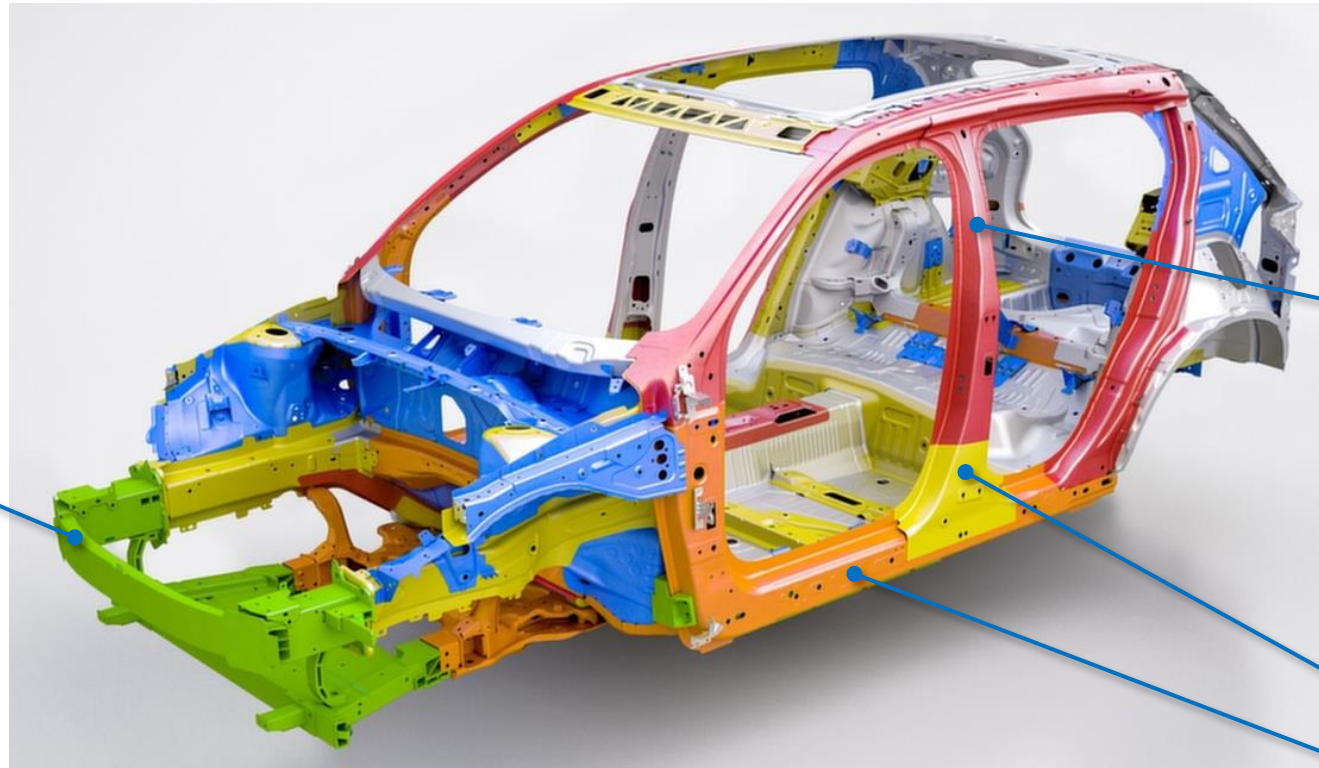
martensitic steels

Martensitic steel
CR1030Y1300T-MS

ahss classic

Complex-phase-steel
CR900Y1180T-CP

Made at Linz
ANDRITZ furnace
start-up 1998
revamp 2019




ArcelorMittal
branded products

Fortiform®
Made at Gent
ANDRITZ furnace
start-up in 2018

