vossloh
enabling green mobility

MAXIMUM RESILIENCE FOR

# Heavy Haul

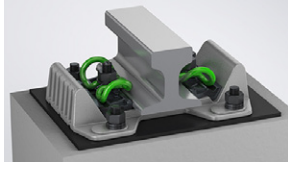
**Vossloh rail fastening systems for heavy-haul transport**

# On the right track under the heaviest loads

It has been almost 200 years since the railway set new standards in the transportation of heavy loads. Now we are on the threshold of another global transformation. The fact that rail traffic has a superior carbon footprint means even more heavy goods will be transported by rail in the near future. That increases the demands on the rail network – in terms of both maximum loads and constant stresses. Vossloh is leading the way as a driver of innovation with especially robust rail fastening systems for heavy-haul transport – on both slab and ballasted track.

**Rail fastening systems for slab track**

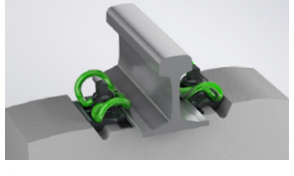
System 300



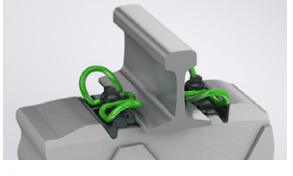
System DFF 30 HH

**Rail fastening systems for ballasted track**

System W 14



System W 30



System W 40

# Heavy Haul: Reliably managing **maximum pressure** is essential for reaching your goal

One thing counts above all else in the tough competition for heavy-haul transport: getting more and more freight to its destination safely and on time. In industries such as mining, axle loads of 35 tonnes are perfectly normal. And in the world's largest ports, where vital raw materials are transferred from ship to rail, axle loads of 72 tonnes are already a prerequisite for getting your foot through the door. Another factor to consider, in addition to weight, is the impact of corrosive sea air.



**Pass the toughest tests with confidence**

Heavy-haul transport places extreme demands on materials. That is why we developed special rail fastenings for axle loads of more than 26 tonnes – and have certified these systems for virtually all regions and climate zones around the world. We must never lose sight of the fact that any system is only as strong as its weakest part. For us, that means we have to ensure the maximum quality of every individual component in our complex rail fastening systems.

To ensure this, we test our components under constant stress using specially developed test procedures that far exceed the legally prescribed parameters. In addition to the effect of vertical forces, longitudinal and lateral stresses are also simulated. The result: Robust special fastenings that protect the track bed structure against material fatigue and remain stable under maximum loads and in the tightest curves. Easy installation and flexible retrofitting minimise investment and operating costs.

# **Perfect protection** against aggressive environments

Whether it is heat, temperature fluctuations, stone chips, corrosive sea air, or exposure to chemicals in industrial environments – extreme environmental conditions are the norm in heavy-haul transport. We have developed the new premium zinc coating Vossloh *protect* to ensure everything also functions smoothly in this area and lasts a long time. It offers long-term protection for all steel components in our rail fastening systems. The top coating provides barrier protection from chemicals, while cathodic corrosion protection keeps them rust-free even in the event of damage. Vossloh *protect* also substantially reduces the risk of material fatigue.

