

HIGH SPEED

Smart Quality for the Highest Speed
We Accelerate the Future



SAFE AND INNOVATIVE SYSTEM SOLUTIONS FOR HIGH-SPEED TRAFFIC

A fast, environmentally friendly and comfortable journey between cities – that is both the wish and need of many people all over the world. Travelling by train is becoming more attractive in relation to air travel, above all on medium-length journeys, thanks to higher speeds and increasing frequencies. Stringent demands are however being made on modern rail infrastructure – due to speeds up to 350 km/h and over as well as due to the complex interaction between substructure, superstructure and vehicle. Issues such as safety and availability, as well as fast maintenance options, move into focus. As a technology leader voestalpine Railway Systems offers innovative, cutting-edge products with the expertise of a provider as well as trendsetting

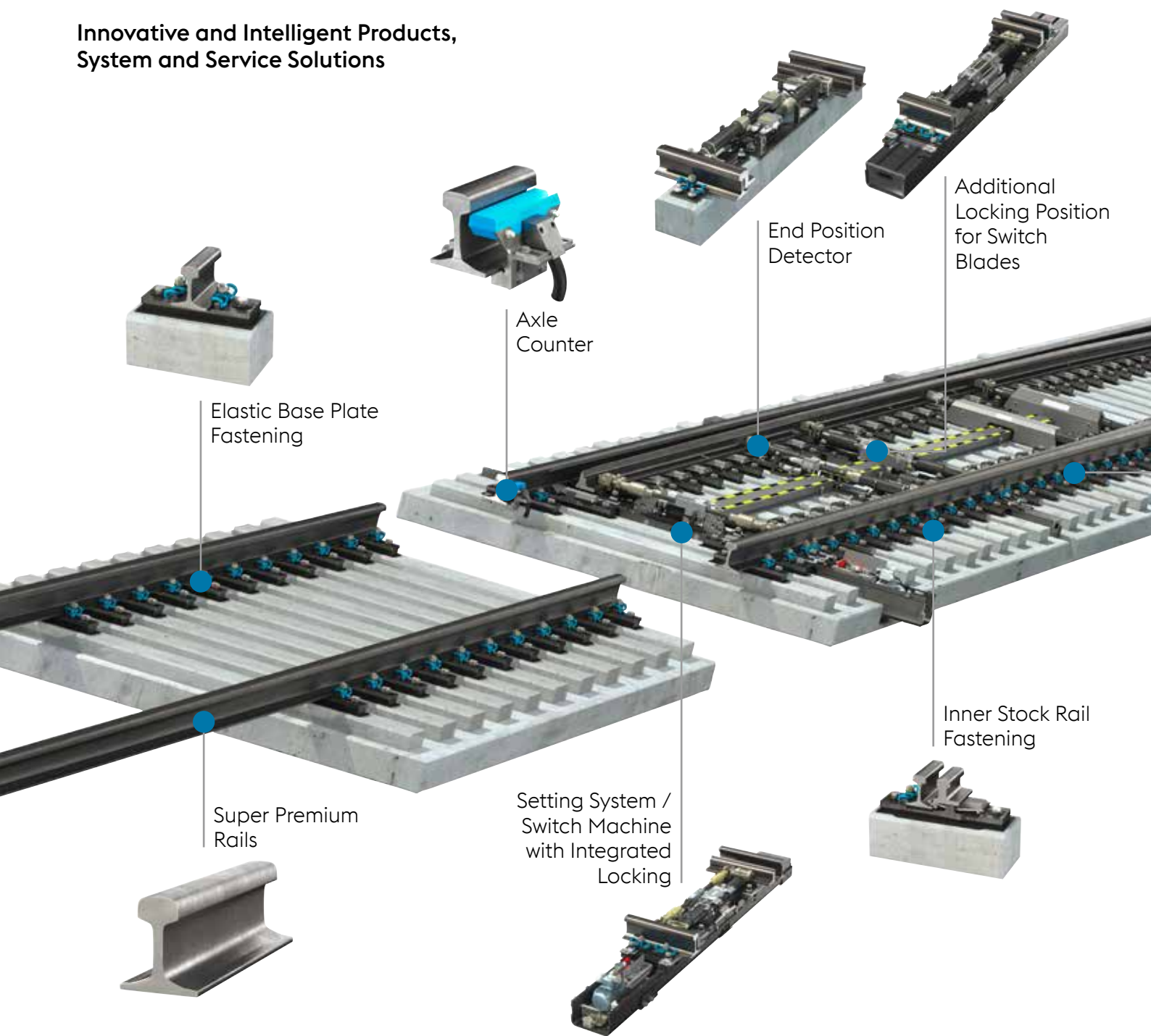
concepts. We thus improve service life, availability, reliability and ease of maintenance for rails, turnouts and signal technology on all continents – and under all climatic conditions.

