

NORTH AMERICA PRODUCT PORTFOLIO

SOLUTIONS THAT FIT YOUR NEEDS

Mobility comes in many forms. Whether the focus is on moving people or goods by land, water, or air – everyone involved in the process wants the same thing: safety, reliability, and efficiency.

In rail transport, this presents those who build and operate infrastructure with a host of challenges: The tracks must conform to the surrounding topography and urban development and reflect the intended use for passenger or freight transport, urban transit, intercity travel, or heavy-haul loads. They must also comply with technical and environmental standards, be easy to maintain, and much more.



LONG-DISTANCE AND FREIGHT TRANSPORT

So that you always arrive safely: Our customized systems for long-distance and freight transport are economical, sustainable and offer the highest quality standards.

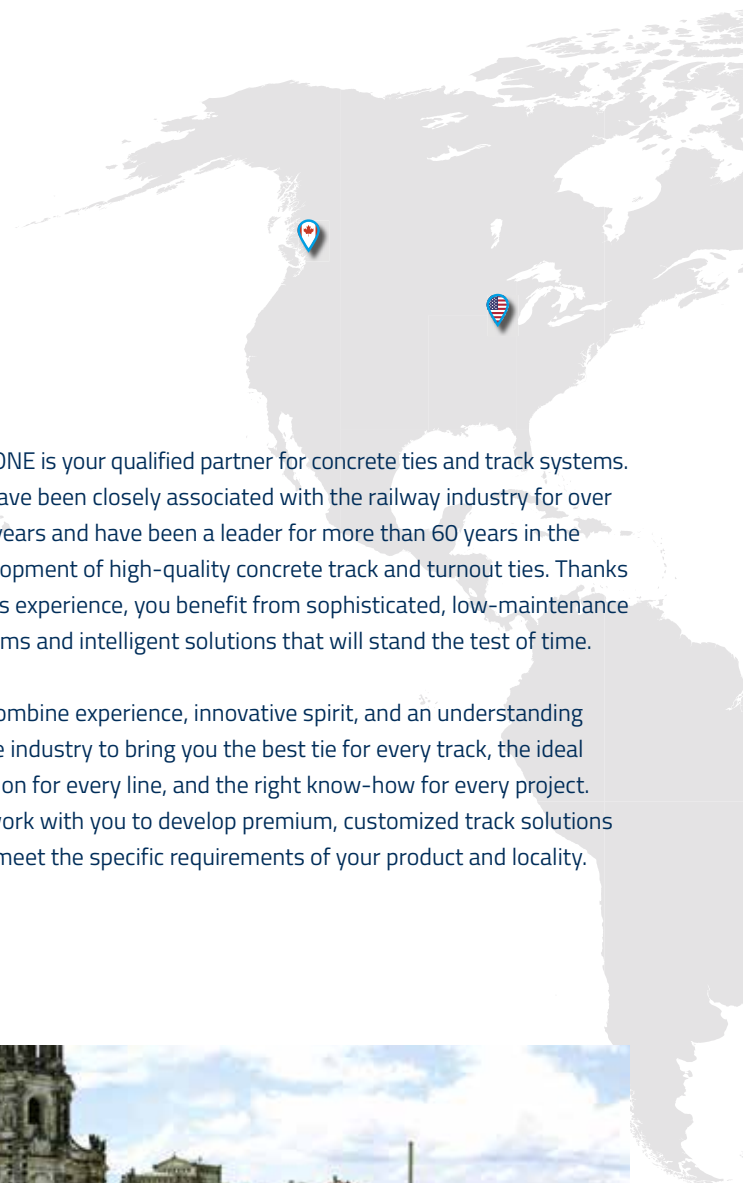
RAILONE is your qualified partner for concrete ties and track systems. We have been closely associated with the railway industry for over 100 years and have been a leader for more than 60 years in the development of high-quality concrete track and turnout ties. Thanks to this experience, you benefit from sophisticated, low-maintenance systems and intelligent solutions that will stand the test of time.

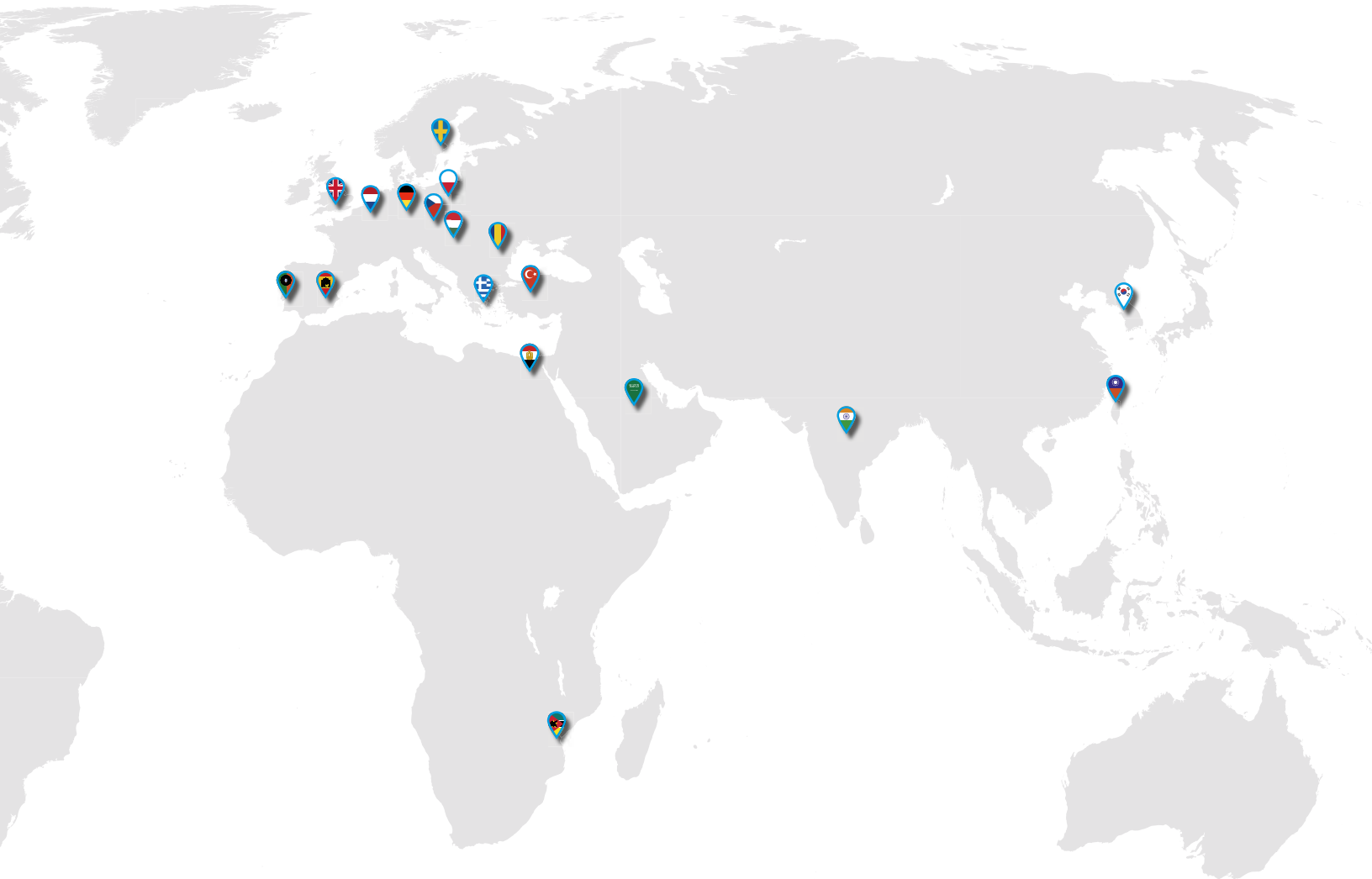
We combine experience, innovative spirit, and an understanding of the industry to bring you the best tie for every track, the ideal solution for every line, and the right know-how for every project. We work with you to develop premium, customized track solutions that meet the specific requirements of your product and locality.



