



# **VOSSLOH FASTENING SYSTEMS**

Company Presentation  
Status May 2024



# AGENDA

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at a glance**

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01

**THE VOSSLOH GROUP AT A  
GLANCE**

# THE VOSSLÖH GROUP

## PROFILE

Vossloh has been producing proven key components for rail infrastructure for over 140 years. We offer customers integrated solutions and services covering the entire rail cycle from a single source - with the aim of maximising track availability.



Vossloh is committed to sustainable corporate management and climate protection. Thus, we prepare the way for sustainable mobility of people and goods with our products and services following the company's guiding principle: „Vossloh – enabling green mobility“.

The Vossloh Group is represented in 20 countries with fully consolidated companies. With approximately 4,000 employees the Group – which is listed on the stock exchange – achieved 2023 sales of €1,214,3 Million; almost 47 percent of it was outside Europe.



# CORPORATE STRUCTURE

Focus on rail infrastructure

546.7



## Core Components

Mass products in large quantities for rail infrastructure projects

### Business units:

Vossloh Fastening Systems  
Vossloh Tie Technologies  
(e.g. concrete sleepers)

537.4



## Customized Modules

Project-specific customized modular solutions

### Business units:

Vossloh Switch Systems  
(switches, signaling products and systems)

163.5



## Lifecycle Solutions

Specialized services for the life cycle of rails and switches

### Business units:

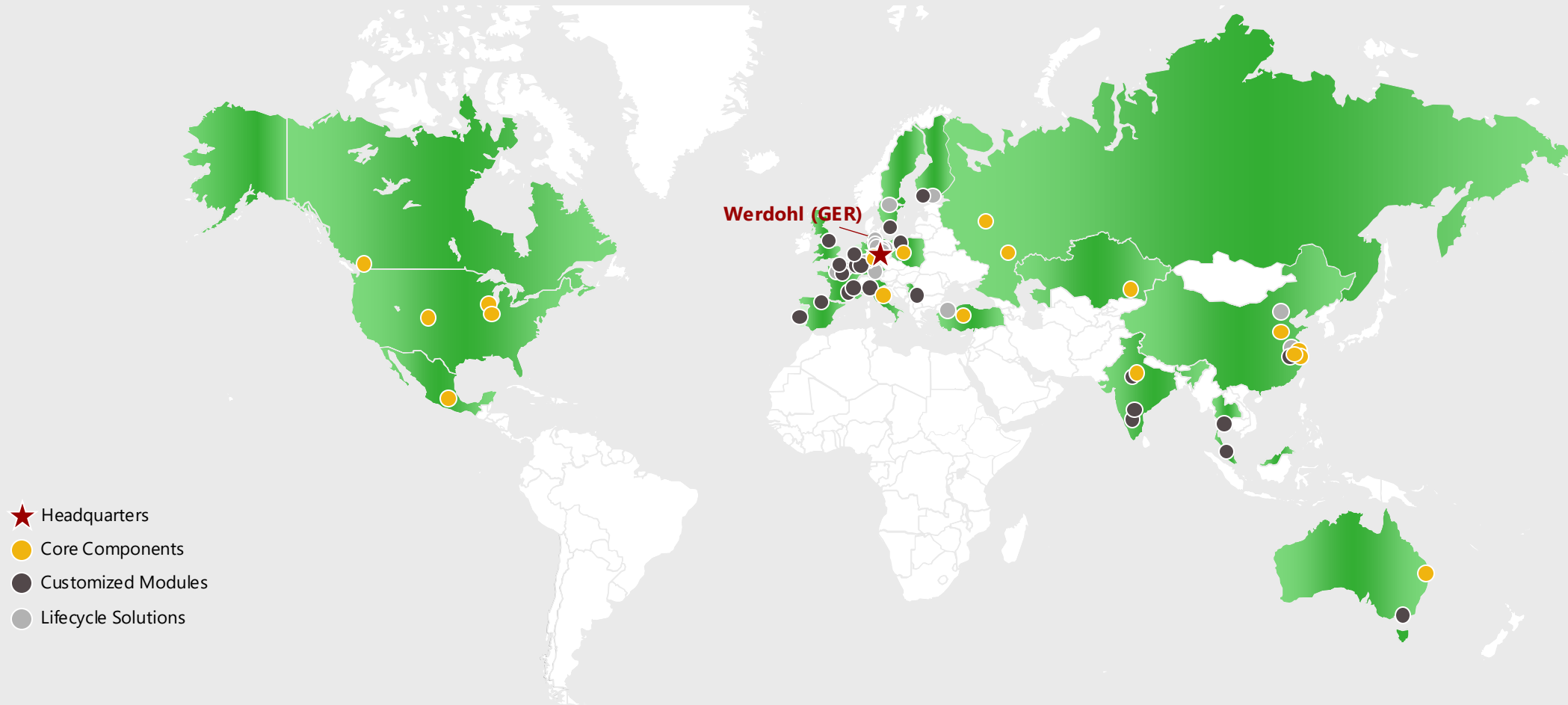
Vossloh Rail Services  
(in particular maintenance, processing and preventive maintenance of rails and switches, as well as welding work and rail logistics)

