

“The Smart Rail Track by Vossloh”

Investors and analysts meeting at the InnoTrans

Berlin, September 21, 2018



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

Higher track
availability

Lower
lifecycle costs

The most
pressing issues
for the rail
industry:

Reduction of
noise and CO₂

The Smart Rail Track by Vossloh

Focal points for the future of rail tracks

***Continuous Track
Controlling***

Smart Maintenance

***Multipurpose Milling
(Smart Maintenance)***

**Innovative solutions from Vossloh
in six key categories**

***Digital Turnout
Management***

***Silent & Clean
Environment***

***Industrial Excellence &
Innovations***

Continuous Track Controlling *powered by* FRAUSCHER

Continuous condition-based monitoring of rail infrastructure

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




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

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.



Smart. Fast. Efficient.

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



Silent & Clean Environment

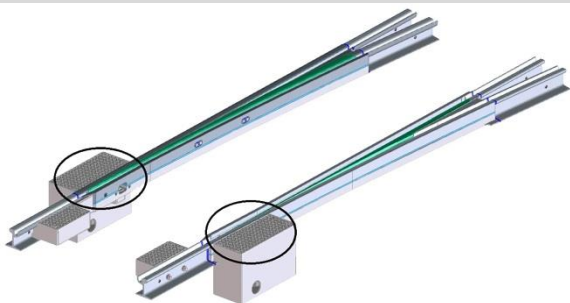
Sustainable reduction of noise and CO₂ volume

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

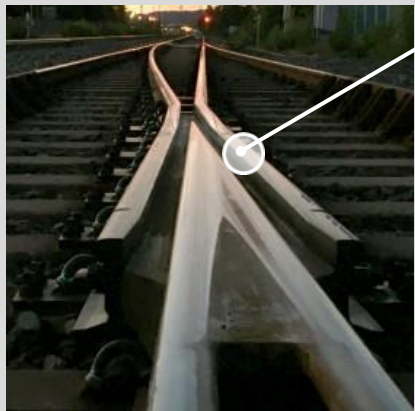


Smart switch heating for greater energy efficiency

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



amalentic

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

Rail fastening system 300-1

Completely new design that meets requirements of high-frequency high-speed traffic



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



FABRIK DER ZUKUNFT

- 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

Business development in the first half of 2018

- 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
- Very positive development in orders received, approx. 10 percent above the previous year
- Free cash flow significantly improved with simultaneously significantly higher investments

Focus market China

- 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
- Increase in the maintenance business with fastening systems

Focus market North America

- 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
- 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

Transportation (discontinued operations)

- 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
- Status of divestment process: Ongoing in-depth sales discussions with several potential buyers; signing expected in 2018

Vossloh Group, H1/2018

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

Key Group indicators		1-6/2017 ¹⁾	1-6/2018	Notes
Sales revenues	€ mill.	452.0	418.1	<ul style="list-style-type: none"> ▪ 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
EBIT	€ mill.	35.6	22.8	
EBIT margin	%	7.9	5.4	
Net income	€ mill.	13.4	11.2	
Earnings per share (EPS)	€	0.56	0.53	
Return on capital employed (ROCE)	%	9.0	5.9	
Value added	€ mill.	6.0	(6.3)	
Free cash flow ²⁾	€ mill.	(61.8)	(2.8)	
Capital expenditure	€ mill.	12.8	19.9	
Depreciation/amortization	€ mill.	(19.0)	(17.6)	

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

Key Group indicators		1-6/2017 6/30/2017 ¹⁾	1-12/2017 12/31/2017	1-6/2018 6/30/2018
Equity	€ mill.	559.2	532.4	519.3
Equity ratio	%	44.9	42.5	43.1
Average working capital	€ mill.	206.9	211.6	208.3
Average working capital intensity	%	22.9	23.0	24.9
Closing working capital	€ mill.	236.6	190.0	210.2
Average capital employed	€ mill.	791.5	788.3	775.0
Closing capital employed	€ mill.	805.3	758.7	784.4
Net financial debt	€ mill.	234.7	207.7	236.1

Notes

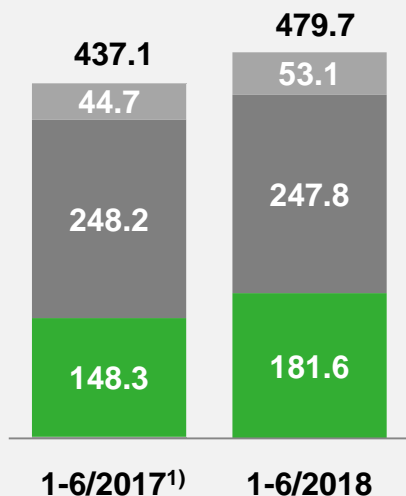
- **Equity** lower than at the end of 2017 amongst others due to dividend payments
- **Working capital** significantly lower as of reporting date, particularly due to lower trade receivables
- **Capital employed** noticeably lower than in 2017 due to lower working capital as of the 6/30/2018 reporting 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.

