STRATEGIC BACKGROUND

WOLFGANG EDER, CEO voestalpine AG
voestalpine is a technology and capital goods company as well as world leader in its business segments, with a unique combination of expertise in materials and processing. The company focuses on product and system solutions made from steel and other metals, in technology-intensive industries and niche segments with extremely high quality standards.
voestalpine’s USP: COMBINATION OF MATERIALS AND PROCESSING EXPERTISE

Competitive advantage and increased customer benefits via...

» Integrated innovation power across long value chains (e.g. additive manufacturing, press hardening steels, high ductility steels, automotive and aircraft components, bonded stacks, complete high speed rail tracks,...)
» Comprehensive solution expertise and intense partnerships with customers (e.g. group wide technological developments with OEMs)
» Quality leadership at finished products based on consistent material and process know how
» Cost reduction via process efficiency based on consistently digitalized value chain management (ideal logistics, high reaction speed, efficient management of interfaces)
voestalpine's USP: COMBINATION OF MATERIALS AND PROCESSING EXPERTISE

Numbers based on normalized annual data

Steel Division
- Crude Steel (in k to)
  - Steel: 5,800
- Steel products: High quality steel sheet, heavy plates including tailored parts

Metal Forming Division
- Crude Steel (in k to)
  - Steel: 800
- Product & system solutions: Automotive body parts, tubes & sections, precision strip, warehouse & rack solutions

High Performance Metals Division
- Crude Steel (in k to)
  - Steel: 1,650
- High performance metals: Tool steels and special alloys, value added services, component production, additive manufacturing

Metal Engineering Division
- Crude Steel (in k to)
  - Steel: 1,650
- Long products and system solutions: Rails, turnout systems, wire rods, seamless tubes and welding technology

Terms and Conditions
- Raw materials
- Steel
- Processing
- Steel and other metals like Aluminum, Titanium, Composite Materials
- Parts
- Components
- Modul / Systems

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OVERVIEW OF INDUSTRIES

Automotive
Aerospace
Energy
Building/Construction
Railways
White goods/Consumer goods
Mechanical Engineering
Other
STRATEGIC CONSIDERATIONS

HBI PLANT

- Performance optimization of existing plants and improvement of marginal cost curve
- Optimization of energy- and environmental footprint (reduction of coke and consequently CO₂-costs)
- HBI is a proven technology with clearly favorable conditions in the future („Shale gas has changed the world“)
- HBI is a prerequisite for all EAF-steel makers with a high quality steel portfolio
- Group wide optimization and growth option with favorable cost basis and high flexibility
- Modular structure as long term strategic option possible
voestalpine SPECIFIC CONSIDERATIONS
HBI PLANT

» Specific burden optimization in Linz and Donawitz

» Specific utilization optimization by debottlenecking of core facilities in the hot phase of the process

» Immediate CO$_2$ cost reduction in existing steelmaking process
ECONOMIC CONSIDERATIONS
HBI PLANT

» voestalpine internal use of HBI limited to 800,000 tons per year

» Ideal economies of scale for HBI plant at a nominal capacity of 2 million tons of HBI production per year

» Therefore sales of HBI to external customers important for economic viability of HBI plant
## Long Term Estimation

### General Condition of HBI Usage

<table>
<thead>
<tr>
<th>Iron ore</th>
<th>Natural gas</th>
<th>Scrap</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓ Worldwide good availability</td>
<td>✓ „Shale gas“-boom (North America,…))</td>
<td>✓ Rising percentage of EAF-based steel mills</td>
</tr>
<tr>
<td>✓ Established market</td>
<td>✓ Decoupling of gas and oil price</td>
<td>✓ Limited availability of high quality scrap</td>
</tr>
<tr>
<td>✓ Decreasing dominance of the top3 ore producers (&gt;“junior miners”)</td>
<td>✓ Renaissance of DRI-production</td>
<td>✓ Increasing demand for virgin iron units</td>
</tr>
</tbody>
</table>

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WHY TEXAS AFTER ANALYZING 18 POSSIBLE SITES IN 7 DIFFERENT COUNTRIES

Best location

Market

Natural gas

Logistics

Electricity

Legal and political stability

Cost factor | % of total cash costs FOB since 04/2010
--- | ---
Iron ore | 70 %
Natural gas | 14 %
Logistics | 6 %
Electricity | 2 %
Others | 8 %

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ONE STEP AHEAD.
LOGISTIC INBOUND (IRON ORE) AND OUTBOUND (HBI)

» Optimization of logistics:
  » Iron ore pellets and HBI are transported in a circular logistic route
  » Reduction of freight cost due to better utilization of freight capacity
  » Basic possibility of pellets imports via Atlantic Ocean (Black Sea area, Northern Europe)
  » Ships can use maximum load draft of 45 ft. (13.7m) in Corpus Christi and carry load of up to 120,000 tons
  » Inland logistics in Europe unchanged to current raw material routes
HBI PLANT – AN INTEGRAL PART OF voestalpine STEEL DIVISION

HERBERT EIBENSTEINER, HEAD OF STEEL DIVISION
CONSTRUCTION PHASE FACTS AND FIGURES

» Groundbreaking: April 23, 2014
» First product: September 28, 2016
» Successful ramp-up phase; plant fully operational: April 1, 2017