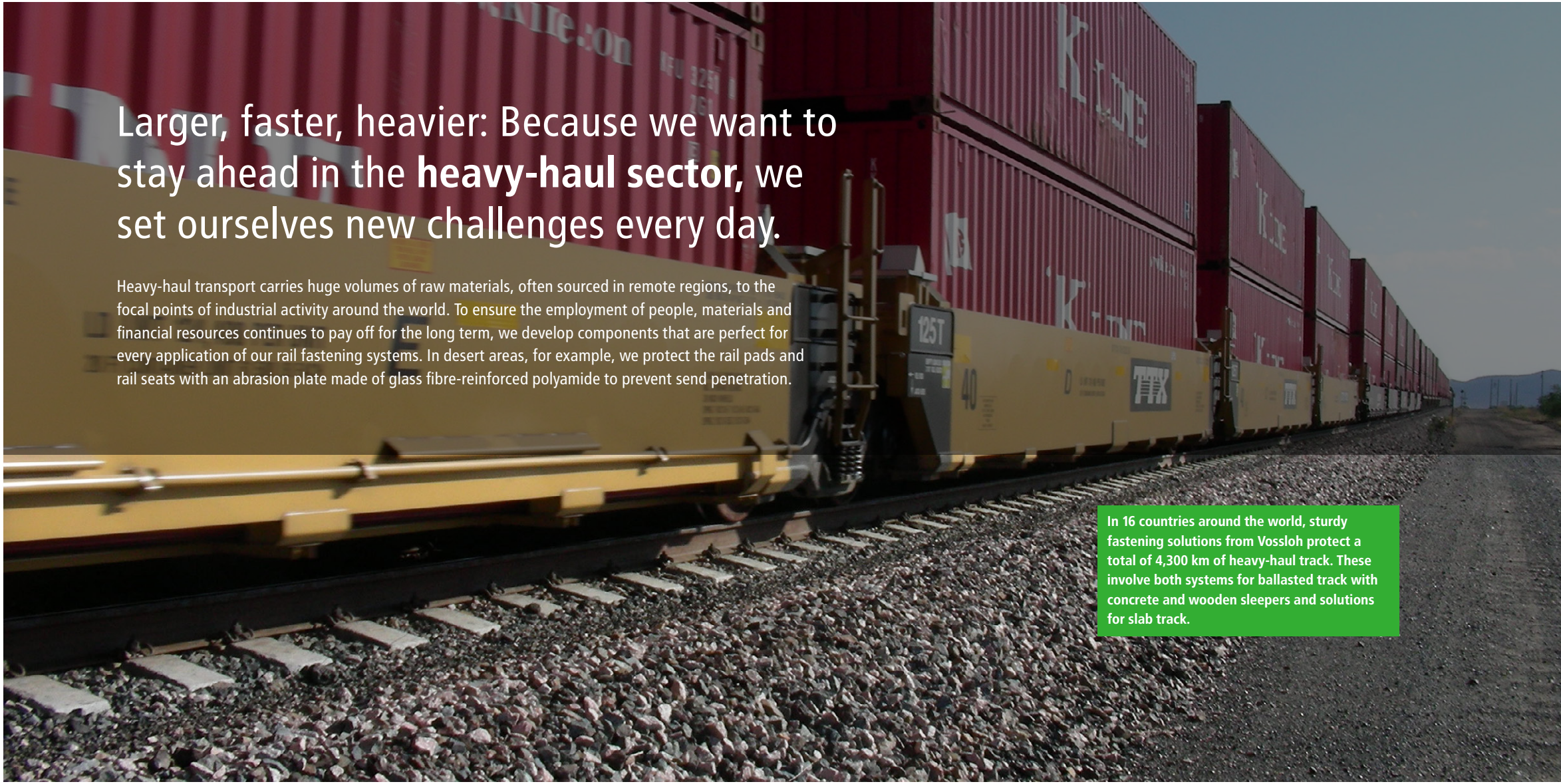
**A number of high-tech materials ensure that our rail fastenings are highly weather-resistant and have a long service life:**

- **The premium coating Vossloh *protect*** comes with the highest protection class (C5-L) in accordance with ISO 12944 and contains no heavy metals, making it suitable for safe use worldwide.
- Specifically designed **Vossloh tension clamps** provide additional tilt protection and rail creep resistance even under enormous axle loads.
- ***Cellentic* elastomers** reliably cushion vibrations and lose none of their rigidity or elasticity, even after years of constant, extreme stresses. They protect the track from wear and material fatigue.
- **Additional angle guide plates** keep the rails in the right position at all times.


**As well as supplying very special products for heavy-haul transport, Vossloh also offers individual consulting for your specific tasks.**

# Larger, faster, heavier: Because we want to stay ahead in the **heavy-haul sector,** we set ourselves new challenges every day.

Heavy-haul transport carries huge volumes of raw materials, often sourced in remote regions, to the focal points of industrial activity around the world. To ensure the employment of people, materials and financial resources continues to pay off for the long term, we develop components that are perfect for every application of our rail fastening systems. In desert areas, for example, we protect the rail pads and rail seats with an abrasion plate made of glass fibre-reinforced polyamide to prevent send penetration.




