“The Smart Rail Track by Vossloh”

Investors and analysts meeting at the InnoTrans
Berlin, September 21, 2018
Disclaimer

Note:
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RAIL TRACKS THAT PERMIT UNINTERRUPTED OPERATIONS
Andreas Busemann

- “The Smart Rail Track by Vossloh”
- InnoTrans 2018
Driving innovation. Developing potential.
Create added value for customers

Focusing on customer needs

- Central concern is maximum availability of rail tracks
- Reduction of lifecycle costs through optimized maintenance
- Lower noise emissions in the transportation of people and goods
- Increase of the lifespan of components for the rail tracks
- Fulfillment of quality and safety requirements for products to create a reliable rail infrastructure

The Smart Rail Track by Vossloh

- As a system supplier, Vossloh understands the physics of rail tracks
- All core divisions have innovative products and services for pressing customer needs in their portfolios
- The use of modern sensors allows to determine the condition of rail and switch systems and to intelligently link the collected data in order to gain relevant information for the customer
- Condition-oriented, predictable maintenance reduces operators’ costs, increases the availability of the route and extends the life of the rail infrastructure
The Smart Rail Track by Vossloh

The future of the smart railway

The most pressing issues for the rail industry:

- Higher track availability
- Reduction of noise and CO₂
- Lower lifecycle costs
The Smart Rail Track by Vossloh
The future of the smart railway

The Smart Rail Track by Vossloh
- Tracks that are maximally available
- Connections that are more reliable, quieter and more cost-efficient than ever

The most pressing issues for the rail industry:
- Higher track availability
- Reduction of noise and CO$_2$
- Lower lifecycle costs
The Smart Rail Track by Vossloh
Focal points for the future of rail tracks

Innovative solutions from Vossloh in six key categories

- Continuous Track Controlling
- Smart Maintenance
- Multipurpose Milling (Smart Maintenance)
- Digital Turnout Management
- Silent & Clean Environment
- Industrial Excellence & Innovations
Continuous Track Controlling powered by FRAUSCHER

Continuous condition-based monitoring of rail infrastructure

Platform solution enables maximum track availability

- The most modern sensor technology enables constant real-time monitoring of the condition of the entire track and provides precise data about every section of the rail line
- Self-learning system recognizes and analyzes potential damages on the track and autonomously initiates appropriate measures

Derivation of data-based, condition-based maintenance strategies and monitoring of activities on the track
Smart Maintenance

Smart maintenance management at the push of a button: Innovative. Intelligent. Individual.

Demand-oriented maintenance of rail sections without track closures or timetable disruptions (route monitoring via app)

Smart HSG trains with the most modern sensor technology grind only exactly where needed
Smart Maintenance

Smart maintenance management at the push of a button: Innovative. Intelligent. Individual.

Multi Purpose Milling (MPM)

Innovative milling machine MPM offers maximum flexibility

- Clean procedure (free of dust and sparks) to correct serious rail and switch deficits at hotspots, in urban transport and especially in tunnels
- Simple reprofiling of rails and switches on short routes and narrow spaces in accordance with DB’s RIL 824-8310 norm
- Maximum flexible use both on plate and gravel tracks, as well as vignole rails and grooved rails on all usual track gauges

Smart operation with touch monitors and wireless panel if needed
Digital Turnout Management

Digital innovation with forward-looking IoT sensors

- Forward-looking IoT sensors enable real-time analysis of the condition of switch systems
- Prequalification of the raw data with microprocessors built into the sensor (for example on the point machine)
- V-MON platform combines physical behavior of the switch components with measurement data collected in order to take timely corrective action in the case of possible deficits
- Innovative energy supply makes sensors practically maintenance-free and enables a wide range of use scenarios as well as a large diversity of measurement parameters
- Digital twins provide direct insight into how switch components function and make the maintenance process easier
Silent & Clean Environment

Sustainable reduction of noise and CO₂ volume

Significant reduction of noise and longer rail lifecycles

Optimization of wheel-rail contact

-4 dB(A)

-10 dB(A)
Silent & Clean Environment
Sustainable reduction of noise and CO$_2$ volume

**DFF 336 crossover**

Novel rail fastening system guarantees improved stability and track guidance with significantly less vibration

- High plastic content and high insulator resistance; can be used in corrosive environments
- Energy-efficient production and lower total weight have a positive effect on the carbon footprint

**Smart switch heating for greater energy efficiency**

Reduction of energy costs compared to traditional solutions by up to 85% through the use of renewable energy sources via a heat exchanger
Industrial Excellence & Innovations
The latest materials and design