URBAN TRANSIT

At the heart of the metropolis, always comfortable and guaranteed to be environmentally friendly – that is modern local transport. Customized solutions for subways, commuter trains and trams make cities a tangible experience for everyone.





ENGINEERING

Make our know-how your own: With their innovative spirit, wealth of ideas and experience, our teams are always at your side when it comes to planning, implementing and monitoring your projects.



PLANT CONSTRUCTION

Turnkey and ready for production – that is how we plan, design and build your new tie plant. Everywhere in the world always perfectly customized to your requirements – a foundation of your success.

SOLUTIONS YOUR WAY.



BALLASTED TRACK – THE TRADITIONAL SOLUTION FOR MAIN-LINE RAIL TRAFFIC

Now as before, concrete ties on ballast represent the classical, fundamental version of track systems: in Germany and around the world. In many cases, conventional ballasted track systems fully satisfy the requirements placed. Ballasted tracks offer especially great advantages where refurbishment of existing lines is involved: rail traffic can be partially maintained, even during the construction

phase. Total life-cycle costs are increasingly assuming a major role in the planning of new lines. Concrete ties can be laid, for example, on a flexible and cost-reducing basis, “under the rolling wheel” – i.e., without interruption of rail traffic. Depending on the country, tie design can vary greatly in accordance with customers requirements, standards and local conditions.