Ductibor® 1000

Usibor® 2000

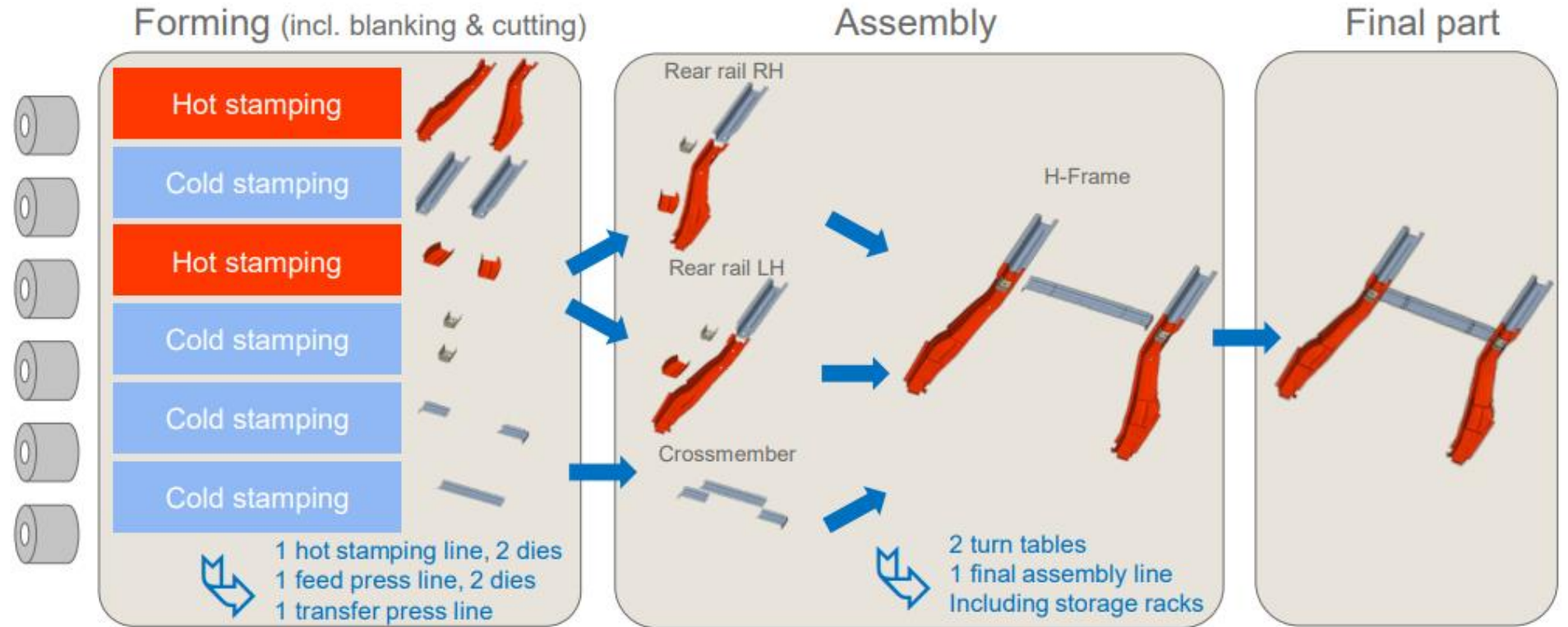
Made at Florange
ANDRITZ furnace
start-up in 2019

Source: Arcelor Mittal

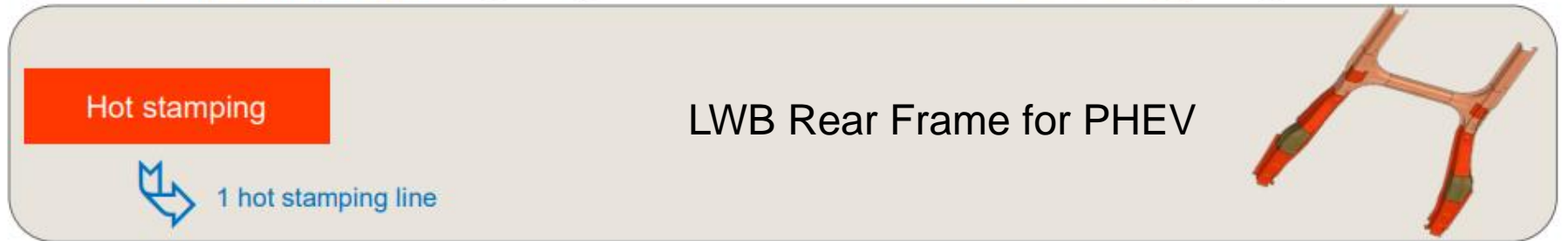
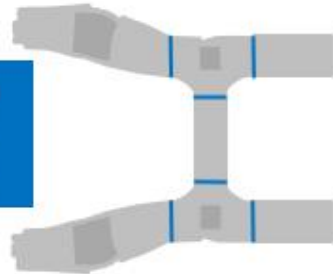
INCREASING GEOMETRICAL COMPLEXITY AND MATERIAL STRENGTH DRIVE LWB