\* Annual average number of employees | Figures 31.12.2023

# GLOBALLY ACTIVE WITH LOCAL PRESENCE

VOSSLOH PRODUCTS IN OPERATION IN OVER 85 COUNTRIES

Broadly diversified sales structure on all continents



# THE COLLECTIVE VOSSLÖH STORY

**Foundation**  
of the company Eduard  
Vossloh, headquartered  
in Werdohl

**Foundation**  
of Stahlberg-Roensch GmbH  
in Hamburg

**Creation**  
of the current **Vossloh**  
**AG**, which is listed on the  
stock exchange

**Takeover**  
**of the Stahlberg-**  
**Roensch Group**,  
track upkeep and logistics  
services

**Acquisition**  
**of Rocla Concrete Tie, Inc.**  
portfolio expansion with  
concrete ties and crossing panels  
for the North American market

**1888**

**1948**

**1990**

**2010**

**2017**

**1904**

**Foundation**  
of the Société de  
Construction et  
d'Embranchements  
Industriels in  
Reichshoffen/Alsace

**1967**

**Patent**  
for the first elastic track  
fastening system

**2002**

**Acquisition**  
**of the French Cogifer**  
**Group**  
expansion of the product  
range with switches and  
signalling components

**2014**

**New three-division**  
**Group** structure under  
the central motto of  
"One Vossloh"

**2018**

**Acquisition**  
of the Australian  
Ties manufacturer  
**Austrak** and of the  
milling business of  
**STRABAG Rail**  
**GmbH**

# PRODUCTS AND SOLUTIONS FROM A SINGLE SOURCE

OUR PRODUCT RANGE





# HEALTH & SAFETY

SAFE PRODUCTS – SAFELY PRODUCED

- / Health and safety are of highest importance to Vossloh and indispensable for the long-term success of our company.
- / We strive to provide a safe and health-conducive working environment for all Vossloh employees.
- / Our top priority is "Zero Accidents".
- / Vossloh pursues a globally applicable work safety policy with uniform directives.
- / In addition, the Work Safety Committee proactively develops and promotes a group-wide safety culture.
- / Preventive measures include regular facility tours, repeated safety contacts, post-analysis even of almost accidents and fast implementation of improvements.
- / Progress made in the field of work safety and health protection is bonus-relevant for managerial staff.





02

**VOSSLOH FASTENING SYSTEMS**

# WORLDWIDE OVER A TOTAL DISTANCE OF 170,000 KM

## VOSSLOH FASTENING SYSTEMS

Vossloh Fastening Systems is the world's leading provider of rail fastening systems with more than 135 years of experience and inventor of maintenance-free elastic rail fastening systems.