**In 16 countries around the world, sturdy fastening solutions from Vossloh protect a total of 4,300 km of heavy-haul track. These involve both systems for ballasted track with concrete and wooden sleepers and solutions for slab track.**


Using our systems keeps both labour and costs low – and that applies to new infrastructure as well as upgrades and maintenance. And if there are new requirements for a section of track during an upgrade – even individual parts of the fastening system down to a single dowel – they can be retrofitted quickly and at a low cost. This means you can bring existing lines up to the latest standards quickly and without major expense.

Another point for greater cost-effectiveness: On request, the selected components can be pre-assembled for delivery ex-factory: for example, already attached to concrete sleepers. Not only does this save time and money, but it also makes work onsite easier, which can be a major benefit in unfavourable climate conditions.

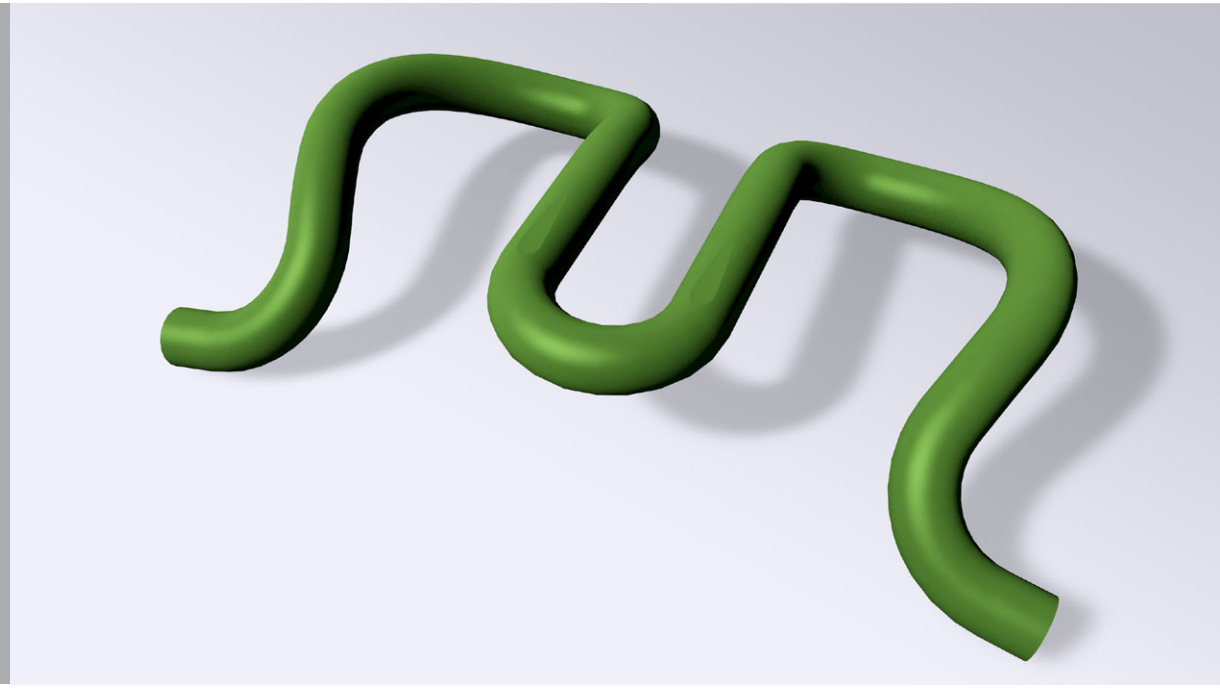
**Interested in in-depth consulting? Call us on +49 (0) 23 92 / 52-0**

# The perfect system combines **quality and cost-effectiveness**

Decades of experience mean that rail fastenings from Vossloh are well-designed system solutions that can be custom-configured for all conceivable applications, and they are available quickly and at a reasonable price in large or small quantities. Refining proven systems results in market-specific solutions for safe heavy-haul transport under extreme climate conditions.