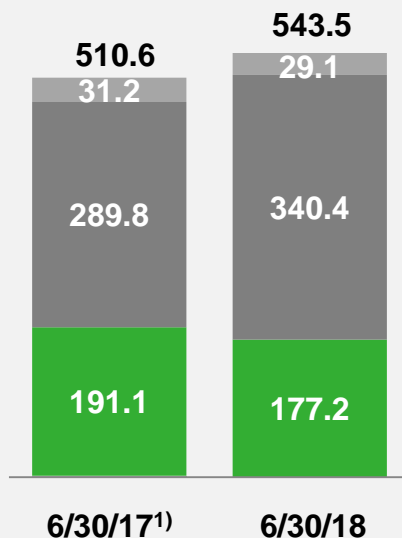
Vossloh Group, H1/2018

Orders received increase significantly by 9.7%, order backlog 6.4% higher

Orders received in € mill.



Order backlog in € mill.



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

■ Core Components (CC) ■ Customized Modules (CM) ■ Lifecycle Solutions (LS)

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

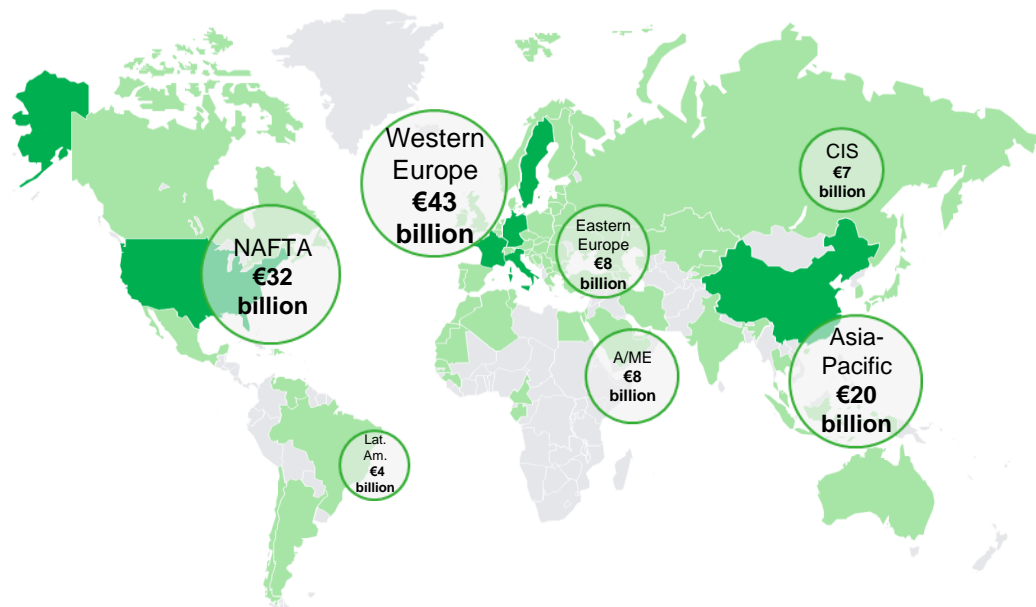
Volker Schenk

- ▶ Market environment and growth opportunities

Market for rail technology 2015/2017 – 2021E/2023E

Accessible market with persistent attractive growth

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



■ 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

CAGR⁽²⁾
(2015–2017 – 2021E–2023E)

Western Europe	+2.3%
NAFTA	+3.1%
Asia-Pacific	+2.5%
CIS	+0.7%
Eastern Europe	+2.7%
Africa/Middle East	+3.8%
Latin America	+5.3%
Total	+2.6%

⁽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
⁽²⁾ Forecasted average growth entire rail technology market, CAGR 2021E–2023E compared to 2015–2017, source: World Rail Market Study 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

in € mill.

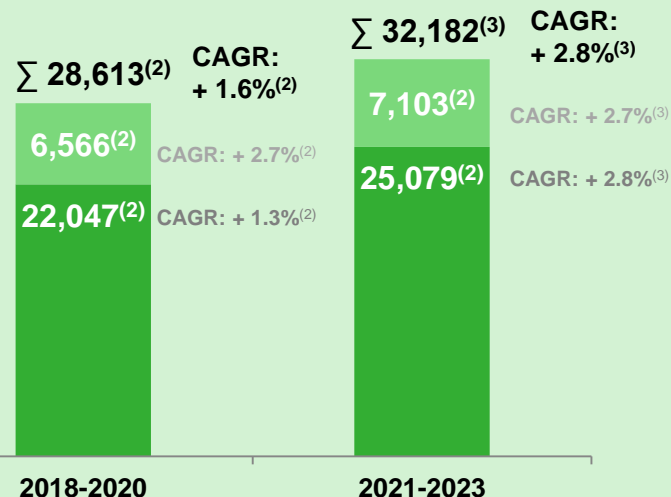
Σ 26,007⁽¹⁾ → Σ 27,296⁽¹⁾ CAGR: + 2.5%⁽¹⁾



■ Infrastructure ■ Infrastructure services

UNIFE forecast: Infrastructure and Infrastructure services

in € mill.