Baseline multi-part



Innovative 1-piece solution

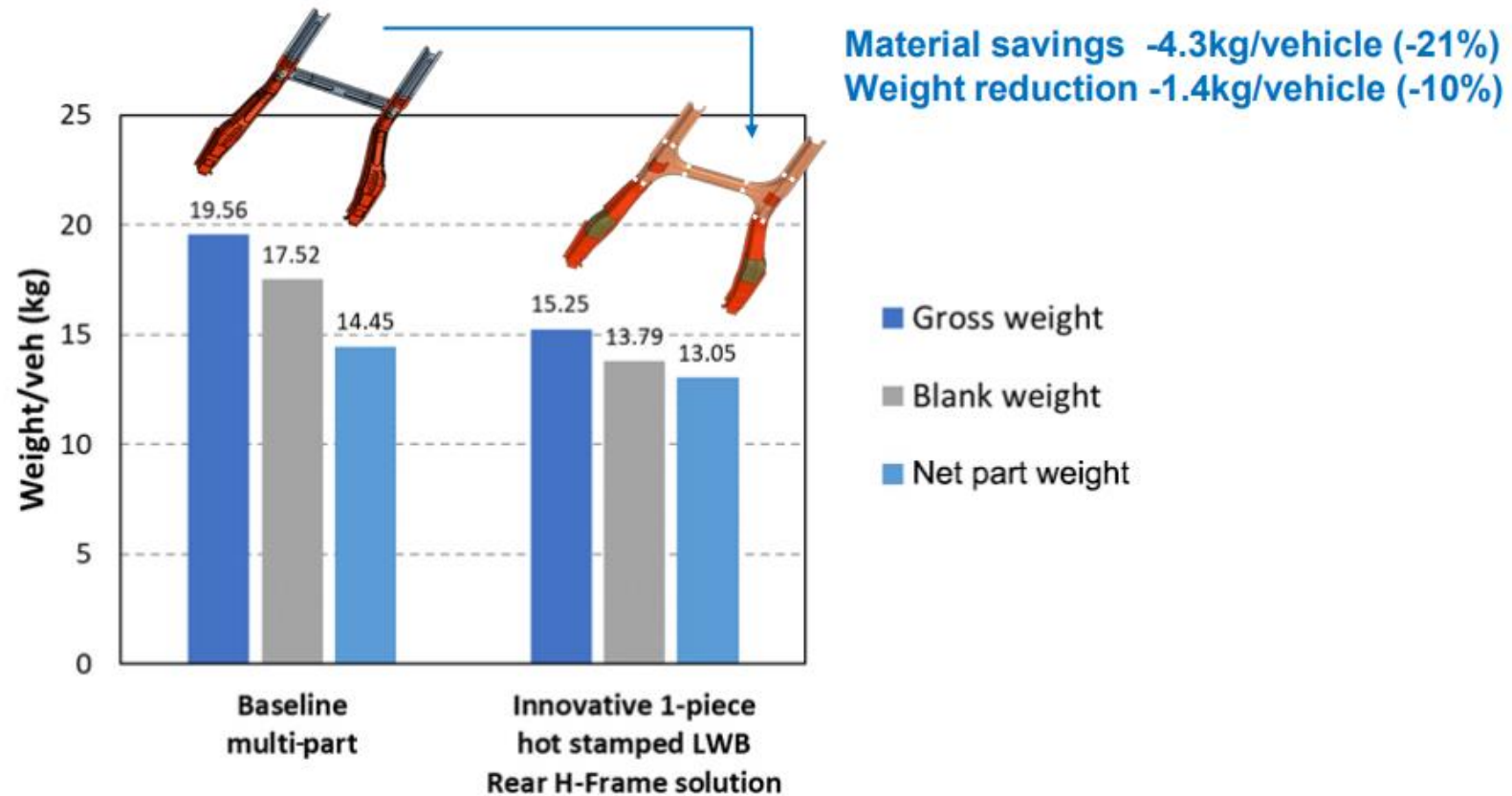


Source: Arcelor Mittal

LWB IS A KEY DRIVER TO REDUCE GHG EMISSIONS IN VEHICLE PRODUCTION AND USE



Hot Stamped LWB Rear H-Frame for PHEV – Weight Comparison

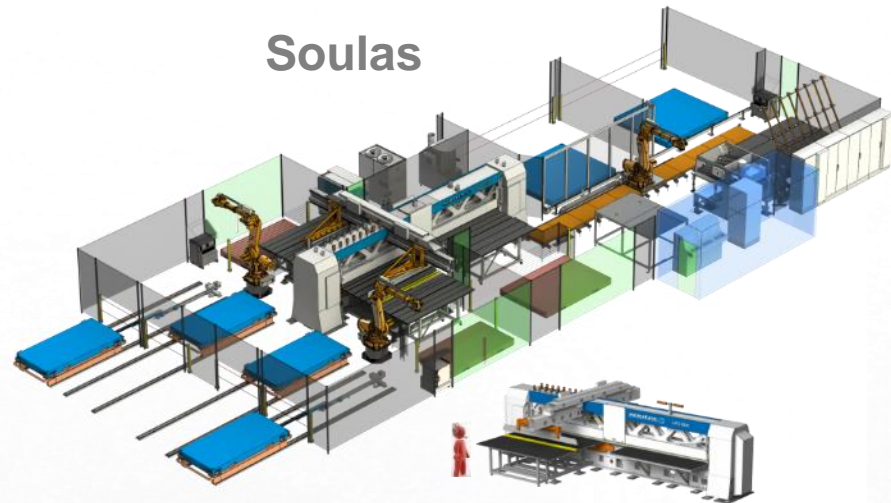
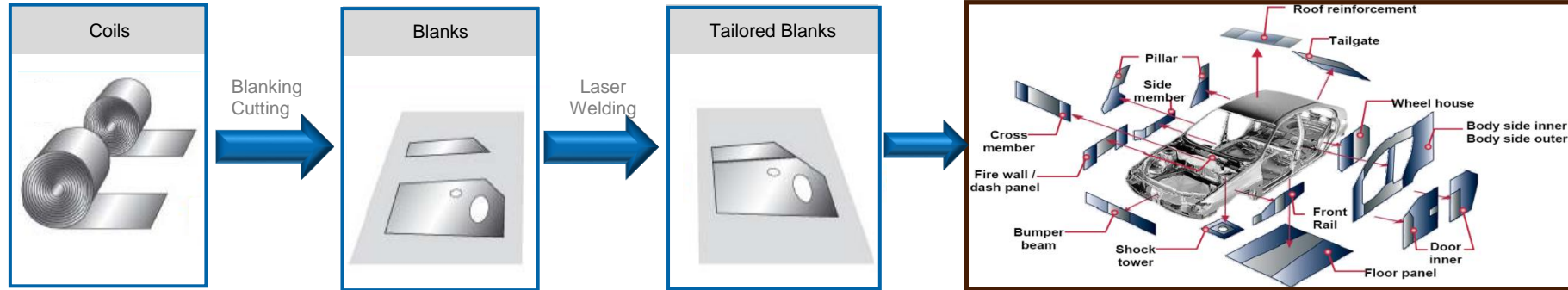