A pioneer in the consideration of economic (LCC) and technical (RAMS) optimization potential, we bring together cutting-edge technology with systems expertise right down the line. voestalpine Railway Systems stands for overall solutions with maximum efficiency – so helping customers get ahead in terms of technology and competition.



RETHINKING HIGH-SPEED TRAFFIC SYSTEMS

Innovative and Intelligent Products,
System and Service Solutions



Options:



Alternative
Plate Integrated
Roller System



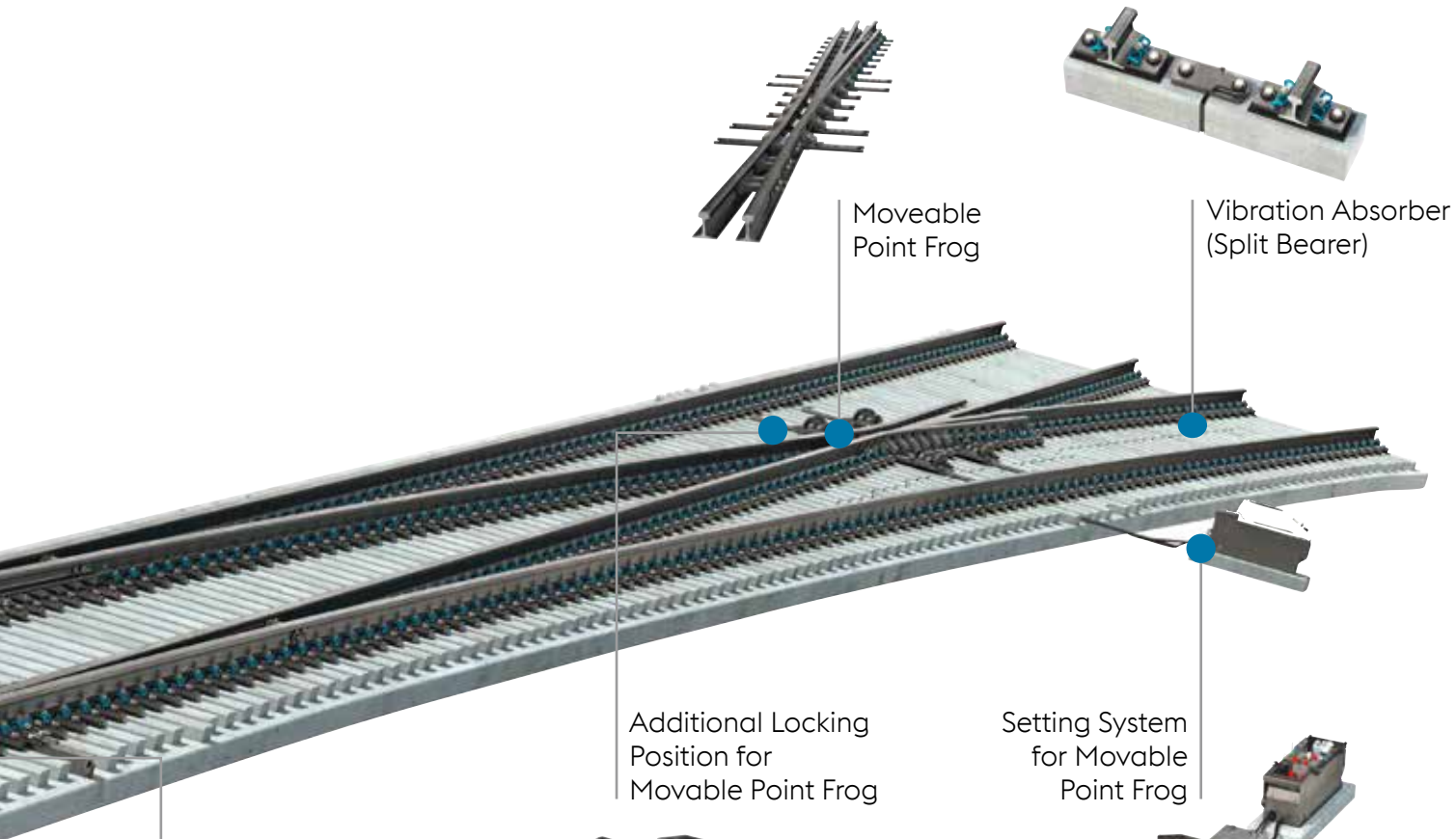
Point Machine for
External Lock



Mechanical Locking
Device
(Fully Encapsulated)