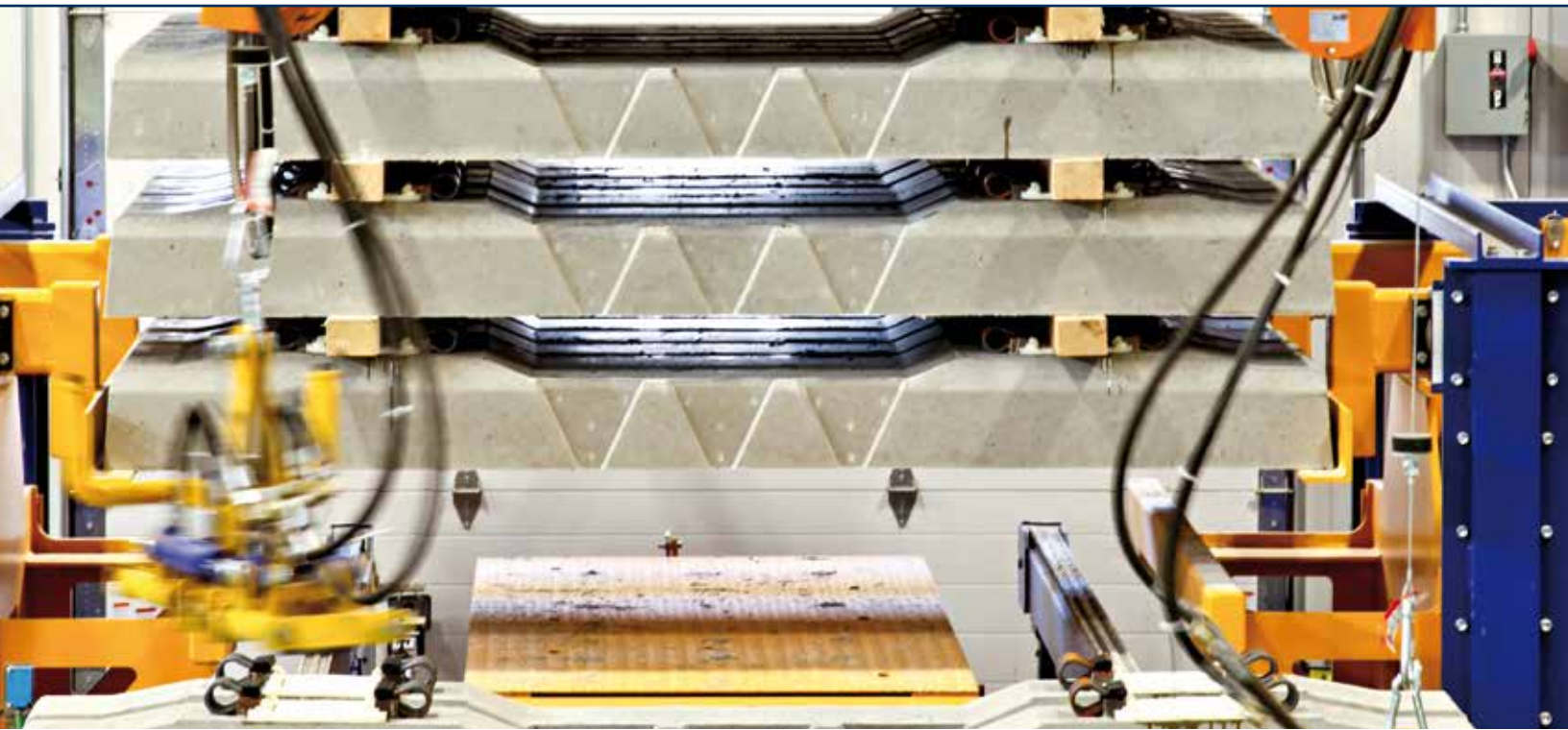
PROPERTIES

- Ties are developed based on international standards EN, UIC and AREMA, as well as customer- and project-specific requirements
- Customized tie geometry, concrete technology and dimensioning
- Flexible tie mold construction for carousel systems
- All common rail fastenings can be used
- Installation possible even during normal operations

HOW YOU BENEFIT COMPARED TO WOODEN TIES

- Reliability: tested tie solutions for projects with requirements based on international standards
- Flexibility: tie suitable for a wide range of axle loads and markets
- Added value: cost-effective design and production
- Durability: increased lifetime and less maintenance





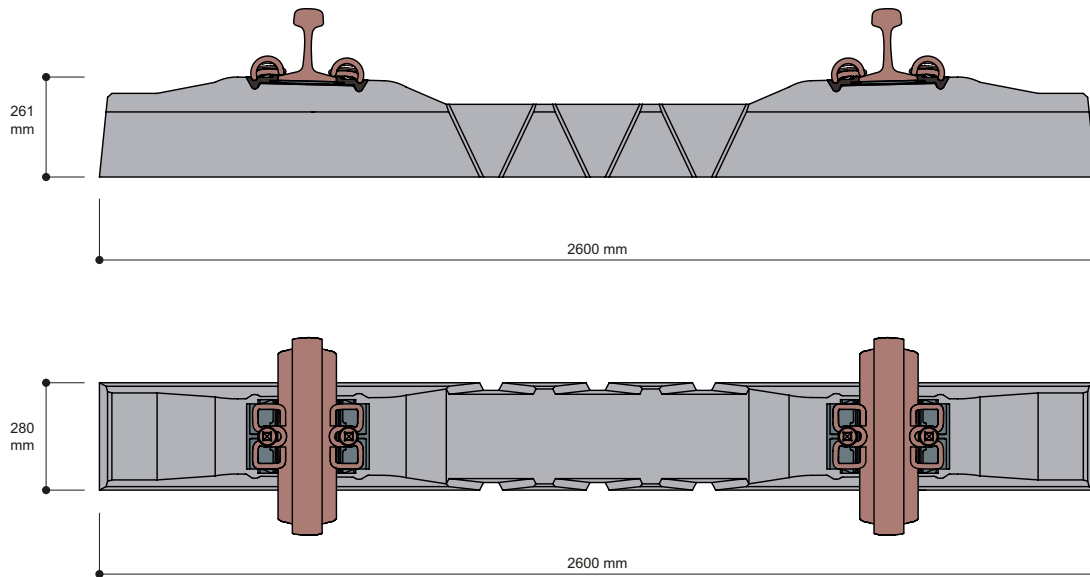
UP 15 – FOR HEAVY HAUL APPLICATIONS: INDIVIDUAL DESIGN FOR HIGH LOAD CAPACITY

ADVANTAGES & BENEFITS

- Heavy tie providing superior track stability for heavy haul operation
- Design based on AREMA manual chapter 30 in combination with the UPRR specification
- Meets requirements of Class 1 railroads
- Tested and approved in accordance with AREMA manual chapter 30
- Increased lateral track resistance due to scallops in the centre tie section
- Compatibility with street construction
- Different fastening systems (W-Type, Safe Lock or e clip) and rail types applicable
- Flexible rail seat inclination (1:40 and 1:20)
- Can be equipped with under tie pads (UTP)
- Production facility has and implemented QM/QA system and is certified acc. ISO 9001, AAR M 1003 and PCI

RAILONE SCOPE OF SUPPLY

- Design verification for the dedicated application
- Clarification of the interfaces to the component suppliers (fastening, USP, etc.)
- Approval procedures in accordance with the technical specification and valid codes
- Production of the concrete ties
- Preassembling of the fastening systems (if fastening design allows it)
- QA documentation throughout whole production process
- Planning and execution of the logistic from RAILONE production plant to the construction site



TECHNICAL FEATURES

Application

Heavy haul

Max. speed

100 mph / 160 kph *)

Axle load

79 kips / 35.4 tons *)

Gauge

56.5" / 1,435 mm

Length

8'6³/₈" / 2,600 mm

Height

10⁹/₃₂" / 261 mm

Width

11¹/₃₂" / 280 mm

Weight

789 lbs / 358 kg

Applicable fastening systems

W-Type, Safe Lock, e clip

Applicable rails

141 AB and others

Rail inclination

1:40, 1:30 and 1:20

Design

Acc. Union Pacific Specifications and AREMA, chapter 30

Approval

Tested acc. to AREMA, chapter 30

Safety

Application of Guard and Guide Rails

N&V

Application of USP's

Power supply

Application of Third Rail

*) Other combinations of speed and axle load may be verified on request

UP 15 REFERENCES

Location/Project name	Delivered (pcs)	Year	Client
Various projects (USA and Canada)	>1.000.000	2014 – 2019	Union Pacific Railroad / CN
British Columbia (Canada)	5.000	2016	Canadian National