CogX crossing
New rolled steel CogX with a hardness of 550 HB for an even longer product lifecycle

Tension clamp SKL 15 HF
Significantly optimized and now even less sensitive to vibrations

Rail fastening system 300-1
Completely new design that meets requirements of high-frequency high-speed traffic

amalentic
A new composite material for eco-friendly tie solutions with isotropic material behavior and high UV resistance
Oliver Schuster

- Industrial Excellence & Innovations – “Factory of the future”
- Financial development in the first half of the year
- Austrak transaction
Industrial Excellence & Innovations

“Factory of the future” brings substantial increase of productivity in Werdohl

We are strengthening our roots!
Industrial excellence & innovations

“Factory of the future” brings substantial increase of productivity in Werdohl

- Comprehensive investment to the most modern factory for rail fastening systems worldwide
- Worldwide technology and innovation center with customer-oriented, flexible and digitalized products and services
- At around €40 million, the largest investment in the company’s history
- Significant increase in efficiency through highly automatized manufacturing that meets the latest standards, increase in added value
- Substantial reduction of manufacturing time for tension clamps from eight to four days
- Conclusion of the implementation phase planned for 2021
### Vossloh Group, H1/2018

Encouraging development in Q2/2018, sharp increase in orders received

<table>
<thead>
<tr>
<th>Business development in the first half of 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good sales and EBIT development in Q2/2018 despite lower contributions to sales from the high-margin China business, as expected; outlook for the full year of 2018 confirmed</td>
</tr>
<tr>
<td>Very positive development in orders received, approx. 10 percent above the previous year</td>
</tr>
<tr>
<td>Free cash flow significantly improved with simultaneously significantly higher investments</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Focus market China</th>
</tr>
</thead>
<tbody>
<tr>
<td>Order in Q2 for the supply of fastening systems for the new route from Zhengzhou to Wanzhou (about €30 million), contributions to sales expected from 2019</td>
</tr>
<tr>
<td>Increase in the maintenance business with fastening systems</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Focus market North America</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customized Modules and Vossloh Tie Technologies sign multi-year framework agreements with CN in Q2 for the supply of switches / switch components and concrete ties</td>
</tr>
<tr>
<td>New long-term relationship with important, strategic partner strengthens Vossloh’s position sustainably and supports the expected upward trend in the business in North America</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Transportation (discontinued operations)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales revenues in first half of the year exceed total annual sales in 2017; improved earnings contribution compared to previous year included in the result from discontinued operations</td>
</tr>
<tr>
<td>Status of divestment process: Ongoing in-depth sales discussions with several potential buyers; signing expected in 2018</td>
</tr>
</tbody>
</table>
Vossloh Group, H1/2018

Sales and EBIT as expected below the previous year, positive free cash flow in Q2

<table>
<thead>
<tr>
<th>Key Group indicators</th>
<th>1-6/2017(^1)</th>
<th>1-6/2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales revenues</td>
<td>€ mill.</td>
<td>452.0</td>
</tr>
<tr>
<td>EBIT</td>
<td>€ mill.</td>
<td>35.6</td>
</tr>
<tr>
<td>EBIT margin</td>
<td>%</td>
<td>7.9</td>
</tr>
<tr>
<td>Net income</td>
<td>€ mill.</td>
<td>13.4</td>
</tr>
<tr>
<td>Earnings per share (EPS)</td>
<td>€</td>
<td>0.56</td>
</tr>
<tr>
<td>Return on capital employed (ROCE)</td>
<td>%</td>
<td>9.0</td>
</tr>
<tr>
<td>Value added</td>
<td>€ mill.</td>
<td>6.0</td>
</tr>
<tr>
<td>Free cash flow(^2)</td>
<td>€ mill.</td>
<td>(61.8)</td>
</tr>
<tr>
<td>Capital expenditure</td>
<td>€ mill.</td>
<td>12.8</td>
</tr>
<tr>
<td>Depreciation/amortization</td>
<td>€ mill.</td>
<td>(19.0)</td>
</tr>
</tbody>
</table>

Notes

- **Sales revenues** in the Core Components division below the previous year; about 40% of the Group sales decline caused by negative effects of exchange rate developments.
- **EBIT** decline primarily as a result of sales development at Core Components.
- **Net income** only slight below the previous year due to better result from discontinued operations; EPS at the previous year's level.
- **Free cash flow** clearly improved from previous year, clearly positive in Q2/2018 (€31.8 million).
- **Capital expenditure** significantly above previous year; largest single investment for the modernization of the production plant for manganese frogs in the Customized Modules division.

\(^1\) Prior-year figures adjusted due to the treatment of the Locomotives business unit as discontinued operations.