Mechanical
Locking Device



Moveable Point Frog

Vibration Absorber (Split Bearer)

Additional Locking Position for Movable Point Frog

Setting System for Movable Point Frog

Elastic Switch Roller System

zentrak Ecosystem
Diagnostic, Monitoring and Asset Management Systems for Infrastructure and Rolling Stock



Insulating Joint



Rail Expansion Joint



Elastic Bridge Base Plate Fastening



Holding Down Device



HEAT-TREATED HIGH-PERFORMANCE RAILS

There is hardly a high-speed network in Europe without rails from voestalpine. For example, the world's longest railway tunnel, the Gotthard Base Tunnel with a length of 57 km, is equipped with our 120 m rails and our high-speed switches. The 50 km Eurotunnel, linking France with Great Britain, was also supplied with heat-treated rails from voestalpine.

Thanks to their resistant, fine pearlitic microstructure, heat-treated rail steel grades are ideal when it comes to combating damage mechanisms occurring in curves on high-speed routes. The globally patented HSH® heat treatment technology provides the rail head with maximum resistance to rolling contact fatigue while also maximizing endurance in the rail foot, in addition to optimum weldability due to the non-alloy steel design of HSH® rails. There are no limits to the range of applications. Manufactured in lengths up to 120 m, HSH® rail steel qualities are available in almost 100 different sections.

Added Value for You:

- » High resistance to rolling contact fatigue (RCF)
- » High straightness and flatness over the entire life cycle (resistance to wear)
- » Excellent weldability
- » Significant reduction in rail maintenance costs
- » Marked increase in service life in the track
- » Clear drop in life cycle costs

MODERN TURNOUT TECHNOLOGY FOR FASTEST RAILROADS



Fast connections between cities and optimum links to public transport mean that modern high-speed trains are a serious alternative to air travel and private transport. Given the growing environmental awareness and the trend in energy prices, today's high-speed technology offers huge potential. Speeds of almost 400 km/h and diverging speeds exceeding 200 km/h make stringent demands, but can be mastered safely and comfortably today thanks to state-of-the-art turnout technology.

Innovative Products and System Solutions for Maximum Requirements:

- » Intelligent system turnouts
- » Optimized switch devices (FAKOP: Kinematic Gauge Optimization)
- » Movable point frogs in customized versions
- » Highly elastic base-plate / fastening systems
- » Rail expansion joints, including for extreme expansion lengths
- » Concrete sleepers
- » Extensive service package

Added Value for You:

- » System expertise and responsibility / everything from a single source
- » Comprehensive international references and experience
- » In-house rail production enables global product optimization
- » Experience with all track systems (slab track, etc.)
- » Innovative switch blade geometries for reduced wear and greater ride comfort
- » Optimized component design (reduced pickup jolt, lower lateral acceleration)
- » Elasticity adjustable thanks to highly elastic fastening systems

INNOVATIVE SETTING, SIGNALING & MONITORING TECHNOLOGIES



Innovative Modular Setting and Switching Systems as well as Monitoring Devices

Years of experience and extensive knowledge about turnout systems allow us to offer innovative solutions which satisfy the requirements in the high-speed rail sector.

- » Complete setting systems, point machines (with/without integrated locking), locking systems, end position detectors and
- » Point heatings, axle counters and wheel sensors

Intelligent Monitoring and Diagnostic Systems

Cutting-edge technologies allow voestalpine to offer fully digitized smart monitoring in the following areas:

- » Monitoring of track systems and fixed infrastructure assets (incl. turnout diagnosis, monitoring of track movement or track circuit)
- » Monitoring of rolling stock (incl. monitoring of box and brake disk temperature, wheel defects, train profiles or environmental conditions)

The direct recording of the asset condition and assessment of targeted information through our Central Management Software zentrak, allows optimized asset management, efficient maintenance planning and to avoid unnecessary preventive maintenance.