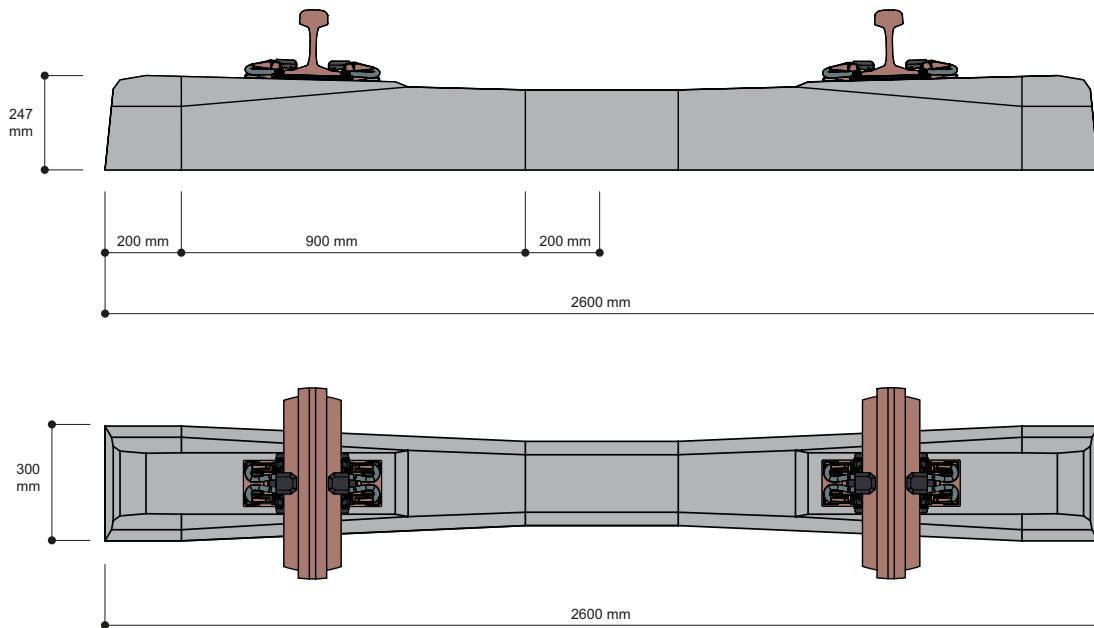
AI 04 – FOR OPTIMUM PERFORMANCE IN HIGH SPEED APPLICATION

ADVANTAGES & BENEFITS

- Economic solution due to uniform design
- Design in accordance with European (EN 13230) and American (AREMA chapter 30) norms
- Fulfills the high requirement of the high speed operation
- Reduced number of tie types in the network
- One tie design for different fastening systems and rail types
- Can be equipped with under tie pad for N&V mitigation
- Compatible with different derailment solutions
- Reduced maintenance
- Highest quality due to carousel line production and reliable QM/QA process

RAILONE SCOPE OF SUPPLY

- Design verification for the dedicated application
- Clarification of the interfaces to the component suppliers (fastening, USP, etc.)
- Approval procedures in accordance with the technical specification and valid codes
- Production of the concrete ties
- Preassembling of the fastening systems (if fastening design allows it)
- QA documentation throughout whole production process
- Planning and execution of the logistic from RAILONE production plant to the construction site



TECHNICAL FEATURES

Application

High speed

Max. speed

>200 mph / >350 kph *)

Axle load

44 kips / 20 tons *)

Gauge

56.5" / 1,435 mm

Length

102.4" / 2,600 mm

Height

9.7" / 247 mm

Width

11.8" / 300 mm

Weight

728 lbs / 330 kg

Applicable fastening systems

W-Type (Schwihag)

Fast Clip (Pandrol)

Applicable rails

60 E1 (UIC), 60 E2

Rail inclination

1:40, 1:20

Design

EN 13230-2 & -6 or AREMA, chapter 30

Approval

Approved for high speed network of Spanish Railways ADIF (ES), Mecca Medina HSL (KSA)

Safety

Aero-dynamic design for reduction of flying ballast

N&V

Application of USP's

Power supply

(OHL considered for high speed lines)

*) Other combinations of speed and axle load may be verified on request

AI 04 REFERENCES

Project name	Delivery (pcs)	Year	Client
Haramain Project Mecca – Medina (KSA)	500.000	2013 – 2017	SRO
Various projects (Spain)	805.359	2019 –	Various



UTT 17/UTT 21 – BALLASTED TRACK SOLUTION FOR HIGH REQUIREMENTS IN URBAN TRANSIT

ADVANTAGES & BENEFITS

- Economic solution due to uniform design
- Meets the North American LRT tie and mixed traffic requirements
- Reduces number of tie types in the network
- One tie design for different fastening systems and rail types
- Can be equipped with under tie pad for N&V mitigation
- Possibility of implementing a third rail for power supply
- Compatible with different derailment solutions
- Reduced maintenance
- Highest quality due to carousel line production and reliable QM/QA process

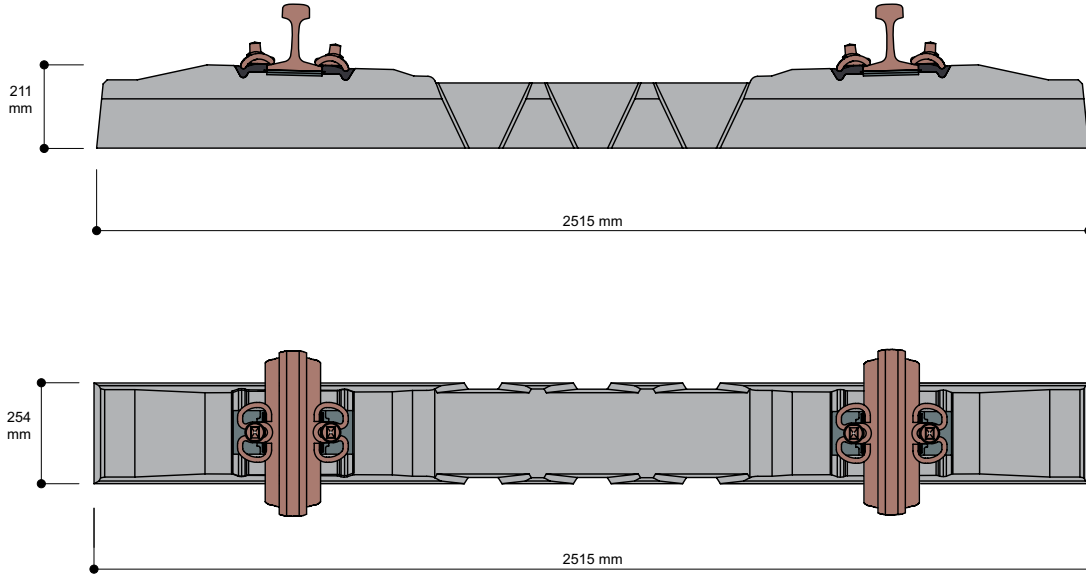
RAILONE SCOPE OF SUPPLY

- Design verification for the dedicated application
- Clarification of the interfaces to the component suppliers (fastening, USP, etc.)
- Approval procedures in accordance with the technical specification and valid codes
- Production of the concrete ties
- Preassembling of the fastening systems (if fastening design allows it)
- QA documentation throughout whole production process
- Planning and execution of the logistic from RAILONE production plant to the construction site