\(^2\) Includes the effects of discontinued operations; free cash flow comprises the cash flow from operating activities, investments in intangible assets and property, plant and equipment, and cash receipts and payments associated with companies accounted for using the equity method.
### Vossloh Group, H1/2018

Equity ratio still well above 40 percent

<table>
<thead>
<tr>
<th>Key Group indicators</th>
<th>1-6/2017 6/30/2017</th>
<th>1-12/2017 12/31/2017</th>
<th>1-6/2018 6/30/2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equity</td>
<td>€ mill.</td>
<td>559.2</td>
<td>532.4</td>
</tr>
<tr>
<td>Equity ratio</td>
<td>%</td>
<td>44.9</td>
<td>42.5</td>
</tr>
<tr>
<td>Average working capital</td>
<td>€ mill.</td>
<td>206.9</td>
<td>211.6</td>
</tr>
<tr>
<td>Average working capital intensity</td>
<td>%</td>
<td>22.9</td>
<td>23.0</td>
</tr>
<tr>
<td>Closing working capital</td>
<td>€ mill.</td>
<td>236.6</td>
<td>190.0</td>
</tr>
<tr>
<td>Average capital employed</td>
<td>€ mill.</td>
<td>791.5</td>
<td>788.3</td>
</tr>
<tr>
<td>Closing capital employed</td>
<td>€ mill.</td>
<td>805.3</td>
<td>758.7</td>
</tr>
<tr>
<td>Net financial debt</td>
<td>€ mill.</td>
<td>234.7</td>
<td>207.7</td>
</tr>
</tbody>
</table>

#### Notes

- **Equity** lower than at the end of 2017 amongst others due to dividend payments
- **Working capital** significantly lower as of reporting date, particularly due to lower trade receivables
- **Capital employed** noticeably lower than in 2017 due to lower working capital as of the 6/30/2018 reporting date
- **Net financial debt** approximately at the previous year’s level; increase from level at the end of 2017 primarily due to dividend and interest payments

1) Prior-year figures adjusted due to the treatment of the Locomotives business unit as discontinued operations.
Orders received increase significantly by 9.7%, order backlog 6.4% higher

Orders received in € mill.

1-6/2017 1) 1-6/2018

<table>
<thead>
<tr>
<th></th>
<th>Core Components (CC)</th>
<th>Customized Modules (CM)</th>
<th>Lifecycle Solutions (LS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-6/2017</td>
<td>437.1</td>
<td>479.7</td>
<td>510.6</td>
</tr>
<tr>
<td>1-6/2018</td>
<td>447.1</td>
<td>531.1</td>
<td>543.5</td>
</tr>
</tbody>
</table>

Order backlog in € mill.

6/30/17 1) 6/30/18

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<th>Lifecycle Solutions (LS)</th>
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</thead>
<tbody>
<tr>
<td>6/30/17 1)</td>
<td>289.8</td>
<td>312.2</td>
<td>191.1</td>
</tr>
<tr>
<td>6/30/18</td>
<td>340.4</td>
<td>29.1</td>
<td>177.2</td>
</tr>
</tbody>
</table>

Notes

- Orders received increased, particularly due to significantly higher orders received at Vossloh Fastening Systems (China, Italy, Turkey)
- Book-to-bill ratio of the Group at 1.15, book-to-bill > 1 in all business units
- VTT and CM sign multi-year framework agreements with CN in North America in the second quarter that will be recognized in orders received when receiving purchase orders
- High order backlog in the Customized Modules division especially caused by an increase at the companies in the USA and Poland; order backlog of Core Components currently lower than in the previous year primarily at the Chinese company

1) Prior-year figures adjusted due to the treatment of the Locomotives business unit as discontinued operations
Driving innovation. Developing potential.
The Austrak acquisition is a further milestone in the growth strategy

Purchase price of around €32 million, sales in 2017/2018 at €33.2 million
Merger control clearance still pending

Austrak Overview
- Founded in 1980, today the leading manufacturer of concrete ties in Australia
- Also production of switch ties and rail crossings
- Headquarters in Brisbane on the East Coast

Strengthening Vossloh’s core business
Increase vertical integration in the Australian market through our own production of ties, which will lead to added value for customers (inter alia, shorter delivery times)

Disproportionately growth in Australia expected due to mining and urban transport projects
Volker Schenk

- Market environment and growth opportunities
Accessible market with persistent attractive growth

Accessible rail technology market (2021E–2023E)(1)