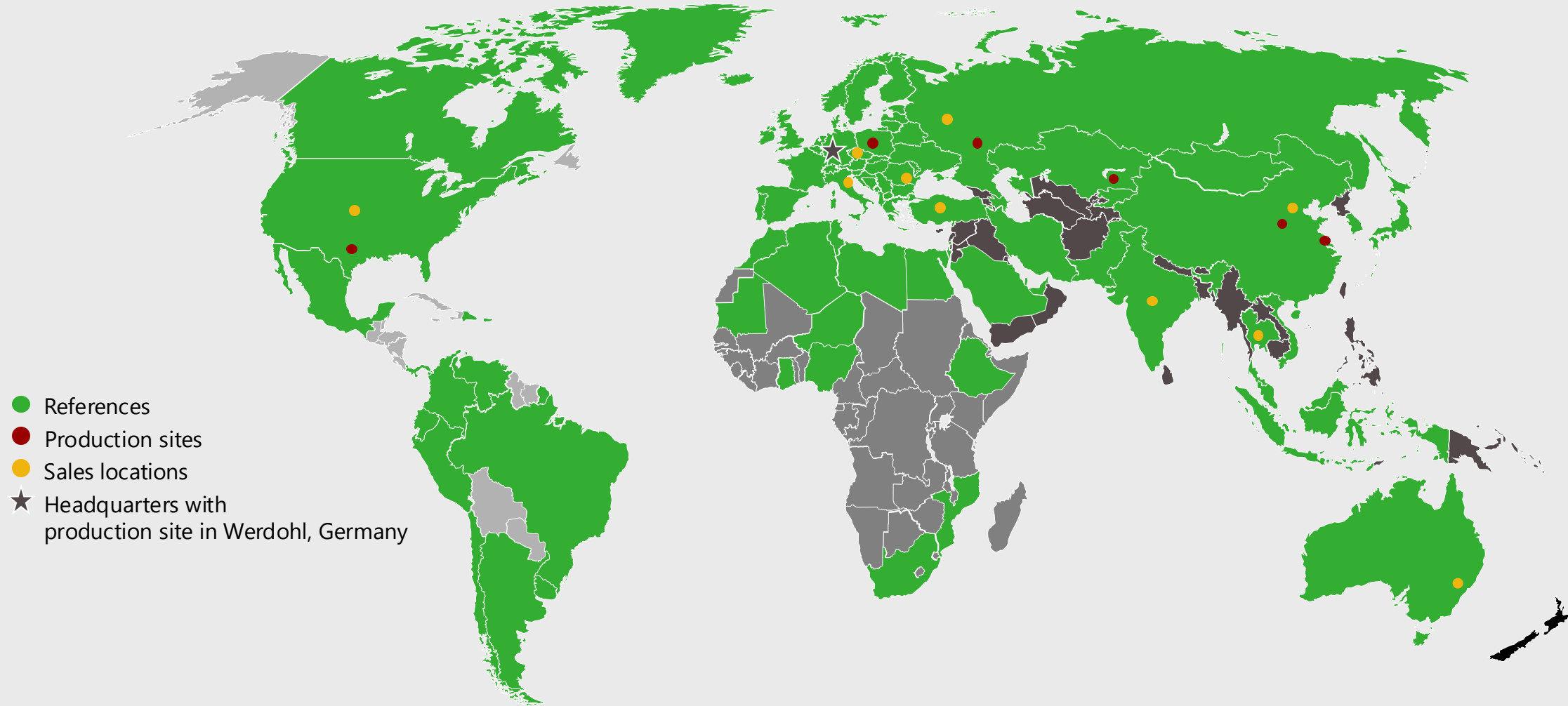
The product range includes fastenings for ballasted tracks and slab tracks for all load profiles from heavy-haul to high-speed as well as urban transport.

Around 50 million tension clamps are produced each year in the production facilities in Germany, China, Poland and the USA. Our products are used in more than 70 countries and more than 70% of the standard European routes are equipped with fastening systems from Vossloh.



# GLOBAL PRESENCE

VOSSLOH FASTENING SYSTEMS



# ACCORDING TO OUR HISTORY AND OUR EXPERIENCE WE SET STANDARDS FOR THE FUTURE



Vossloh has been based in Werdohl since 1883 and has been a reliable partner to the railway industry for over 130 years.



Vossloh's elastic fastening systems sparked a revolution in the railway industry in 1967.



Each of our fastening systems is a high-tech product, developed and tested in our own technology center in Werdohl.



In our technology center we test our products according to international standards.

# KNOW-HOW IS OUR TRADITION

## VOSSLOH FASTENING SYSTEMS


- / Global team of engineers, designers, materials researchers, measurement technicians and many other highly qualified experts.
- / Continuous research - 78 patents currently reflect our innovative strength.
- / Cooperation with more than 20 renowned universities, colleges and research institutes worldwide.
- / We not only meet quality and safety standards, we also support regulatory authorities worldwide in the development and elaboration of technical guidelines and standards.
- / We process around 2,000 product-specific customer inquiries every year.
- / Honest feedback from our customers is important to us, which is why we conduct regular customer satisfaction analyzes.



# EVERY VOSSLOH FASTENING SYSTEM IS A REAL HIGH TECH PRODUCT

DEVELOPED AND TESTED IN OUR OWN R&D LABORATORIES

- / Every rail fastening system from Vossloh is developed and tested in the company's own state-of-the-art R&D laboratories.
- / Every newly developed product passes through a clearly defined innovation process here, with each development stage following a coordinated management process. This ensures compliance with the highest quality standards and efficiency.
- / Materials testing and endurance testing can be carried out in accordance with customer requirements or the test conditions of international standards.



In-house test rooms  
and laboratories at  
the Werdohl site

Testing of individual  
components as well as  
complete systems





# 03

## **CONVENTIONAL RAIL – INNOVATION FOR THE RAILS OF TOMORROW**



# CONVENTIONAL RAIL

INNOVATION FOR THE RAIL OF TOMORROW



## / Safety on standard routes

Our tension clamps form a stable fastening solution for line types with an axle load of to 26 t. The highly componets ensure a pleasant journey.

## / Unconventional solutions for conventional routes

On one hand, rail fastenings must cope with high goods loads in order to protect the rail bed and the rail from wear. On the other hand, in passenger travel they must provide high travel comfort without rough vibrations. The highly elastic system solutions by Vossloh satisfy these requirements especially as they reduce unwanted vibrations.

## / Unrivalled flexibility

Thanks to our intermediate plates and rail pads of *cellentic* elastomer, the rail elasticity of conventional rail tracks can be adapted to the different requirements. Thanks to the extent of our range, the Vossloh systems fulfill numerous requirements.