UTT 17 REFERENCE

Project	Delivered (pcs)	Year	Location
Hurontario (Canada)	5.000	2021 – 2022	Ontario, Canada

UTT 17



TECHNICAL FEATURES

Application

Urban Transit (UT)

Max. speed

UTT 17: 60 mph / 95 kph *)

UTT 21: 100 mph / 165 kph *)

Axle load

UTT 17: 55 kips / 25 tons *)

UTT 21: 66 kips / 30 tons *)

Gauge

56.5" / 1,435 mm

Width

10" / 254 mm

Weight

UTT 17: 578 lbs / 262 kg

UTT 21: 613 lbs / 278 kg

Applicable fastening systems

W-Type, Safe Lock, e-clip

Applicable rails

UTT 17: 115 RE

UTT 21: 115 RE / 136 RE

Rail inclination

1:∞, 1:40, 1:30 and 1:20

Design

acc. to AREMA, chapter 30 and the TCRP Report 115

Approval

Tested acc. to AREMA, chapter 30

Safety

Application of Guard and Guide Rails

N&V

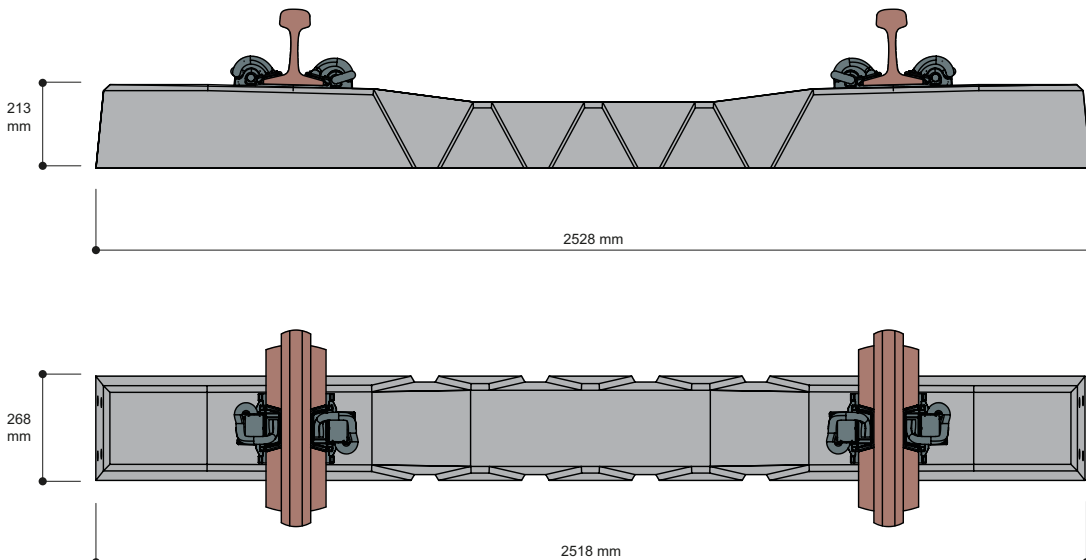
Application of USP's

Power supply

Application of Third Rail

*) Other combinations of speed and axle load may be verified on request

UTT 21



SOLUTIONS YOUR WAY.



BALLASTLESS TRACK – TOP PERFORMANCE ON A FIRM FOUNDATION

Rail traffic is reaching out toward new horizons on ballastless track systems. The arguments are indeed convincing: long life cycles, top speed, ride comfort, and great load-carrying capability. You take no chances with these systems, especially with newly constructed lines: even at speeds over 300 km/h, your coffee will stay in your cup. Practically maintenance free, ballastless track systems ensure almost 100% availability over many years. In many cases, a maintenance-free track system is indeed the more cost-effective solution over the long run. Ballastless tracks can be built on either asphalt or concrete supporting layers. Track systems installed on asphalt supporting layers predominantly feature direct-support configurations: for example, in the form of GETRAC® applications. On the other hand, systems implemented with concrete supporting layers offer the selection among an optimal diversity of models with homogeneous system structures.

PROPERTIES

- Flexibility and consistency in use
- Ideal for high loads and extreme speeds with maximum safety

HOW YOU BENEFIT

- Stability and precision
- Optimum driving comfort
- Long service life and virtually maintenance-free
- Basis for optimized routing
- Reliable and mechanized installation methods