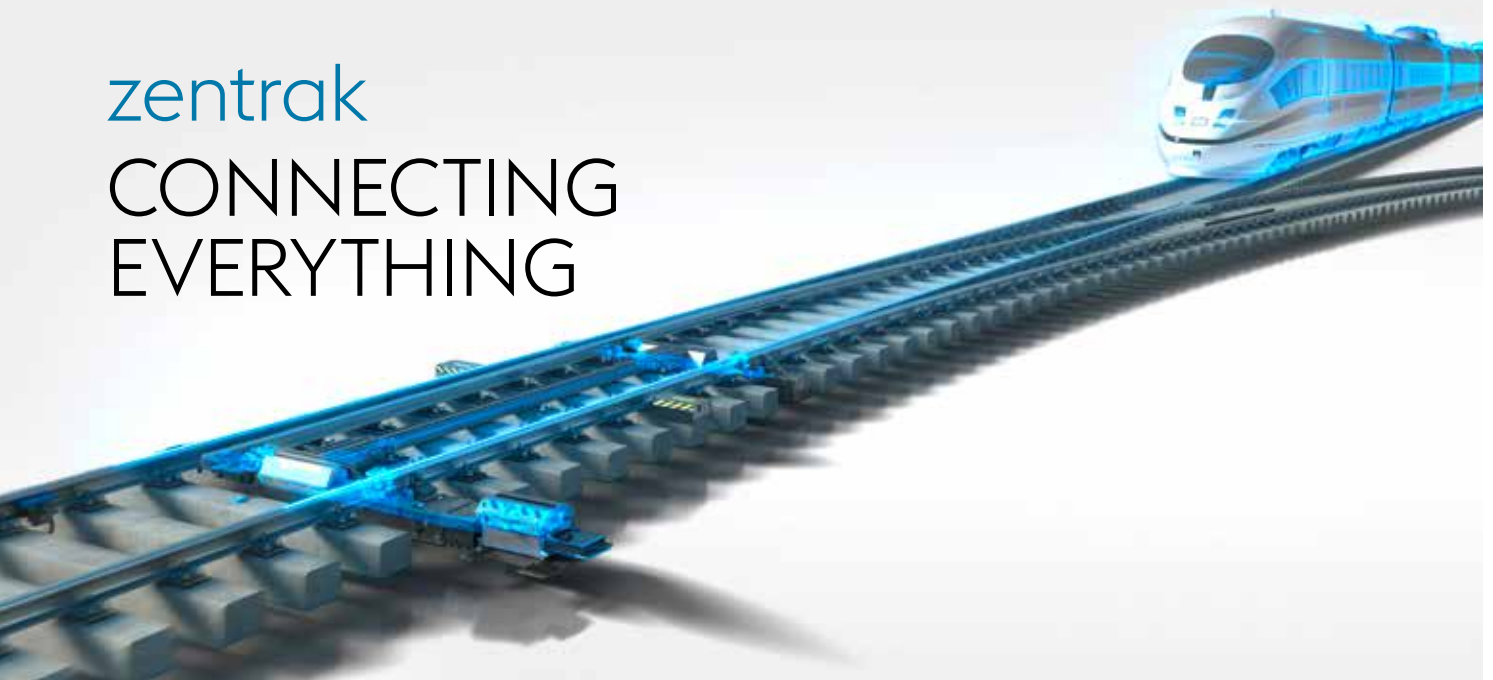
Added Value for You:

- » Compatible with a wide range of interlocking technologies
- » Encapsulated components
- » Minimized space requirement
- » Can be retrofitted
- » Extended inspection intervals and optimized asset management
- » Modular diagnostic platform and planning instrument
- » Integration in higher-level systems possible

zentrak

zentrak

CONNECTING EVERYTHING



THE INTELLIGENT, CONSCIOUS AND LIVING RAILWAY ECOSYSTEM

Your railway network keeps the world moving forward: but your infrastructure is only as strong as the technology that holds it together. That's where zentrak comes in: our intelligent, living railway ecosystem enables you to create and manage the most efficient, reliable, and high performing railway track assets in the world.

zentrak's three modules Rolling Stock Monitoring, Infrastructure Monitoring, and Asset & Maintenance Management combine as a catalyst for cost effective digitalization and sustainable, long term growth: building a future in which your railway network thrives intelligently.

Infrastructure Monitoring

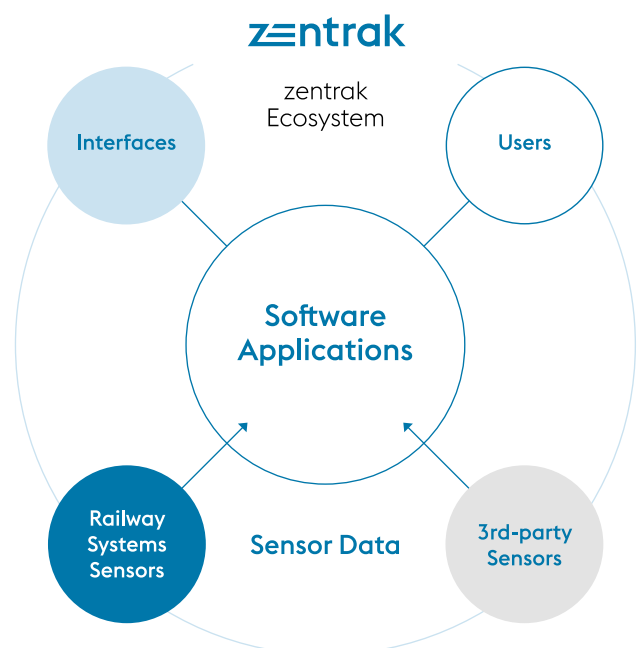
- » Continuously records the condition of your infrastructure
- » Enables proactive condition-based maintenance for maximum availability and the lowest lifecycle costs