# INNOVATION FOR THE RAIL OF TOMORROW

## CONVENTIONAL RAIL



### Property

Our unrivalled range...

Extremely resistant plastic material ...

The great fatigue strength of our components ...

Innovation in our research and development department ...

### Advantage

... permits tailored conventional rail solutions for each type of rail bed.

... permits use in any climatic zone.

... guarantees long life and ensures long-term rail investments.

... continuously improve safety and sustainability.



# CONVENTIONAL RAIL LINES IN 69 COUNTRIES ON 80,217 KM

MORE THAN TWO TIMES AROUND THE EQUATOR



Conventional lines are in demand as never before: Wherever long-life fastening systems of Vossloh are installed; the route operators profit from the high durability of our solutions from day one.



System W 14



System DFF 21



System W 21



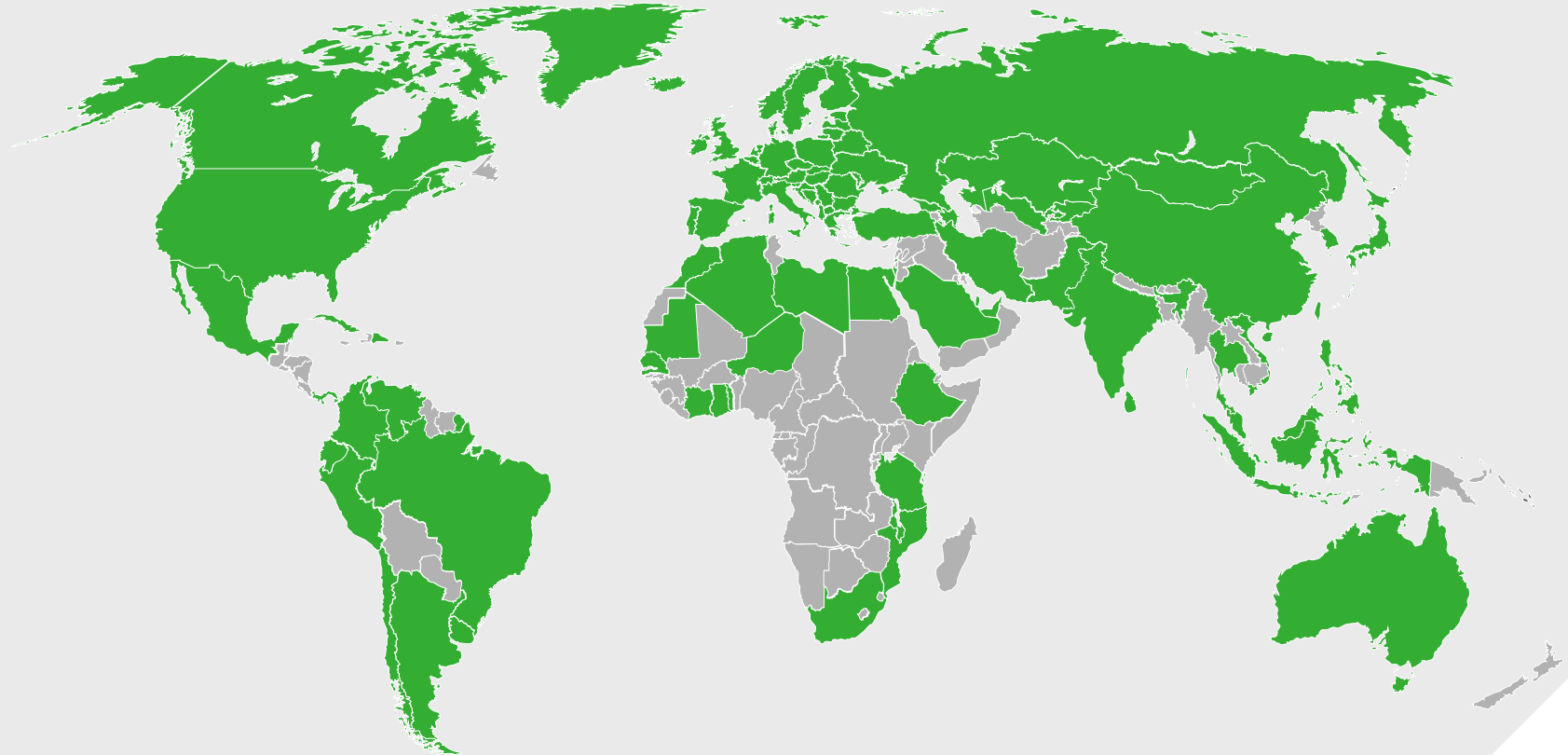
System KS 24



System W 30



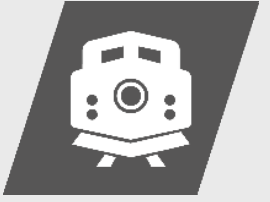
System 300 NG





# 04

## **HEAVY HAUL –** HEAVY LOADS SAFETY ON THE RAIL



# HEAVY HAUL

## HEAVY LOAD SAFELY ON THE RAIL

### / Heavy loads safely guided

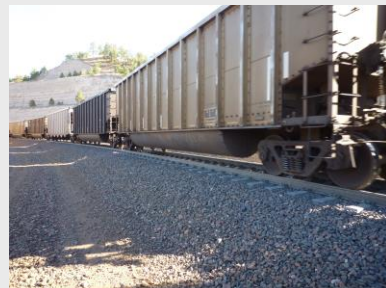
Axle loads of more than 26 tonnes mean extreme loads for the railway track. Resistant fastening systems ensure safe and durable connections and simultaneously allow fast and easy maintenance.

### / Certificated product quality for safety and durability in heavy haul traffic

Vossloh checks the fatigue strength of tension clamp. In our labs, not only vertical forces but also loads in the lengthwise and lateral directions are simulated. We perform comprehensive combination examinations to safely exclude undesired tilting of the rail and thus increase rail safety.