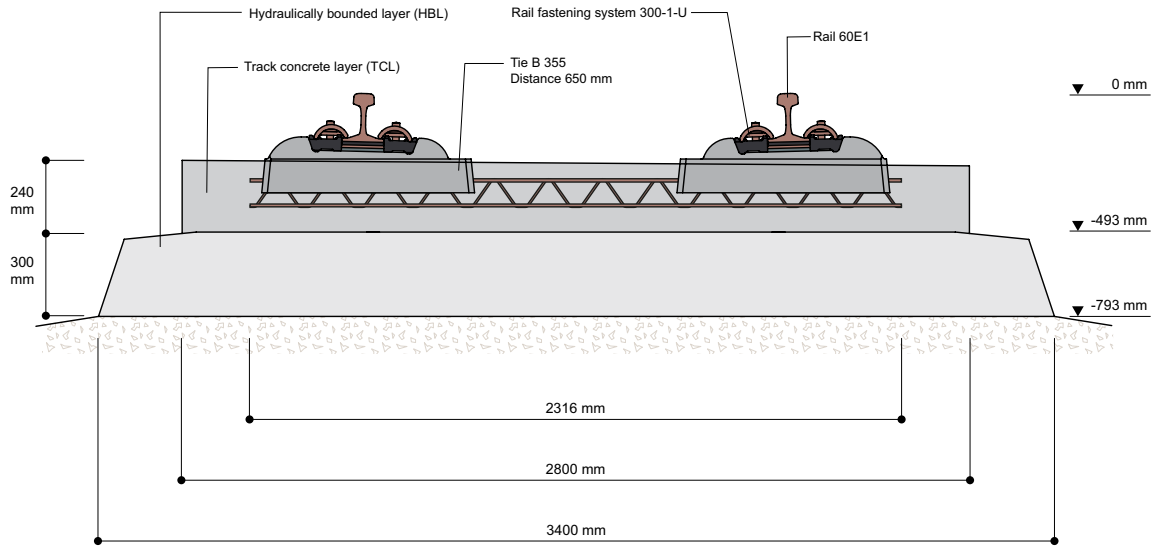
RHEDA 2000® – MAXIMUM PASSENGER COMFORT FOR MAXIMUM SPEEDS

ADVANTAGES & BENEFITS

- A maximum of cost effectiveness and reliability by utilization of concrete ties as superior quality precast concrete building components in the critical area of the rail seat zone
- Great precision of track geometry parameters by application of precise concrete ties
- Great adaptability to all types of substructure and models executed, by means of application of cast in place concrete for the concrete track supporting layer
- Great reliability as a result of technologically mature concrete engineering of the track supporting layer for a great diversity of climatic conditions and concrete standards
- High speed and heavy haul solution available
- Flexible, high performance installation procedures on the basis of simple installation steps that are reproducible for both manual as well as automated procedures
- Great added value by local production possibilities

RAILONE SCOPE OF SUPPLY

- Design verification for the dedicated application
- Clarification of the interfaces to the component suppliers (fastening, N&V, signaling, power supply, etc.)
- Approval procedures in accordance with the technical specification and valid codes
- Production of the concrete ties
- Preassembling of the fastening systems
- QA documentation throughout whole production process
- Planning and execution of the logistic from RAILONE production plant to the construction site
- Method statements and installation support on site
- Engineering services for construction



TECHNICAL FEATURES

Application

High Speed Lines (HSL) and Conventional Lines

System type

RHEDA family with bi-block ties B 355 in in-situ concrete

Max. speed

>200 mph / >350 kph

Axle load

55 kips / 25 tons *)

Gauge

56.5" / 1,435 mm

System width

110.2" / 2,800 mm

System height (on embankment)

31.5" / 800 mm

Applicable fastening systems

System 300 (by Schwihag)

System FCB (by Pandrol)

Applicable rails

60 E1, 136 RE, others

Rail inclination

1:40 and 1:20

Design

Acc. EN 16432

Approval

Approved in the Network of German Railways (Deutsche Bahn), British Railways (Network Rail), Polish Railways (PKP PLK)

and several project related approvals

Safety

Application of of Guard and Guide Rail

N&V

Application of noise absorbers

Design as mass spring system

Power supply

Earthing concept for OHL power supply

Signaling

Compatible with all signaling systems

*) Other combinations of speed and axle load may be verified on request

RHEDA 2000® REFERENCES

Project	Delivered (m)	Year	Client
Follo Line Tunnel Oslo – Ski (Norway)	2 × 20.000	2019 – 2021	Acciona Ghella Joint Venture
Floen-Arna-Tunnel, Bergen incl. mass spring system (Norway)	6.900	2019 – 2020	AZVI Norge
Stuttgart 21, Ulm – Wendlingen incl. mass spring system (Germany)	55.000 + 10.500 turnout	2018 – 2020	Deutsche Bahn
Hanau – Nantenbach (Germany)	2 × 6.000	2016 – 2017	Deutsche Bahn
Othrys / Kallidromos (Greece)	33.000	2015 – 2016	J & R Avas
Mecca Medina, Haramain Line (KSA)	2 × 80.000	2012 – 2018	OHL Arabia
Guadarrama Tunnel (Spain)	60.000	2008 – 2010	ADIF
Taiwan High Speed Rail Project (Taiwan)	345.000	2004 – 2006	Taiwan Track Partners JV



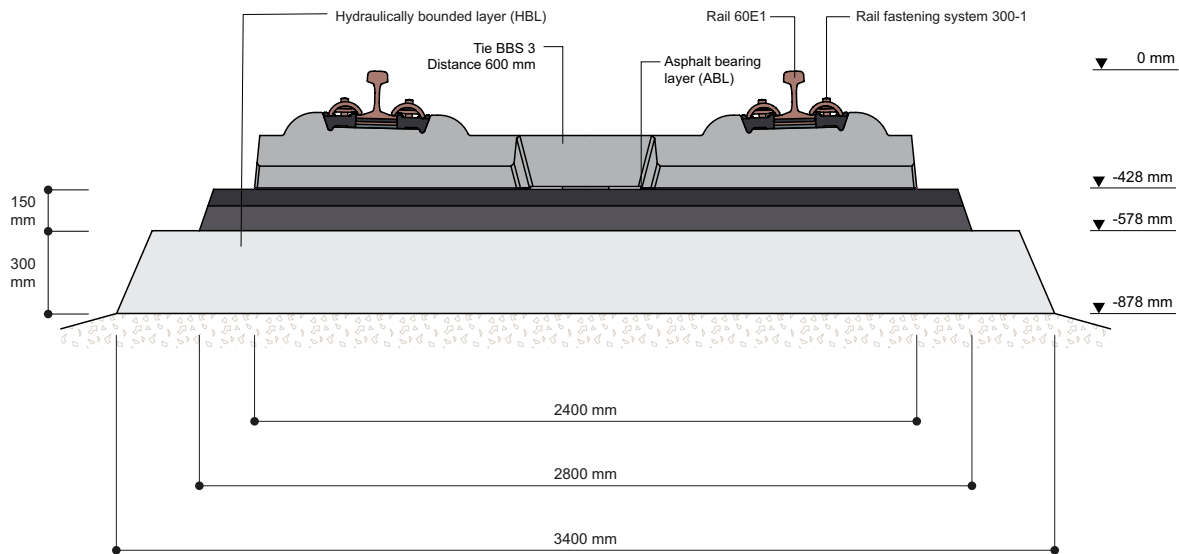
GETRAC® – INNOVATIVE ASPHALT TECHNOLOGY FOR ECONOMICAL ASSEMBLY