Rolling Stock Monitoring

- » Provides a variety of measurement technologies
- » Enables the combination of individual site diagnostic and monitoring functions at a single location
- » Software applications for real-time analysis, interpretation, and presentation of diagnostic results

Asset and Maintenance Management

- » Allows you to manage your assets throughout their entire lifecycle
- » Supports data-driven decisions such as investments and improvements
- » Provides the foundation for a dynamic maintenance strategy



LIFE CYCLE SOLUTIONS – OUR EFFICIENT TRACK MANAGEMENT LEADS TO OPTIMIZED PERFORMANCE AND COSTS

From the idea to implementation, from training to consulting, from products via logistics to maintenance – with our Life Cycle Management for HIGH SPEED we offer an extensive portfolio of services. They not only ensure great ride comfort at high running speeds, but also satisfy the requirements in terms of safety and quality. We stand for customized product and service solutions with minimized life cycle costs. We analyze the needs of our customers and recommend the best technical and most cost-effective solution for rails, turnouts and systems based on precise calculations.



PREPARE

CONSULTING, ENGINEERING & TRAINING

150 engineers are hard at work all over the world, developing specific solutions for our customers – from the planning, development and engineering phase through assisting with installation to optimizing maintenance strategies. At our academies we share our knowledge with customers in the framework of seminars and in-house training programs.



START

SUPPLY, LOGISTICS & INITIAL SERVICE

With our customized availability concepts and just-in-time logistics chains we supply our customers with the railway construction materials they need. Our initial services not only guarantee maximum installation quality – they also pave the way for reduced follow-up costs and an increased service life.



RUN

SMART MAINTENANCE SOLUTIONS

Maximizing availability, minimizing operating costs – those are the strategic objectives of our customers. Thanks to our combined product and service expertise we carry out preventive and corrective maintenance independently: Our service even includes processing scrap materials at the end of the life cycle.



PERFORM

TRACK MANAGEMENT

You want to concentrate on your business and ask capable partners to look after your railway infrastructure? We're the people for the job! Our Track Management with electronic diagnostic systems allows you to plan maintenance. So cutting costs – and guaranteeing high levels of availability.



LEADING THE WAY IN SUSTAINABLE RAILWAY INFRASTRUCTURE

At voestalpine Railway Systems we take our social and environmental responsibilities seriously. As the global leader for railway infrastructure system solutions, we understand the impact our products have on society and the environment.

We are dedicated to providing durable solutions that enable the operation of sustainable transport systems. Our commitment to ethical and legal conduct is governed by the voestalpine Code of Conduct, ensuring impeccable actions throughout our company and supply chains.

Why we need Sustainable Mobility Solutions

The need for sustainable mobility solutions has never been more pressing in a world shaped by urbanization, digitalization, globalization, and demographic shifts. As the demand for mobility driven by these megatrends continues to grow, it is imperative to address the challenges of climate change and resource depletion head-on.

Our Commitment to Eco-Friendly Railway Infrastructure Solutions

We are proud to be at the forefront of providing sustainable railway solutions that promote environmental stewardship, ensure longevity, and adhere to the highest industry standards.

Our focus on sustainability is built on three foundational pillars:

» greentec steel

Our revolutionary greentec steel initiative is at the heart of our environmental strategy. By pioneering new steel production methods, we significantly reduce CO₂ emissions, contributing to a greener planet.

» Longevity Solutions

Our products are designed for durability and resilience, ensuring they stand the test of time. By extending the lifespan of our railway infrastructure components, we reduce the need for frequent replacements, thus conserving resources and minimizing environmental impact.

» Certified Responsibility

We adhere to rigorous certification processes that validate our commitment to environmental and social responsibility. These certifications ensure that our practices not only meet but exceed industry standards, reflecting our unwavering dedication to sustainable development.



Visit us online

voestalpine Railway Systems
www.voestalpine.com/railway-systems

voestalpine
ONE STEP AHEAD.