<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Western Europe</td>
<td>+2.3%</td>
</tr>
<tr>
<td>NAFTA</td>
<td>+3.1%</td>
</tr>
<tr>
<td>Asia-Pacific</td>
<td>+2.5%</td>
</tr>
<tr>
<td>CIS</td>
<td>+0.7%</td>
</tr>
<tr>
<td>Eastern Europe</td>
<td>+2.7%</td>
</tr>
<tr>
<td>Africa/Middle East</td>
<td>+3.8%</td>
</tr>
<tr>
<td>Latin America</td>
<td>+5.3%</td>
</tr>
<tr>
<td>Total</td>
<td>+2.6%</td>
</tr>
</tbody>
</table>

Countries with Vossloh sales > €50 million in 2017
Countries with Vossloh sales < €50 million in 2017

Average yearly total volume of the market forecast by region in the period 2021E–2023E

(1) Average yearly total volume of the accessible market for railway technology in the period 2021E–2023E, source: World Rail Market Study forecast 2018, UNIFE The European Rail Industry, Roland Berger Strategy Consultants
Rail infrastructure and infrastructure services 2015/2017–2021E/2023E

UNIFE study shows good medium- and long-term market potential

UNIFE: Infrastructure and Infrastructure services

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>5,613(1)</td>
<td>6,060(1)</td>
</tr>
<tr>
<td>20,394(1)</td>
<td>21,236(1)</td>
</tr>
</tbody>
</table>

Average yearly volume of the accessible market in the segments infrastructure and infrastructure services in € million, CAGR: + 2.5%(1)


UNIFE forecast: Infrastructure and Infrastructure services

<table>
<thead>
<tr>
<th>2018-2020</th>
<th>2021-2023</th>
</tr>
</thead>
<tbody>
<tr>
<td>6,566(2)</td>
<td>7,103(2)</td>
</tr>
<tr>
<td>22,047(2)</td>
<td>25,079(2)</td>
</tr>
</tbody>
</table>

Average yearly volume of the accessible market in the segments infrastructure and infrastructure services in € million, CAGR: + 1.6%(2)

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<th>2018-2020</th>
<th>2021-2023</th>
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Average yearly volume of the accessible market in the segments infrastructure and infrastructure services in € million, CAGR: + 2.8%(3)

(2) Average yearly volume of the accessible market in the segments infrastructure and infrastructure services in € million, CAGR 2018–2020 compared to 2015–2017.

Rail infrastructure and infrastructure services 2015/2017–2021E/2023E

UNIFE forecast for Vossloh’s main markets

Western Europe (including Germany/France)
- World’s largest market for rail technology, home market of the Vossloh Group
- Comprehensive modernization activities in multiple countries, pace of implementation nevertheless uncertain

Germany
- Largest rail network in Europe with over 70,000 km of track
- Higher investments in local / long-distance traffic/ freight transport routes expected
- DB plans to double the number of long-distance passengers by 2030

France
- Second-largest rail network in Europe with over 50,000 km of track
- Removal of investment blockage; material investments in lines for long-distance and freight transport routes expected

North America
- Largest rail network in the world with over 400,000 km of track
- Significant growth expected especially after 2020

Russia
- Third-largest rail network in the world with over 130,000 km of track
- Relatively inaccessible market

China
- Second-largest rail network in the world with over 200,000 km of track
- Ongoing attractive growth

Focus market Western Europe

Infrastructure

(1) Average yearly volume of the accessible market in the segments infrastructure and infrastructure services in € million and forecast average growth, source: World Rail Market Study 2018, UNIFE The European Rail Industry, Roland Berger Strategy Consultants
(2) Source: World Rail Market Study 2018, UNIFE The European Rail Industry, Roland Berger Strategy Consultants
(3) Significance of the UNIFE study for Vossloh is quite low (among other things, because of the definition of market accessibility)
Andreas Busemann

- Outlook for the Vossloh Group
Summary
Outlook for the Vossloh Group

“The Smart Rail Track by Vossloh”
- Vision of cost-optimized and individualized real-time management of rail infrastructure in implementation
- Innovative solutions meet the most pressing issues of the rail industry

Strategy
- Competitive position in Australian market expanded by Austrak acquisition
- Operators profit from joint development with Frauscher through the unique combination of core competencies of both companies
- UNIFE study sees attractive growth for Vossloh’s focus markets

Outlook 2018
- Sales in the range of €875 million to €950 million
- EBIT margin of between 6.0 and 7.0 percent
- Positive value added in 2018 is aimed for
RAIL TRACKS THAT PERMIT UNINTERRUPTED OPERATIONS
Financial calendar and contact information

You can always contact us

Financial calendar 2018

- October 25, 2018
- March 2019

Quarterly statement as of September 30, 2018
2018 Annual Report

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