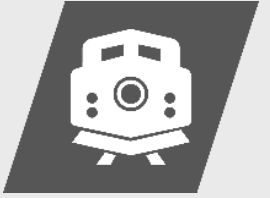
### / Robust rail – long-lived and low-maintenance – Axle loads up to 72 tons

Our weather resistant special fastenings for heavy haul applications not only protect the rail, but also the entire track superstructure from material fatigue and ensure stability even under the highest loads and in the narrowest curves.



# HEAVY LOAD SAFELY ON THE RAIL

HEAVY HAUL



## Property

Combinations of force-absorbing railbearings with dedicated clamping and angle guidance elements ...

Further developments of tried and tested fastening components...

Easy-to-install fastening systems ...

Optimized retention forces in the horizontal and vertical directions...

## Advantage

... manage the split between economic efficiency and increasing safety requirements.

... permit safe heavy haul traffic.

... offer a cost-efficient option for retrofitting of railway routes.

... extend the usage duration, reduce the maintenance effort.





# HEAVY HAUL ROUTES IN 15 COUNTRIES OVER 3,250 KM

EQUATES APPROXIMATELY TO THE ROUTE FROM HAMMERFEST TO ROMA

- / Milelong trains and tight curves: W 40 HH AP system for the extreme heavy haul traffic in the USA
- / Deserts and lowlands – Mauretania’s only railway route: since 2005, Vossloh equipped this heavy-load route with its KS System
- / Crane rails at container harbours – **up to 72 tons in Sidney**: we developed the DFF 30 HH system based on the tried and tested W 30 HH and DFF 300 solutions