Source: Arcelor Mittal

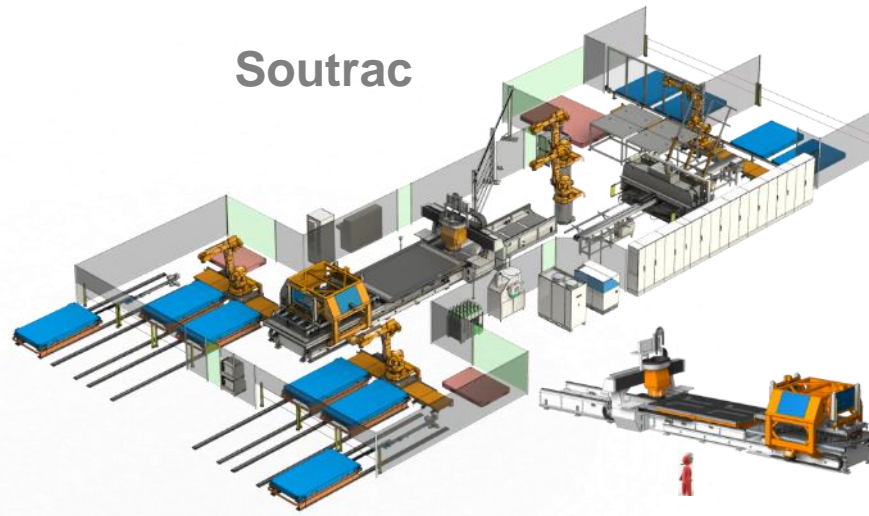
ANDRITZ SOUTEC EQUIPMENT FOR LASER WELDED BLANKS (LWB)



