

SAFETY AT EVERY SPEED.

High Speed Solutions

voestalpine

ONE STEP AHEAD.



SAFE AND INNOVATIVE SYSTEM SOLUTIONS

Fast, sustainable, and comfortable travel between cities is both a growing expectation and a global necessity. With increasing speeds and higher service frequencies, rail transport is becoming an increasingly attractive alternative to air travel, particularly for medium-distance journeys.

At the same time, modern rail infrastructure faces ever more demanding requirements. Operating speeds of up to and beyond 350 km/h, combined with the complex interaction between infrastructure and rolling stock, require innovative and highly reliable solutions. Safety, availability, and efficient maintenance are key factors in ensuring long-term operational excellence.

As a technology leader, voestalpine Railway Systems delivers innovative, state-of-the-art products, combining deep engineering expertise with forward-looking concepts. Our solutions enhance the service life, availability, reliability, and maintainability of rail, turnout, and signaling systems across all continents and under all climatic conditions.

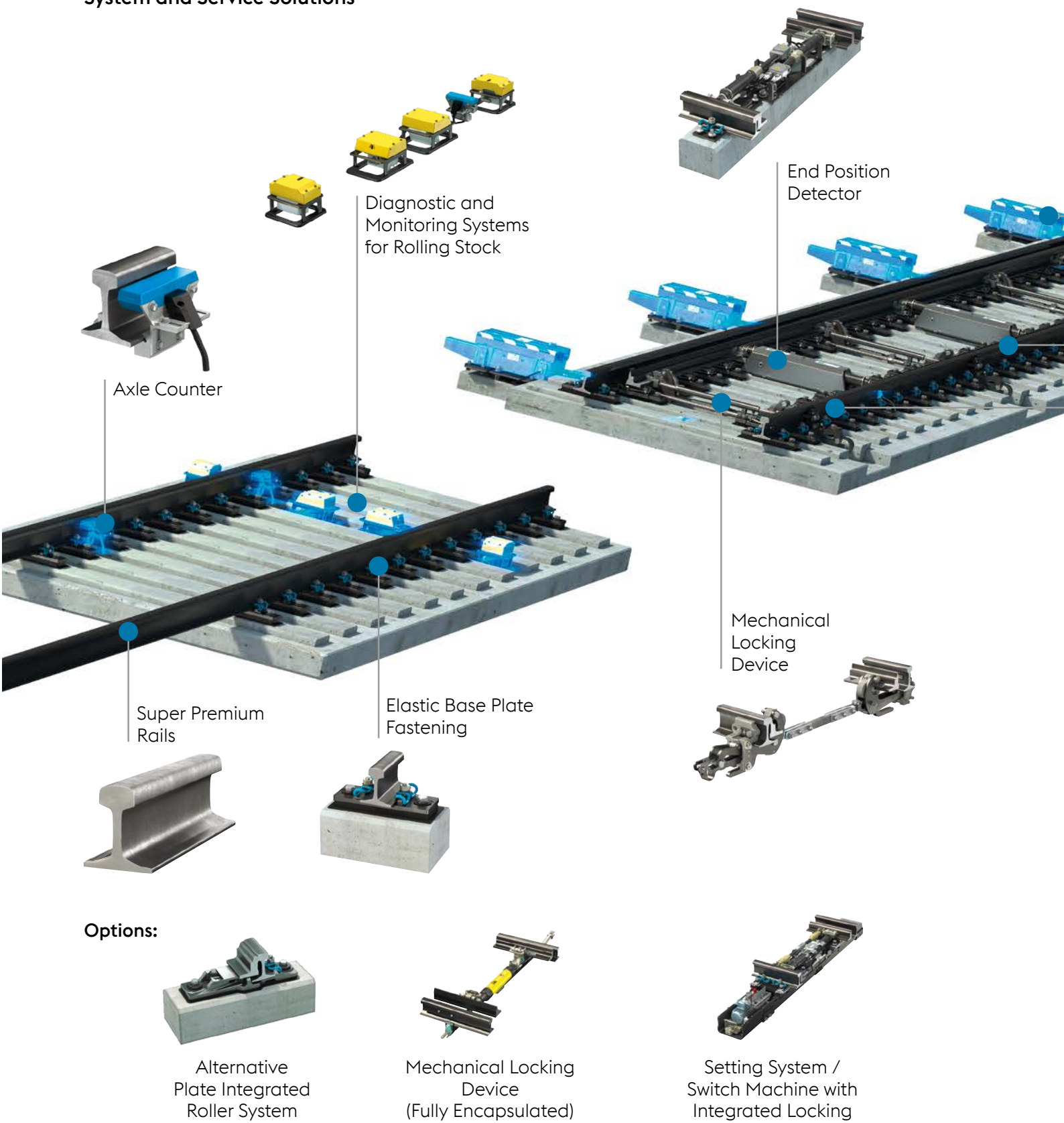
As a pioneer in integrating economic optimization (LCC) with technical excellence (RAMS), voestalpine Railway Systems combines cutting-edge technology with comprehensive system expertise throughout the entire rail lifecycle.