ADVANTAGES & BENEFITS

- Technologically mature system with maximal safety and reliability
- Fast and low-risk installation as a result of
 - small number of work steps,
 - high degree of mechanization and
 - lack of dependency on the weather ($t \geq 0/3 \text{ } ^\circ\text{C}$)
- Application of conventional road building and track laying equipment (with conventional track laying and alignment techniques)
- Possibility of conversion of existing rail lines without interference with the parallel track in operation (retrofit solution)
- Immediate availability of the track after its installation (no hardening times compared to concrete systems)
- Minimal down time and effort in track reconstruction after train accidents
- Adaptation to vibration abatement solution possible: GETRAC® A3.1

RAILONE SCOPE OF SUPPLY

- Design verification for the dedicated application
- Clarification of the interfaces to the component suppliers (fastening, USP, etc.)
- Approval procedures in accordance with the technical specification and valid codes
- Production of the concrete ties
- Preassembling of the fastening systems
- QA documentation throughout whole production process
- Planning and execution of the logistic from RAILONE production plant to the construction site
- Method statements and installation support on site
- Engineering services for construction on a sub-contractual basis



TECHNICAL FEATURES

Application

Conventional Lines and High Speed Lines (HSL)

System type

Directly supported ballastless track system with asphalt supporting layer

Max. speed

>186 mph / >300 kph *)

Axle load

55 kips / 25 tons *)

Gauge

56.5" / 1,435 mm

System width

110.2" / 2,800 mm

System height (on embankment)

31.5" / 800 mm

Applicable fastening systems

System 300 (by Schwihag)

System FCB (by Pandrol)

Applicable rails

60 E1, 136 RE, others

Rail inclination

1:40 and 1:20

Design

Acc. EN 16432

Approval

Approved in Network of German Railways (Deutsche Bahn) and several project related approvals

Safety

Application of Guard Rail possible

N&V

Application of noise absorbers and mass spring system (GETRAC® A3.1)

Power supply

Earthing concept for OHL power supply

Signaling

Compatible with all signaling systems

*) Other combinations of speed and axle load may be verified on request

GETRAC® REFERENCES

Project	Delivered (m)	Year	Client
Leverkusen (Germany)	1.800	2021	Eiffage Rail
Hohenthurm – Peissen (Germany)	4.698	2016 – 2017	Deutsche Bahn
New Schlüchterner Tunnel with trafficability (Germany)	4.080	2014 – 2015	Deutsche Bahn
Brandleite-Tunnel (Germany)	2 × 3.600	2005	Deutsche Bahn



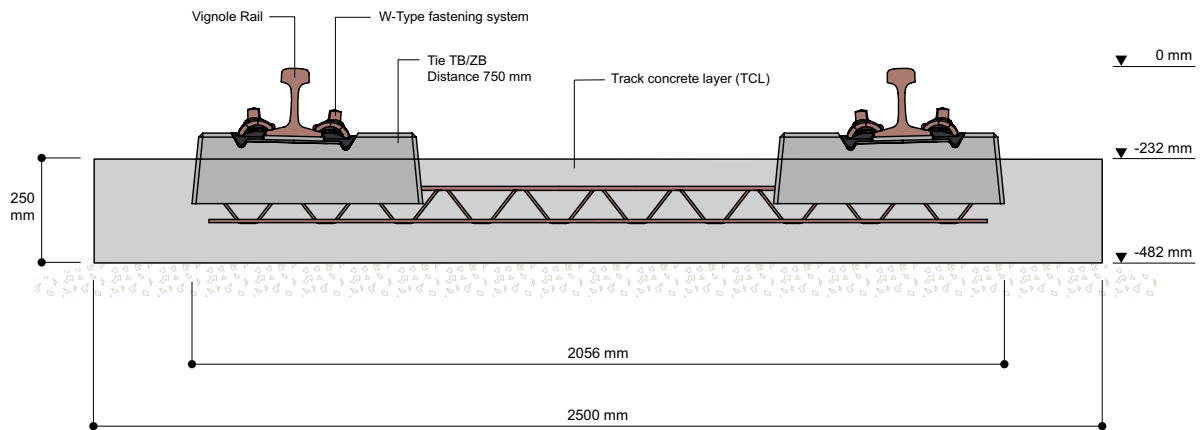
RHEDA CITY – PROVEN RHEDA 2000® QUALITY FOR URBAN TRANSIT

ADVANTAGES & BENEFITS

- Simple, ballastless track system with high daily track-laying output; No gauge tie bars needed during installation
- Maximum-possible precision of track geometry from the cross tie
- Capability of modifying as a result of optimized track system design
- System solution to satisfy greater demands for production form noise and vibration, and for requirements for electrical isolation
- Great levels of safety and long service life
- Compatibility with street construction
- Defined elasticity of the track, by employment of pre-selected components
- Possibility of discrete or continuous support of the rails
- Capability of “building and riding” procedures

RAILONE SCOPE OF SUPPLY

- Design of the system for the dedicated application
- Clarification of the interfaces to the component suppliers (fastening, N&V, signaling, power supply, etc.)
- Approval procedures in accordance with the technical specification and valid codes
- Production/delivery of the concrete ties and all system components
- Preassembling of the fastening systems
- QA documentation throughout whole production process
- Planning and execution of the logistic from RAILONE production plant to the construction site
- Method statements and installation support on site
- Engineering services for construction contractual basis



TECHNICAL FEATURES

Application

Urban Transit (UT)

System type

RHEDA Family with bi-block ties TB/ZB in in-situ concrete

Max. speed

75 mph / 120 kph *)

Axle load

33 kips / 15 tons *)