Market and Technology Leadership



Welding systems for all kind of linear seams for mass production

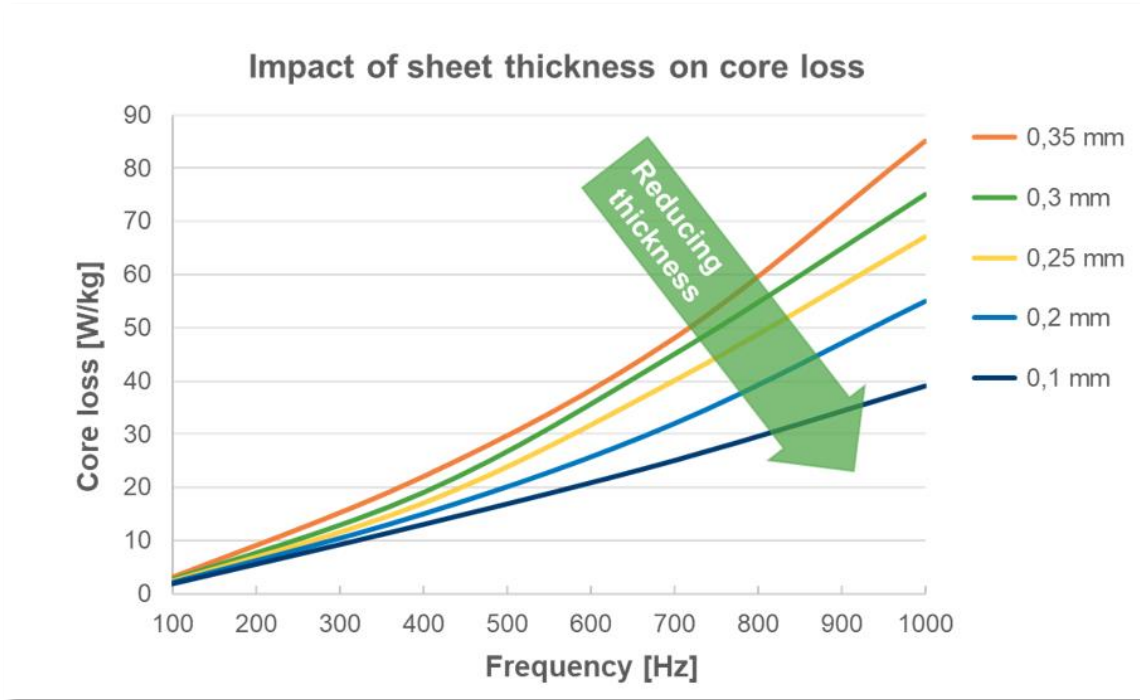


Welding systems for non-linear seams of complex design for mass production

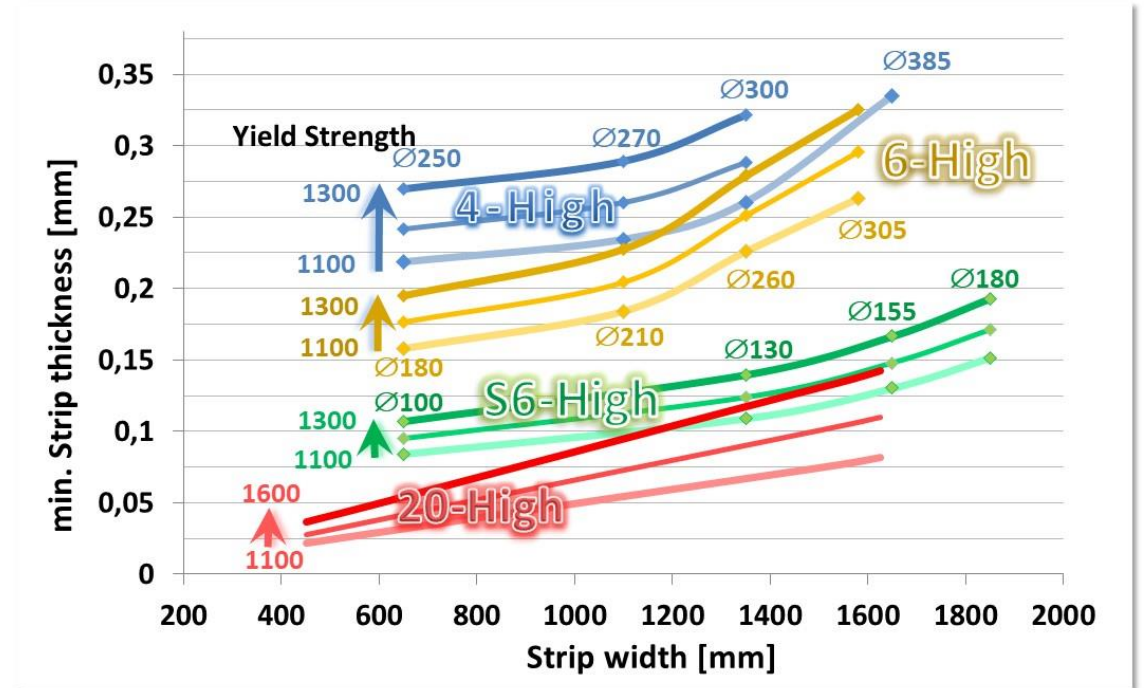