System DFF 30 HH



System W 14 HH



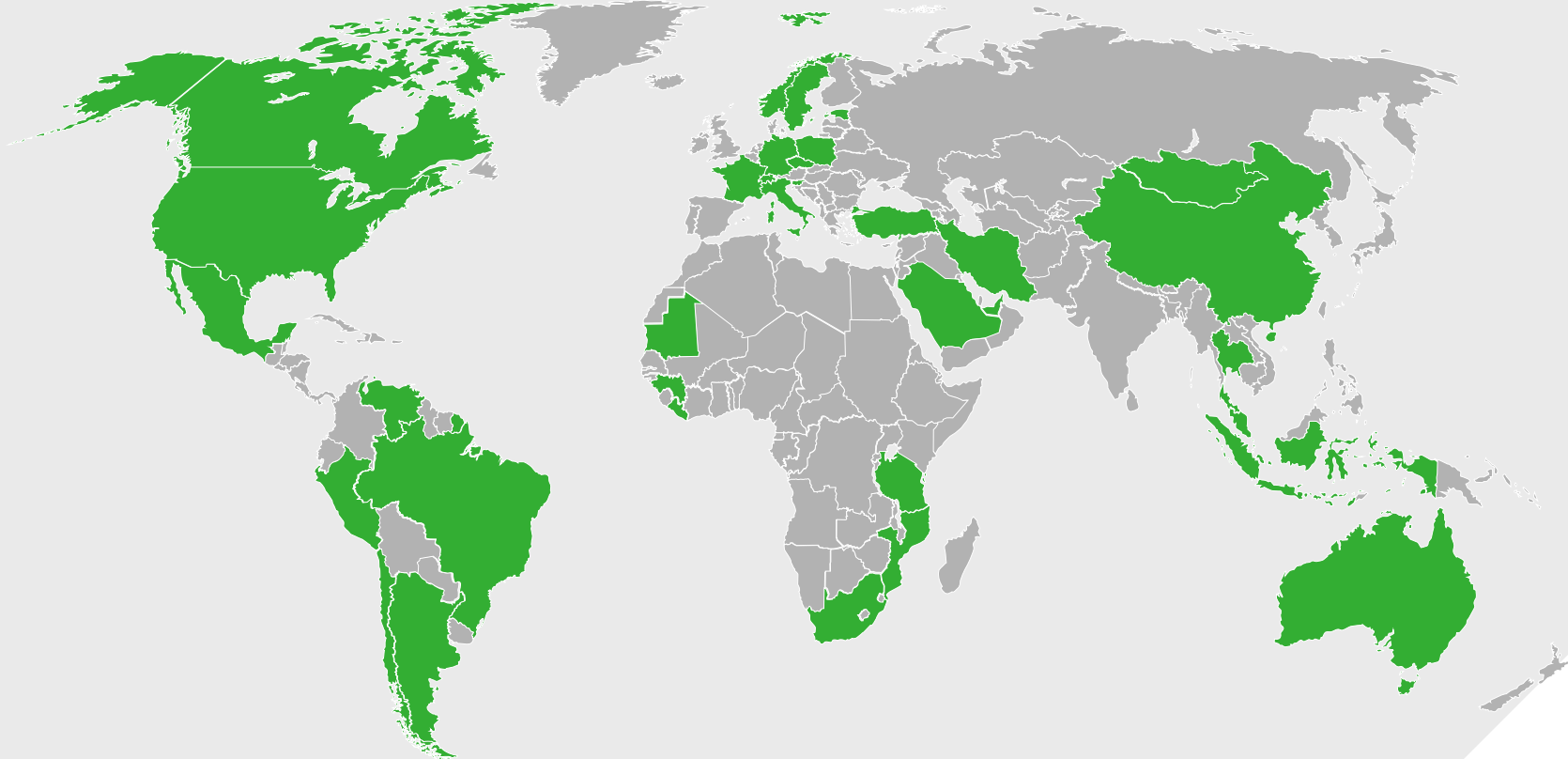
System W 30 HH



System W 40 HH



System 300 HH





05

**HIGH SPEED –**  
GENTLE TO THE RAIL



# HIGH SPEED

## GENTLE TO THE RAIL



### / High Speed – On an elastic base

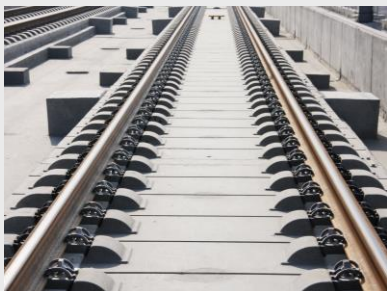
High speeds are a load test for the rail fastening. Vossloh tension clamps for high speed traffic with more than 250 km/h ensure safe tensioning. In addition, highly elastic components compensate acting forces in an outstanding way.

### / Elastic rails for safety and travel comfort

The higher the speed the more elasticity is required of the rails. With technologically optimized elastic components such as tension clamps, rail pads and intermediate plates our tailored fastening solutions will bring travellers gently and safely to their destinations.

### / Unrivalled reliability – *cellentic* elastomer

The elastic but at the same time stable plastic does not lose its vibration damping properties during chilly frost nor in hot summer. Thanks to the micro-cellular polymer structure, the aging resistant material maintains its complete stiffness even after millions of repeated loads.



# GENTLE TO THE RAIL

HIGH SPEED



## Property

*cellentic*: ideal balance between strength and elasticity ...

Specific design of the tension clamps ...

Additional angle guide plates ...

Thanks to innovative materials ...

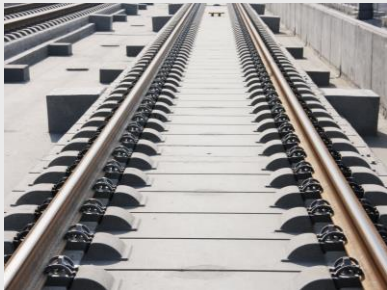
## Advantage

... catch forces caused by travelling trains reliably, minimise vibrations.

... ensure tilt protection and creep resistance even at high speed.

... always keep the rail in the correct position.

... our rail fasteners are distinguished by high weather resistance and long life.



# AT HIGH SPEED IN 15 COUNTRIES OVER 18,347 KM

EVEN BIGGER THAN THE DIAMETER OF THE EARTH



- / Speed Record in China – 1318 km between Beijing and Shanghai: System 300, makes travel speeds of 350 kilometers per hour possible
- / Route between Mecca and Medina with specially produced fastening systems
- / Fastest Measured Speed in Tunnels - worldwide record: 362 km/h for fastest measured speed in tunnels