Gauge

56.5" / 1,435 mm different narrow gauges possible

System width

98.4" / 2500 mm

System height (on embankment)

18.8" / 480 mm

Applicable fastening systems

ex. ME26 Schwihaag, W14 Vossloh or other acc. specification

Applicable rails

Vignole and grooved rails

Rail inclination

1:40, 1:20 and 1:∞

Design

Acc. EN 16432

Approval

Approved by several Transit Networks

Safety

Application of Guard Rail possible

N&V

Design as mass spring system

Power supply

Application of Third Rail earthing concept for OHL power supply

Signaling

Compatible with all signaling systems

*) Other combinations of speed and axle load may be verified on request

SELECTED RHEDA CITY REFERENCES

Project/Place	Delivered (m)	Year	Client
Berlin (Germany)	200.000	1996 –	BVG
Dresden (Germany)	100.000	1998 –	DVB
Faliro Bay, Athens (Greece)	3.800	2019 – 2020	AKTOR S.A.
Tampere (Finland)	5.600	2017 – 2019	Raitiotiellianssi
Palembang (Indonesia)	2 × 23.400	2015 – 2018	PT Waskita Karya
REM Montreal (Canada)	14.000	2019 – 2020	Nouvlr
Hurontario (Canada)	17.000	2021 –	Mobilinx

SOLUTIONS YOUR WAY.



OUR ENGINEERING EXPERTISE FOR YOUR PROJECT

When you are dealing with an extensive infrastructure project, any help is welcome. Thanks to our decades of experience in national and international railway projects, we know exactly how we can lend you a hand most effectively.

Our strong network provides you with quick support around the world, knowledgeable personnel, and the engineering services you need to complete your project.

Optimize your project workflow, plan new track solutions, or modernize your infrastructure: Our experts are standing by with innovative spirit and fresh ideas to help you plan, prepare, implement, and monitor your projects. Together, we will prepare a package of services tailored to meet your unique challenges and requirements.

Benefit from the know-how of a technology leader and take advantage of our engineering services to bring success and efficiency to your projects.

01

CONSULTANCY



Based on deep expertise, RAILONE offers consultancy services in the fields of – inter alia – noise and vibrations, geology, survey, LCC, RAMS and interoperability analysis.

02

DESIGN



From concept design to preliminary and detailed design. RAILONE provides calculations, reports and project documentation required for track construction.

03

CONSTRUCTION SUPERVISION



RAILONE's experts support your track construction from preparation works to construction completion based on extensive experience on ballasted and ballastless track systems.

04

MAINTENANCE AND QUALITY ASSURANCE



RAILONE provides the maintenance and repair plans, quality assurance documentation etc. to ensure optimal construction and track performance.

REFERENCES

Project	Planned track length (m)	Year	Client
Rapur Tunnel (India)	6.500	2019	RVNL
Etihad Rail Stage 2D (UAE)	6.900	2022	CRCC

PLANT SOLUTIONS, YOUR WAY



What is imaginable also is feasible! You require a plant for ties or turnout bearers? For ballasted track, ballastless track or other alternative track types? A complete plant construction solution or an integration into an existing site? A manual process or highly automated? You have to consider particularly demanding climatic conditions and still want a smoothly functioning system? And of course time is short? Together with you and for you, we will find the optimum solution, customized for your requirements.

Wherever new transport projects are realized, state-of-the-art plants with high availability and guaranteed reliability are the most important basis for your economic and sustainable success.

WITH A RAILONE PLANT, YOU CAN COUNT ON ...

- ... more than 60 years of experience in tie production.
- ... extensive competence in passenger and freight transport.
- ... know-how from numerous major projects worldwide.
- ... an international network of reliable contractual partners.
- ... highest technical, economical, logistic and qualitative standards.
- ... standardized and efficient production processes.
- ... a solution that is exactly customized to your expectations.
- ... a one-stop-shop service, from planning to operation.
- ... a strong partner with a tradition of innovation.

SERVICES WITH ADDED VALUE

COMPLETE PLANTS OR PARTIAL SERVICES

From your inquiry to commissioning:
Our services ensure the efficient
construction of your plant.

Plant engineering

Whether predominantly manual or highly
automated production, plant and manu-
facturing processes are geared entirely
to your economic success.



Requirement assessment

Having many years of experience, we
find the sustainable solution that is pre-
cisely customized to your requirements.

Mold design

Mold follows product – we develop the
mold that exactly matches your manu-
facturing process and your requirements.

Product development

Use our proven product simulations
to optimize your tie in terms of material
usage and durability.

Infrastructure

We ensure short distances, whether
for integration into the existing infra-
structure or for the development of an
economical solution for new buildings.

Installation/commissioning

Together with your specialist personnel,
our team of experts will install and com-
mission the system.



Training

Our experienced specialists support,
accompany and train your staff:
from commissioning to maintenance.

Production logistics

Efficiency from design onwards: All pro-
duction logistics processes are proved
regarding cost-effectiveness before con-
struction and planned accordingly.

Intralogistics

Use our know-how to perfect your
material and data flows, optimize
processes and quality assurance and
optimize cash flow.

Quality management/certification/ auditing

With our international presence and expe-
rience, we advise and support you in
product certification and QMS auditing.

Material technology

We help you to select the ideal commod-
ities for your tie and the perfect formula
for your manufacturing process.

Funding

Your journey is the reward: We support
you financing your plant with selected
partners.



Spare parts management

With our contacts to renowned manu-
facturers, we offer you spare parts con-
cepts that guarantee fast availability
worldwide and thus smooth production.

The PCM RAILONE Group has been manufacturing concrete ties and track systems for urban transit and long-distance rail transportation for over 60 years. The technology leader also offers its expertise in the fields of engineering and plant construction. Its customer-driven innovations fulfill the highest quality standards and are installed around the world.



Saurav Mittal

Director of Sales
PCM RAILONE AG
saurav.mittal@railone.com
Tel +49 9181 8952-288



Jens Kleeberg

CSO
PCM RAILONE AG
jens.kleeberg@railone.com
Tel +49 9181 8952-285



Mark Butler

Head of Commercial Management
International
PCM RAILONE AG
mark.butler@railone.com
Tel +49 9181 8952-287