ANDRITZ SOLUTIONS FOR COLD ROLLING MILLS



ANDRITZ's proprietary S6-High Rolling Mill perfectly addresses the upcoming challenges of E-Mobility



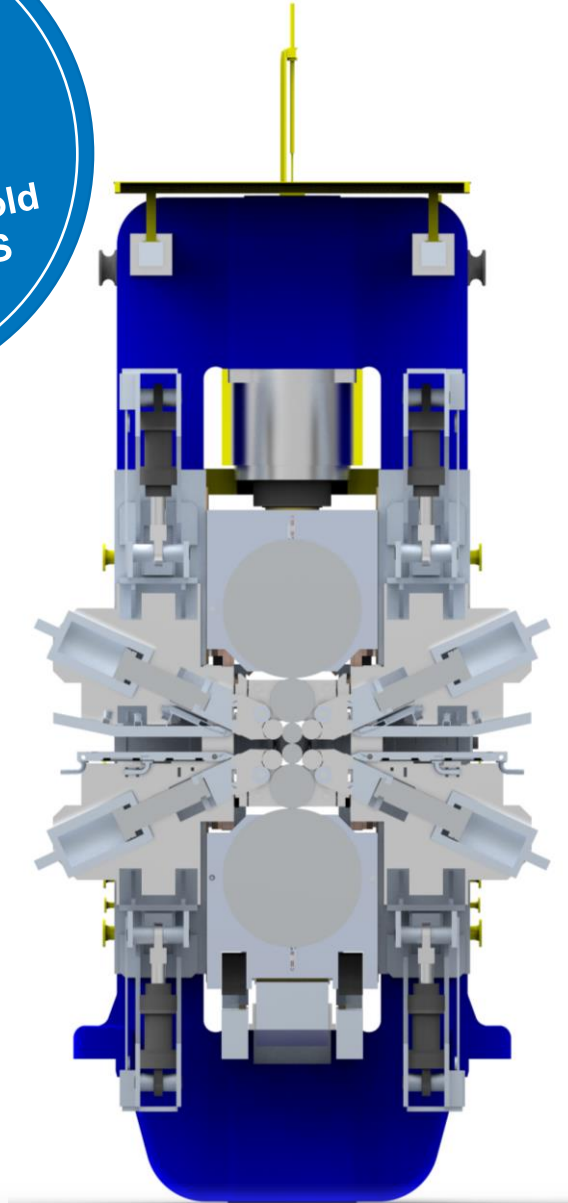
Based on magnetic flux density of 1.0 T; Source: www.waelzholz.com, EN 10303