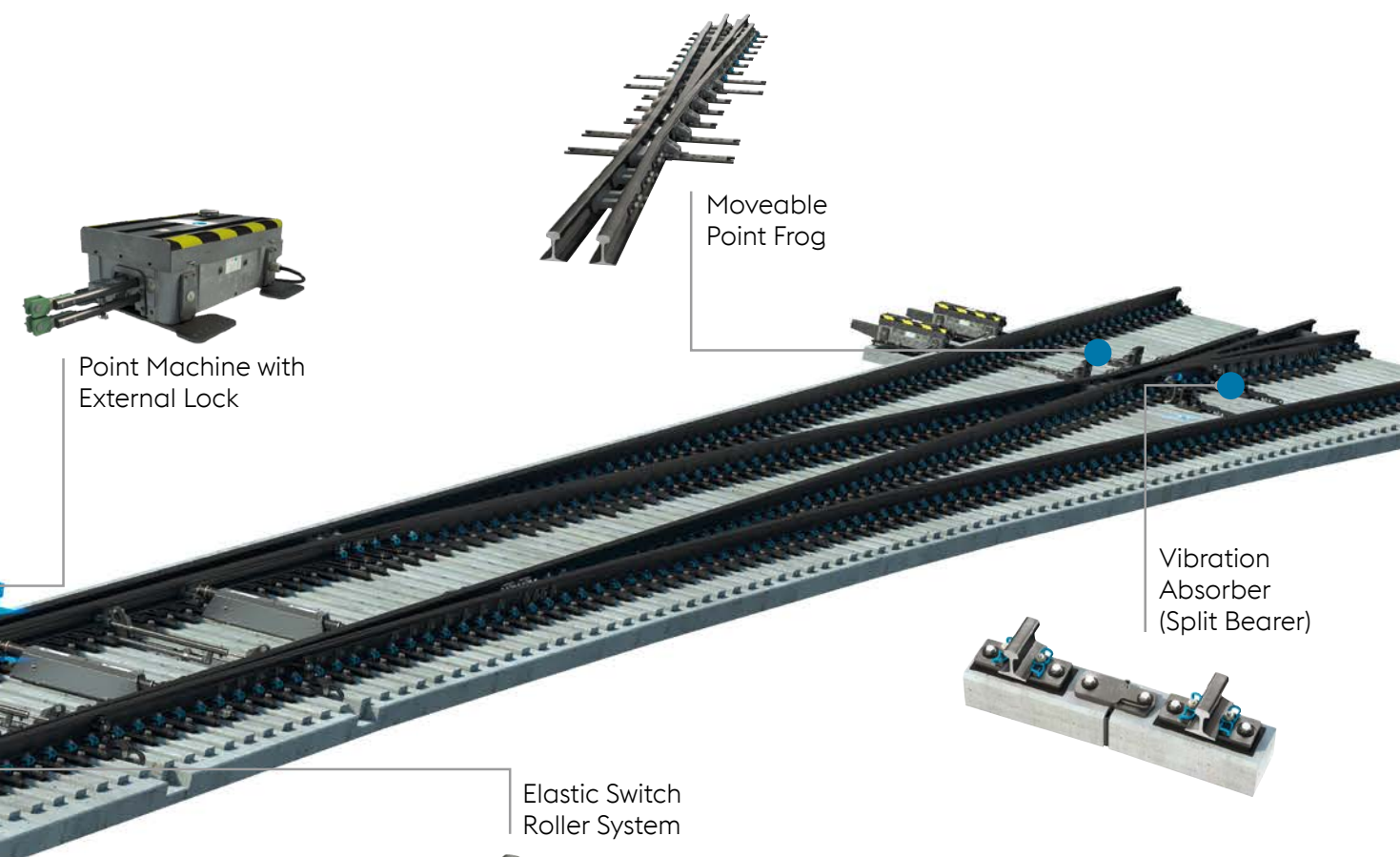
voestalpine Railway Systems stands for smart quality at maximum speed. We provide efficient, future-oriented solutions that help our customers achieve technological leadership, operational excellence, and sustainable competitive advantage