# A wealth of experience behind the **new generation**

As a successor to the "high-tension spring washer" patented by Karl Vossloh in 1927, the tension clamp for rail fastening was introduced by Professor Hermann Meier in 1967. Following successful tests, Vossloh took over the general licence to manufacture the clamps. The basic principle proved extremely adaptable and enabled constant progress to be made over the years. The billionth tension clamp was manufactured on 22 July 2020, with no end to production in sight: The next generation of tension clamps is already in progress.



**Allow us to introduce … our latest generation of Vossloh tension clamps!**

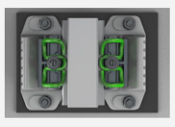
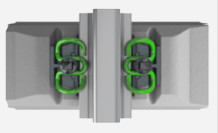
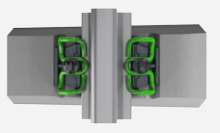
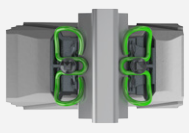
Thanks to growing demand and increasing loads in rail transportation, we have made the new M-generation clamps more robust to help to ensure that tracks remain safe into the future. This new development is being produced in Werdohl, Germany, using state-of-the-art process technology.

**Benefits offered by the new generation:**

- More compact, lighter design
- More robust thanks to a higher natural frequency
- Ultramodern production facility
- Reduced logistical costs
- Easier on resources

# Fastening systems for heavy-haul transport: **Specifications** at a glance

You can also use our Product Finder on our Web site:

| | Rail fastening systems for slab track | | Rail fastening systems for ballasted track | | |
|---|---|---|---|---|---|
| |  |  |  |  |  |
| **Product** | **System 300** | **System DFF 30 HH** | **System W 14** | **System W 30** | **System W 40** |
| Axle load | ≤ 35 t | ≤ 72 t | ≤ 35 t | ≤ 35 t | ≤ 35 t |
| Speed | ≥ 160 km/h | ≤ 80 km/h | ≤ 160 km/h | ≤ 160 km/h | ≤ 160 km/h |
| Curve radius | ≥ 300 m | ≥ 300 m | ≥ 400 m | ≥ 400 m | ≥ 150 m |
| Height adjustment | – 4 mm/+ 26 mm | + 80 mm | Optional | Optional | Optional |
| Gauge adjustment | ± 16 mm | – 10/+70 mm | ± 10 mm | ± 10 mm | ± 10 mm |

**Note:** Content, figures and specifications in this brochure reflect the performance of the fastening system under ideal conditions, but this will always depend on external factors and influences. Contact us so we can work with you to develop a solution tailored to your project and your requirements. The information in this document represents the state of technical development at the time of publication; the product may have been updated since as a result of ongoing research and development work at Vossloh.

# **Unfailing fatigue strength** for the land of unlimited opportunities.

In the US, everything is larger than anywhere else. And that is why we developed the System W 40 HH AP with the Skl 40 tension clamp especially for heavy-haul transport there. Its spring arms are arched backwards to increase toe load and fatigue strength. The grip on the rail base is also improved. The broader angle guide plates are better at guiding greater loads through tight curves. Additional elements protect against wear caused by desert sand. Extensive tests, including changing temperatures and sand-water mixtures in accordance with US guideline AREMA Chapter 30, confirmed its high fatigue thresholds. Even under the harshest conditions, the system assures a long service life and lower lifecycle costs.

**Want to know more about our references? Drop us a line:**

### 72 tonnes on the craneway

The huge crane systems in Port Botany, in Sydney, Australia, carry axle loads of up to 72 tonnes. Building on existing solutions, we developed the DFF 30 HH slab track system especially for this function. It makes child's play of carrying the huge loads, and is also extremely resistant to the salty sea air.

### Flexible thanks to mixed transport systems

Etihad Rail, in the United Arab Emirates, has had good experience with the W 30 heavy-haul system. Elastic rail pads enable mixed transport on the 310 km track from Tarif to Sharjah. Along this route, which links two ports with the industrial city of Khalifa, goods trains with axle loads of up to 32.5 tonnes reach speeds of 160 km/h, while passenger trains can travel at 200 km/h.

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# Interested in more products in the Vossloh portfolio for your rail infrastructure?

Take a look at our Product Finder, where you'll quickly find the solution that's right for you!

**Click here to directly access the Product Finder**

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