» Final costs: USD 1.012 billion (initial budget USD 742 million)
» Reasons for overrun:
  » Critical weather conditions
  » Cost inflation due to unforeseen construction boom in Corpus Christi region
  » Additional investments, technical optimizations and environmental measures (e.g. warehouse design, etc.)
INTERNAL USE OF HBI
MAIN DRIVERS

The HBI plant is a strategic asset tailor-made to address the unique set-up of voestalpine

- CO₂ Savings
- Efficiency/Productivity
- Strategic Options
INTERNAL USE OF HBI
EFFICIENCY/PRODUCTIVITY INCREASE

Bottleneck in Linz set-up: Hot metal production

HBI is charged as additive to regular burden

HBI is used as
- Iron source
- Process performance booster
- Reduction agent reducer

HBI allows for productivity increase and helps to ease hot metal bottleneck → improved utilization of downstream processes and harmonized capacities
INTERNAL USE OF HBI
EFFICIENCY/PRODUCTIVITY INCREASE

Steel Shop (Linz and Donawitz)

» HBI is charged via scrap chutes

» HBI increases scrap load density \( \rightarrow \) reduced charging times, only one scrap chute per heat \( \rightarrow \) shorter tap to tap times

» HBI has low and predictable sulphur and trace element levels \( \rightarrow \) excellent scrap supplement for high-quality steel grades

» HBI enhances scrap mix flexibility \( \rightarrow \) less dependability on expensive scrap grades

» HBI chemically improves slag quality (esp. Donawitz)
voestalpine HBI PLANT

STEFAN EINFALT, CHAIRMAN OF voestalpine TEXAS LLC
WHAT IS HBI AND HOW IS IT USED?

» Premium metallic source based on iron ore pellets (direct reduction grade)
» Process: Pellets are reduced in a shaft furnace by the means of natural gas instead of using coke in the blast furnace process
» Fe content >90%, metallization 92-94%

<table>
<thead>
<tr>
<th>Blast Furnace</th>
<th>Effects of HBI use</th>
<th>Electric Arc Furnace</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increases output</td>
<td>High-quality feedstock for most demanding steel grades</td>
<td></td>
</tr>
<tr>
<td>Reduces CO₂ emissions</td>
<td>Attractive pig iron alternative</td>
<td></td>
</tr>
<tr>
<td>Reduces coke consumption</td>
<td>Scrap supplement</td>
<td></td>
</tr>
</tbody>
</table>
STRATEGIC RATIONALE FOR USE IN EAF (EXTERNAL CUSTOMERS)

- Use in EAF primarily as a scrap supplement in order to produce most demanding steel grades with low residual levels
- Reduction of scrap price risk exposure
- Diversification of raw material mix
  - Access to high quality EAF feed
  - Optimization of feedstock
- Quality push
  - Dilution of scrap
  - Constant low residual level
- Predictable chemistry and quality (in comparison to scrap)
- Improved charging practice (e.g. continuous feed systems)

Example: Required quality < 0.10 Cu

- 30% E3/HMS1
- 30% E6
- 40% HBI

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A STEEP RAMP-UP CURVE...

- Performance test in February 2017 successfully passed
- Promising plant utilization ratio for the first 12 months of production: 75-80% (including hot commissioning)
- Natural disasters and maintenance issues prevented an even higher production rate in year 1
- Customer acquisition started years prior to start of operation – all product sold
...BUT WE LIVED IT ALL IN JUST ONE YEAR

“Harvey was the strongest landfall in this area, known as the Texas Coastal Bend, since Hurricane Carla, in September 1961.”

Consequences:
» Plant shutdown
» Port closure
» Repairs at plant
» Loss of production

“This was the first wintry precipitation event in South Texas since the icing event on January 23rd-24th 2014, and the first measurable snow event since the Christmas Snowstorm of 2004.”

Consequences:
» Equipment failure
» Supply issues caused by low temperatures
» Gas price spikes
SALES STRATEGY
ALLOCATION OF QUANTITIES

Total production since start-up: >2.1 millions metric tons

Top 5 destinations:
» Austria
» Mexico
» USA
» Spain
» Italy
SALES STRATEGY AND USP

**Strategy**

- Focus on customers that use HBI as a scrap supplement, not a substitute
- Differentiate by product quality
  - Carbon content >1.5% increases yield
  - Metallic iron content: 85-87% achieved
  - Ultra low gangue, phosphorus and sulfur levels
  - Screening material prevents fines (>increases yield again!)
- Best service performer
- Offer HBI on long-term basis

**USP**

- Differentiation by product quality
- Reliability and best-in-class service (direct deliveries – without traders involved)
- Continuous supply (especially in US with small barge-lots) guarantees lower working capital
- Deep sea port and favorable logistics into US (by barges) or also international destinations in NAFTA, Maghreb or Europe
POSITIVE MARKET OUTLOOK

» **Short-term**
  » Positive market sentiment prevails over next view months
  » **Demand currently exceeds supply** – several customer inquiries cannot be fulfilled (e.g. Mexico, US, Southern Europe, MENA, South Korea)

» **Mid-term**
  » President Trump’s section 232 measurements could further bolster good environment for steel industry (higher utilization rates of US steel mills trigger higher scrap consumption, hence higher metallics demand)

» **Long-term**
  » **Shift towards EAF steelmaking** in NAFTA and other regions fosters use of prime metallic
  » Top steel grades to be produced via EAF route
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