**System 300**



**System W 21 HS**



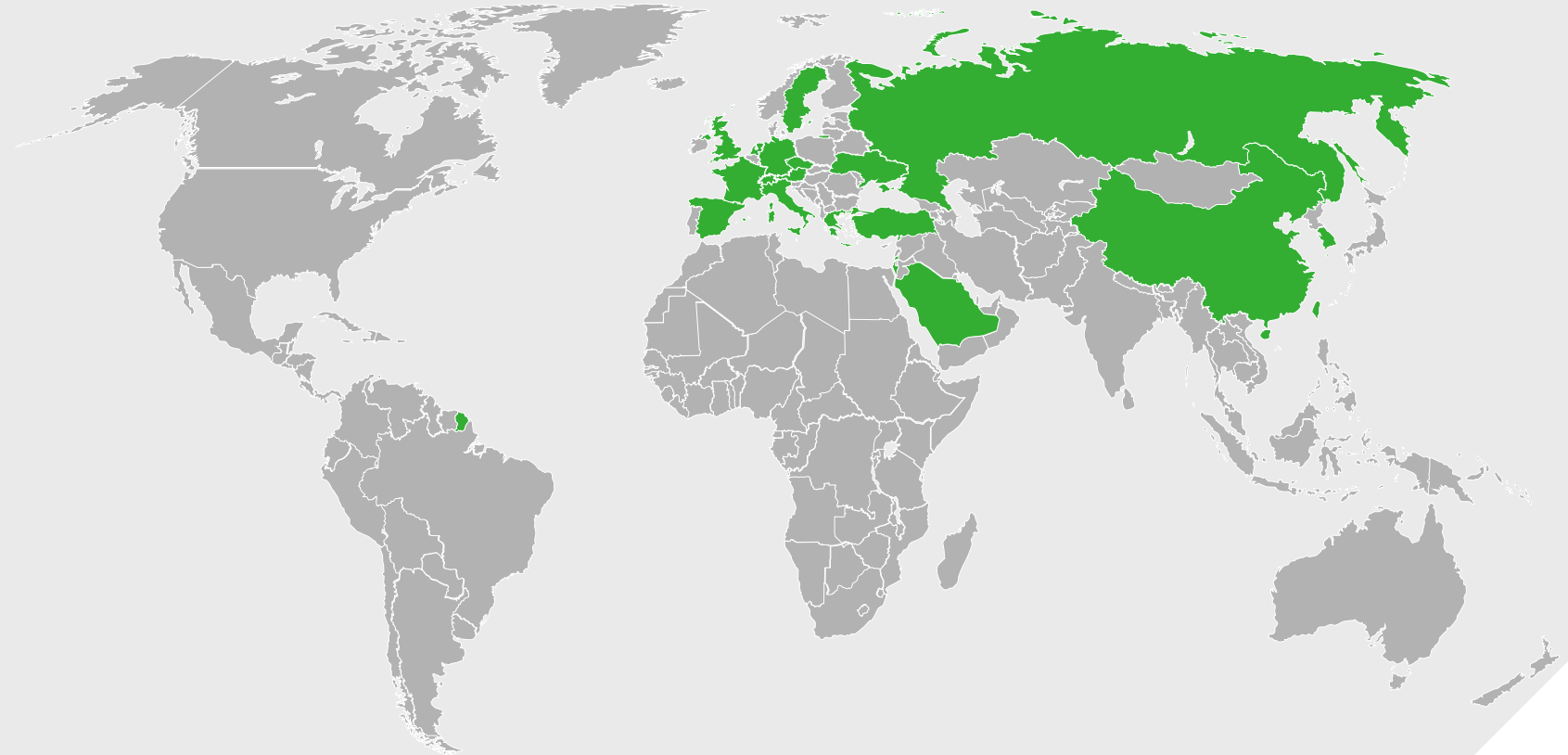
**System 300 NG**



**System DFF 300**



**System W 14 IS**





# 06

## **URBAN TRANSPORT –** MOBILITY IN CITIES

# URBAN TRANSPORT

## MOBILITY IN CITIES



### / Urban Transport – Always smooth with stop-and-go

Frequent starting and breaking at many stops within the shortest time characterize urban transport. In this case, highly elastic components provide for comfortable travelling at high operating safety and reduced noise.

### / Greater quality of life in metropolises

For every rail installation variant Vossloh offers an optional suitable fastening system, especially on concrete slab track where our solution with proven durability. For passengers this means an even soft ride without uncomfortable shocks. The elastic rail supports with permanently tight clamping reduce rail wear significantly, giving advantages for the operator.

### / Continuous sustainability

Vossloh's diversified range for rail-bound local transport permits tailored solutions. Because of the modular concept of our fastening solutions, for instance, we can target on strengthening the vibration damping. The Vossloh urban mobility solutions are economically sustainable especially because of greater installation efficiency and longer life with minimum maintenance requirement.



# MOBILITY IN CITIES

MOBILITY IN CITIES



## Property

Vibrations damping prevents shocks ...

Highly elastic rail support ...

Stable and long-life fatigue strength components ...

Simple gauge and height regulation ...