RETHINKING HIGH-SPEED TRAFFIC SYSTEMS

Innovative and Intelligent Products,
System and Service Solutions





Inner Stock Rail Fastening



zentrak ecosystem

Diagnostic and Monitoring Systems for Track, Fixed Assets and Rolling Stock



Rail Expansion Joint



Elastic Bridge Base Plate Fastening



Holding Down Device



HBS-Roller



HEAT-TREATED HIGH-PERFORMANCE RAILS

Hardly any high-speed rail network in Europe operates without rails from voestalpine. Our technology contributes to some of the world's most demanding railway infrastructure projects, delivering outstanding quality, reliability, and performance at maximum speed.

The Gotthard Base Tunnel, the world's longest railway tunnel at 57 km, is equipped with our 120-meter rails and high-speed turnouts. Likewise, the 50 km Channel Tunnel connecting France and Great Britain benefits from voestalpine's heat-treated rail technology.

Designed for the challenges of modern high-speed rail operations, our heat-treated rail steel grades provide exceptional resistance to wear and fatigue, particularly in demanding curve sections. Thanks to their fine pearlitic microstructure and the globally patented HSH® heat-treatment technology, our rails combine superior resistance to rolling contact fatigue with outstanding durability and optimized weldability.

Engineered for maximum availability and long service life, HSH® rails support safe and efficient railway operations at the highest speeds. Available in lengths of up to 120 meters and nearly 100 different rail profiles, they provide flexible solutions for a wide range of applications worldwide.

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

TURNOUT TECHNOLOGY FOR HIGH-SPEED RAILWAYS

Fast city-to-city connections and seamless integration with public transportation make modern high-speed rail a compelling alternative to air and road travel. Growing environmental awareness, increasing energy costs, and the demand for sustainable mobility further highlight the significant potential of high-speed rail transportation.

Operating speeds approaching 400 km/h and diverging speeds exceeding 200 km/h place exceptional demands on railway infrastructure. Meeting these challenges requires intelligent engineering, uncompromising quality, and proven reliability.

With state-of-the-art turnout technology, these demanding performance targets can be achieved safely, efficiently, and comfortably. Designed for maximum availability, durability, and operational excellence, our solutions enable rail operators to deliver high-speed mobility with confidence.

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 Switching, Locking and 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, 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





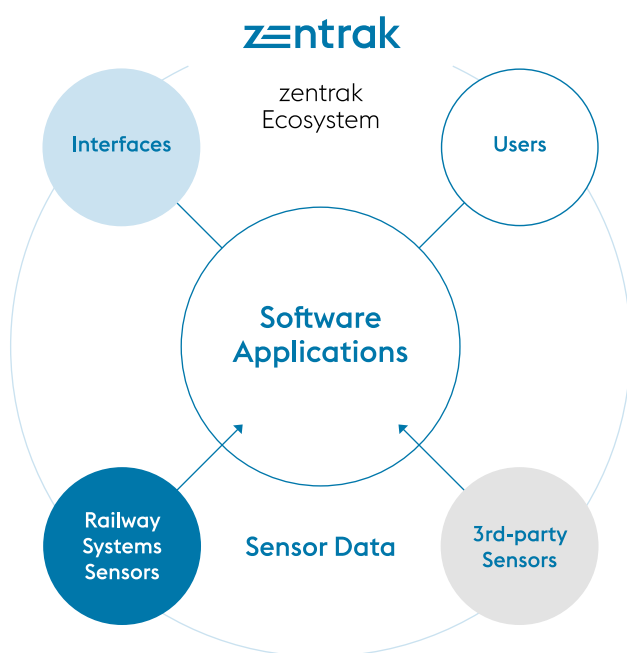
zentrak

INTELLIGENT PERFORMANCE ON TRACK®

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

EFFICIENT TRACK MANAGEMENT FOR OPTIMIZED PERFORMANCE

From engineering and consulting to logistics, training, and maintenance, our High-Speed Life Cycle Management portfolio covers every stage of the railway asset lifecycle. We deliver customized solutions for rails, turnouts, and railway systems that maximize safety, reliability, and ride comfort while minimizing lifecycle costs.

Through detailed analysis and precise calculations, we identify the most effective and cost-efficient solution for each customer's individual requirements.

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.

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.

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.

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.





SUSTAINABLE PERFORMANCE ON TRACK®

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.

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