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S6-High
Most economic cold
rolling for AHSS



LATEST INNOVATIONS IN COLD ROLLING MILL

S6-High Next Generation for rolling new AHSS with higher tensile strength and lower strip gauges

- High pass reduction and low number of passes
 - Increasing of the work roll diameter range by more than 65% by using of a second smaller work roll set
 - Two different sizes of side supports with an overlap of the two work roll ranges
 - Transfer of high rolling torques
 - High productivity and product quality
 - S6-High rolling applied for AHSS, special steel and NGO electrical steel grades
- Latest customer references: Nucor, Shougang

KEY SUCCESS FACTOR

Combination mill used in 4-High mode for reduction of low/medium strength strip or temper mill and S6-High mode for reduction of HSS/AHSS and low strip finish gauges. In total three work roll sets for highest production flexibility.

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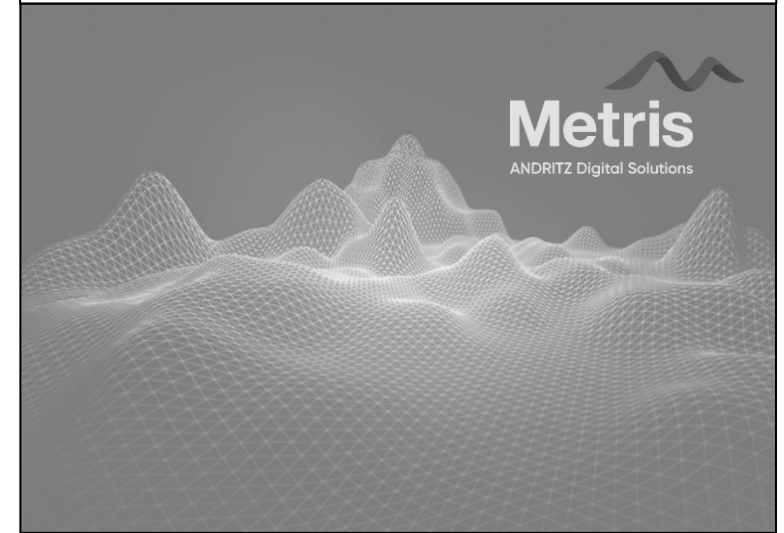
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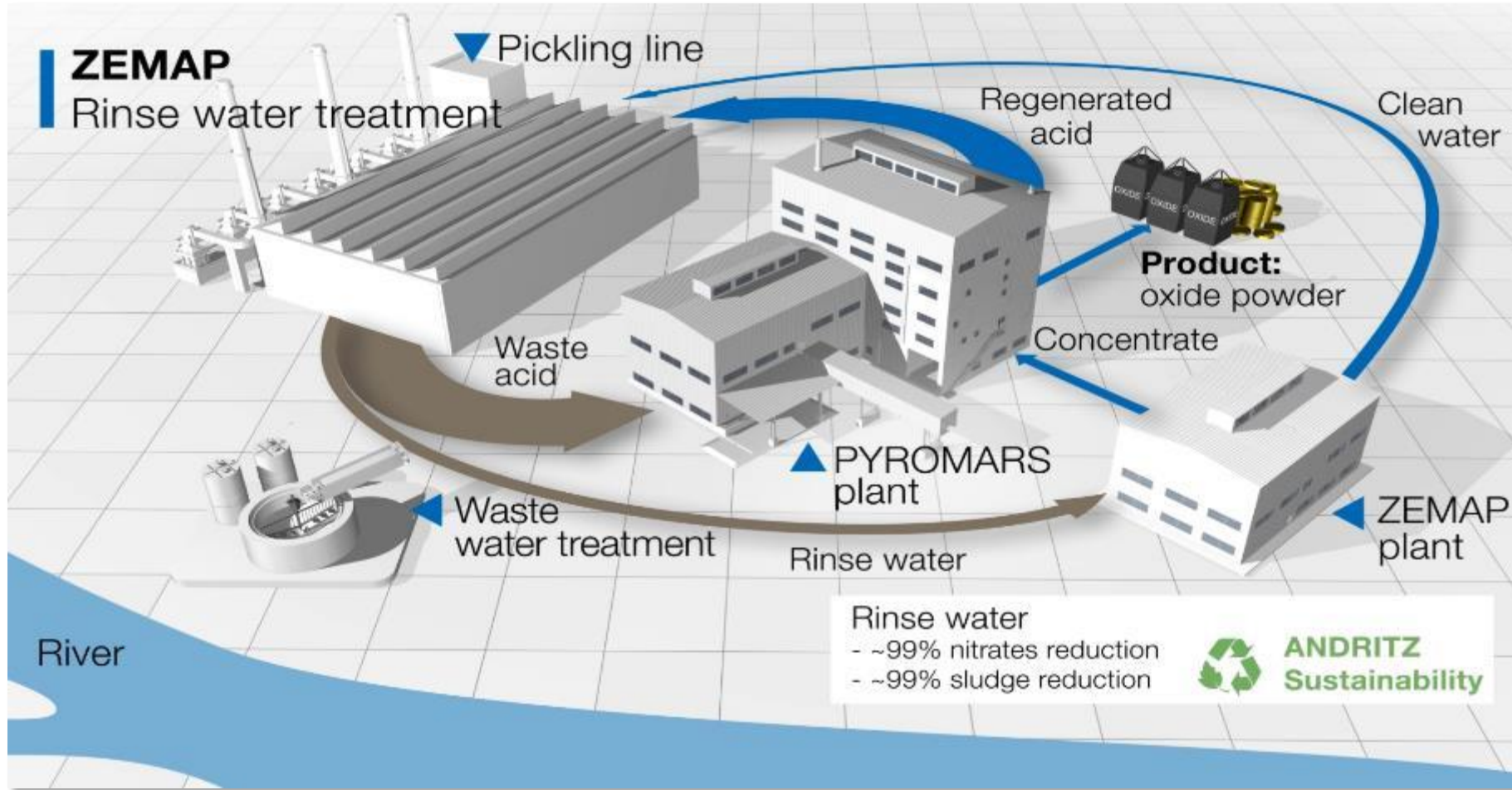