## Advantage

... and increases travel comfort.

... minimise disruptive structure-borne sound.

... protect the rail bed and superstructure from early wear.

... ensures flexible adaption possibilities.



# URBAN TRANSPORT LINES IN 50 COUNTRIES ON 3,431 KM



EQUATES APPROXIMATELY TO THE ROUTE FROM CHICAGO TO LOS ANGELES

- / Vossloh as One-Stop Shop for the Tram in Suzhou: 18 km double low-floor tramway with fastening systems and turnouts.
- / Budapest Metro: special vibration reducing rail fastening with *cellentic* high-tech material that absorb low frequency vibrations
- / Completely tunneled Santo Domingo metro; 200,000 passengers daily; the trains run in 3 min. intervals and at a speed of 80 km/h.



System W Tram



System W 25 N



System 300 UTS



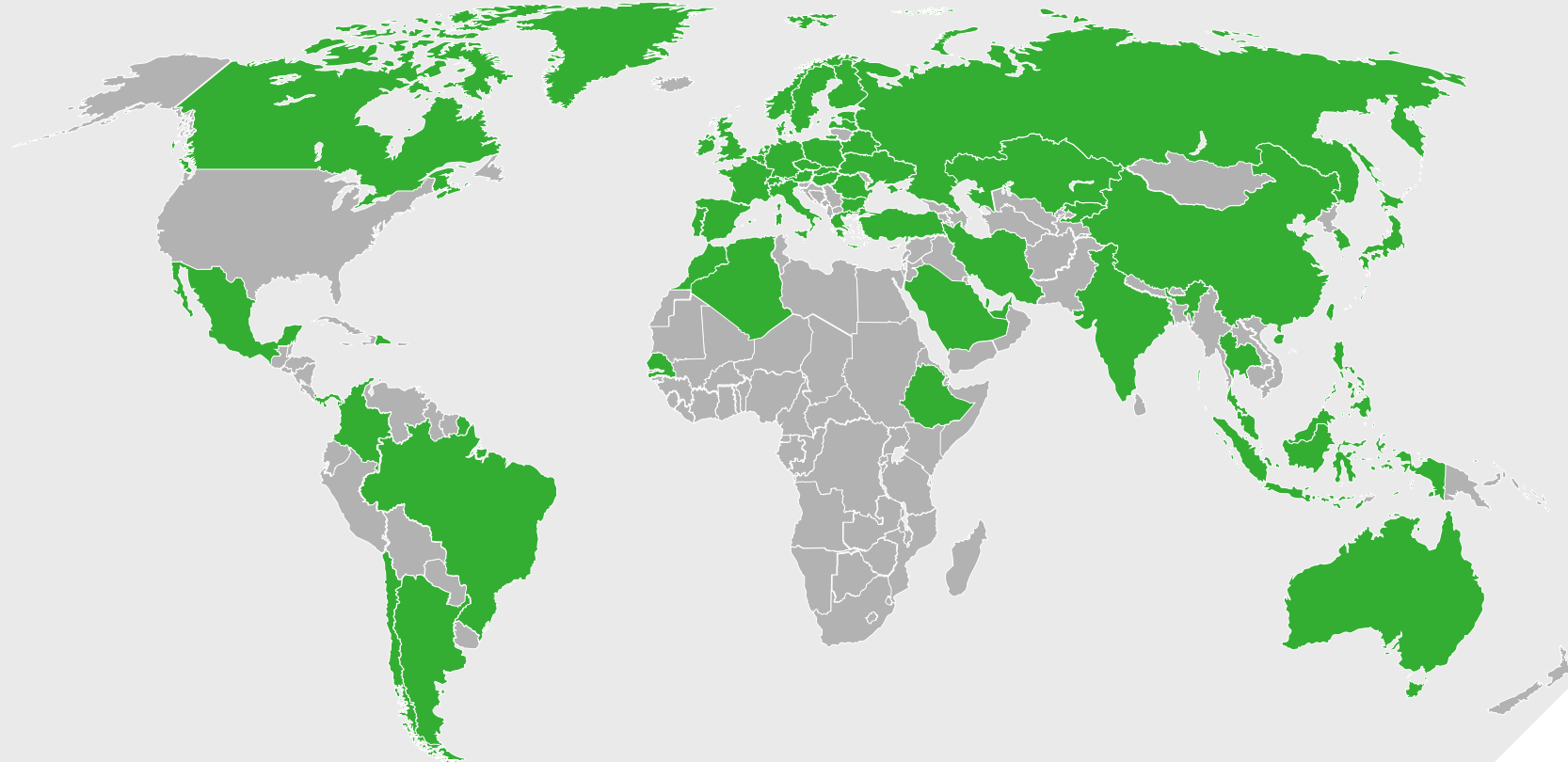
System 336



DFF 300 UTS



DFF 336 NG



**vossloh**