■ Infrastructure ■ Infrastructure services

(1) Average yearly volume of the accessible market in the segments infrastructure and infrastructure services in € million, CAGR 2015–2017 compared to 2013–2015, source: World Rail Market Study 2018, UNIFE The European Rail Industry, Roland Berger Strategy Consultants.

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

(3) Average yearly volume of the accessible market in the segments infrastructure and infrastructure services in € million, CAGR 2021–2023 compared to 2015–2017.

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

UNIFE forecast for Vossloh's main markets

Focus market Western Europe

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

(€ mill.)	CAGR: 3.2% ⁽¹⁾
1,784 7,435	2,203 8,951
2015-2017	2021E-2023E

Germany

- Largest rail network in Europe with over 70,000 km of track⁽²⁾
- Higher investments in local / long-distance traffic/ freight transport routes expected
- DB plans to double the number of long-distance passengers by 2030

(€ mill.)	CAGR: 5.3% ⁽¹⁾
551 2,400	630 3,392
2015-2017	2021E-2023E

France

- Second-largest rail network in Europe with over 50,000 km of track⁽²⁾
- Removal of investment blockage; material investments in lines for long-distance and freight transport routes expected

(€ mill.)	CAGR: 3.1% ⁽¹⁾
277 947	329 1,141
2015-2017	2021E-2023E

North America

- Largest rail network in the world with over 400,000 km of track⁽²⁾
- Significant growth expected especially after 2020

(€ mill.)	CAGR: 2.8% ⁽¹⁾
3,047 6,052	3,489 7,244
2015-2017	2021E-2023E

Russia⁽²⁾

- Third-largest rail network in the world with over 130,000 km of track⁽²⁾
- Relatively inaccessible market

(€ mill.)	CAGR: (0.7)% ⁽¹⁾
557 2015-2017	533 2021E-2023E

China⁽²⁾

- Second-largest rail network in the world with over 200,000 km of track⁽²⁾
- Ongoing attractive growth

(€ mill.)	CAGR: 2.5% ⁽¹⁾
180 2015-2017	209 2021E-2023E

Australia

- Over 50,000 km of track⁽²⁾
- Increasing infrastructure demand through investments in mines/regional transport.

(€ mill.)	CAGR: 4.9% ⁽¹⁾
375 1,017	425 1,427
2015-2017	2021E-2023E

India⁽³⁾

- Attractive infrastructure growth through “Integrated Transportation Plan 2032”

(€ mill.)	CAGR: 8.6% ⁽¹⁾
725 2015-2017	1,192 2021E-2023E

Additional focus markets:

Growth

Infrastructure Infrastructure services

⁽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”

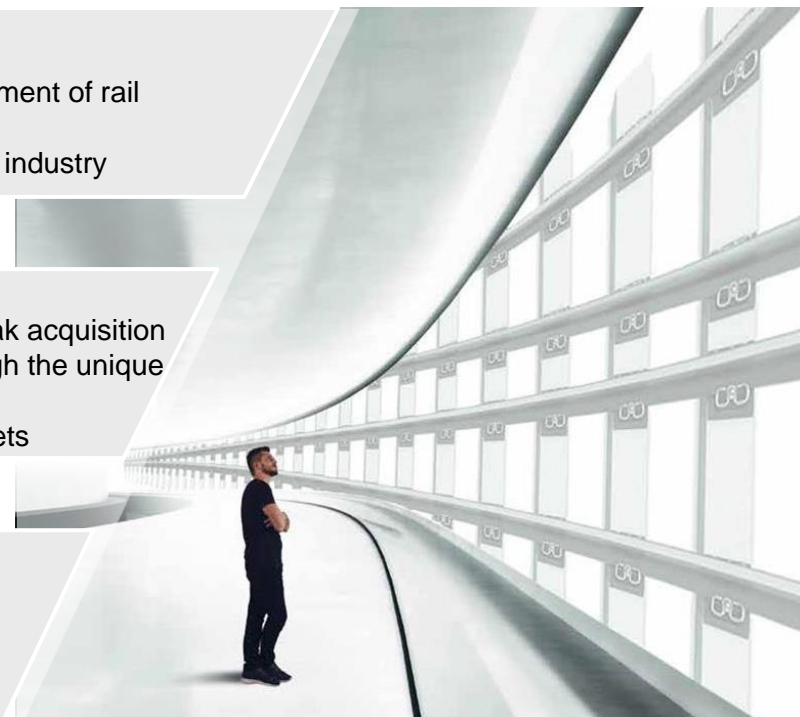
- Vision of cost-optimized and individualized real-time management of rail infrastructure in implementation
- Innovative solutions meet the most pressing issues of the rail industry

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 | Quarterly statement as of September 30, 2018 |
| ▪ March 2019 | 2018 Annual Report |

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