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CircleToZero IN STAINLESS STEEL PROCESSING



PYROMARS + ZEMAP – Zero Effluent Mixed Acid Pickling of stainless steel



Two ZEMAP plants in operation in Republic of China.

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INTELLIGENT FLAT PRODUCT PROCESSING

Target customers: world-class, flat products producer who delivers the product exactly as requested, on time and with consistent quality

Increase asset value



- Risk-based maintenance
- Condition monitoring
- Anomaly detection
- Process change tracking
- Logbook
- Digital twin

**Increase asset availability
by up to 25%**

> 50 references, thereof
> 15 in Metals

Increase product quality



- Intelligent CGL
- Coil quality mgmt.
- Data analytics
- Advanced furnace control
- Process model (picking, annealing)
- Intelligent rolling mill optimization
- Control performance assessment (CPA)

**Minimize yield losses
by up to 5%**

> 60 references, thereof
> 45 in Metals

Improve production performance



- Manufacturing execution system (MES)
- Overall equipment efficiency (OEE)
- Cost/resource management
- Statistical process control (SPC)
- Plant floor management
- Alarm management
- Control performance assessment (CPA)
- Production information (PID)

**Increase production output by
up to 15%**

> 40 references, thereof
> 20 in Metals

Secure sustainable production



- Utility and energy consumption
- Emission reduction (CO₂, NO_x)
- Intelligent acid management
- Cyber security

CO₂ reduction by up to 25%

> 30 references, thereof
> 15 in Metals

ROADMAP 2022-2024



Improve profitability and grow business volume

- **Finish turnaround and grow with healthy profit levels**
 - Revenue towards 700 MEUR
 - EBITA > 6%
- Increase share of **service business** to > 35%
- Strengthen **project management capabilities**
- Leverage niche market position into **regional expansion**
- Develop solutions for the **steel industry's H2 journey**
- Increase share of **green products** to > 30%



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MANY THANKS!

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