Points and crossings
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The Vossloh group’s mission

To provide safe, proven, cost-effective and sustainable solutions in order to meet the growing mobility needs of people and goods.

Vossloh Cogifer’s goals

To carry out this mission, we aim to offer all of our customers—infrastructure managers, integrated rail companies, global contractors, railway concessions, railway companies—high-performance, tailored points, crossings and signalling systems for all types of networks: high-speed, conventional and heavy-haul railways; rapid transit systems and tramways.

- Easyswitch-R built-in hydraulic actuation system, with point VCC lock and KVCC point detector
- Easyswitch-R built-in hydraulic actuation system, with heel lock and Paulvé point detector
- Lubrication-free slide chair with internal elastic fastening
- Heating coil, easy to install for all types of rails, switches and stock rails
We rely on our long history and industry experience to design innovative equipment that continually offers heightened performance and is adapted to the specific needs of our customers. At the same time, we provide the best safety guarantees for transported passengers and merchandise. Thanks to our efficient and experienced teams and our network of 25 subsidiaries around the world, we have the local presence, flexibility and adaptability necessary to supply our customers with the tailored solutions they expect. Vossloh Cogifer offers global solutions comprising switch systems, related safety equipment, and products for actuation, locking and monitoring. We also provide signalling systems with remote monitoring technology for predictive maintenance. At Vossloh Cogifer, we have the technical and human resources to support our customers at every step in their projects, from diagnosing needs to the delivery, on-site installation and set-up of customised, specific solutions. Our research and development capacity and international presence enable us to offer the best, most innovative solutions based on our international experience, while guaranteeing high reliability and optimised life cycle costs.

- Slide chair: example of flexible configuration
- Independent cast check rail support with elastic rail fastening for standard rails and 33C1 check rails
- Forged switch blade with a single induction heating operation
- Cast manganese steel frog with four flash-butt welded legs. Running surfaces may be pre-hardened by explosion for heavy traffic.
Vossloh Cogifer designs and manufactures points and crossings for all railway networks.

Very high-speed (over 300 km/h)

For ballasted and slab tracks, Vossloh Cogifer is a preferred company for manufacturing and supplying specialised points and crossings. Our patented technology comprises movable manganese monobloc frogs and a fully inclined running table. This enables trains to operate at the highest speeds in optimal comfort and safety. To date, we have supplied more than 1,300 points and crossings for very high-speed rails across a wide range of networks throughout the world.

560 km/h

The speed at which the TGV travelled over Vossloh Cogifer points and crossings when it reached a record speed of 578.4 km/h in France in April 2007.

Tramways

Vossloh Cogifer designs and manufactures complete tramway solutions, from motorised points and crossings to signalling systems, for all technologies and rail profiles. For maximum comfort, safety and reliability, we have developed machined solid monobloc switches, which help to optimise the life cycle cost of points and crossings.
Rapid transit

Rapid transit systems are an increasingly needed mass transit tool. Vossloh Cogifer offers a complete range of dedicated points, crossings and signalling systems for all types of steel-wheel and tyre-wheel rapid transit: heavy transit systems, light rail and automated systems. We are able to rapidly install and set up pre-assembled and pre-tested devices, thereby limiting traffic disruption and optimising costs. For rapid transit systems using fully automatic light vehicle (VAL) technology, we have developed and patented special devices with movable switches for route changes.

Conventional lines and suburban networks

To meet the needs of the conventional and suburban line market, Vossloh Cogifer has developed the monobloc manganese crossing with welded legs, along with adapted operating and safety systems. Our network of subsidiaries throughout the world enables us to offer personalised, in-country services that meet local needs in an optimal timeframe.

Heavy-haul lines

The heavy-haul transportation market is currently undergoing rapid growth. For decades, Vossloh Cogifer has supplied points and crossings to networks designed for transporting ore (for example, an axle weight of 42 tonnes in Australia). Our technology for pre-hardening frogs enables us to meet very specific requests.
A full range of high-performance points and crossings

Our range of points and crossings makes it possible for all types of railways to cross and separate, using simple turnouts as well as the most complex crossovers.

Movable point manganese monobloc cradle: a Vossloh Cogifer exclusive for high-speed railways

This patented Vossloh Cogifer technology enables trains to run perfectly smoothly at maximum speed on through tracks and at speeds of up to 230 km/h on diverted tracks.

Manganese monobloc frog with welded legs: connecting frog and rail

Our special tri-metallic welding procedure fuses the frog to the rail, creating perfect continuity on straight and curved rails, and integrating points and crossings on long welded rails (LWR). Each year, our workshops produce over 6,000 monobloc frogs and cradles with welded legs.

Inclined points and crossings: ensuring smooth operation on high-speed railways

A pioneer in the field, Vossloh Cogifer developed a running table inclined at 1/20 or 1/40 that is perfectly continuous with standard rails. We achieved this feat several decades ago by creating and patenting an innovative switch profile. Tailored to high speeds, it guarantees perfectly smooth travel through points and crossings. This reduces the need for maintenance and train car jolting, thus improving passenger comfort.
mance points and crossings

Forgings for switch rails, produced with an ultra high-performance industrial tool

With high-speed switches, the switch rail profile is different from the standard connecting rail profile. Forging is performed at the heel of the switch rail, enabling the intermediate railway to be welded to the adjacent rail. Each year, Vossloh Cogifer manufactures more than 10,000 forgings for special switch rails using a unique, ultra high-performance industrial tool. Lengths of up to 600 mm are forged in 55 seconds in a single heating cycle, avoiding any distortion of steel’s metallurgic properties.

Concrete sleepers

Vossloh Cogifer introduced concrete sleepers into points and crossings in the early 1980s. Offering optimised maintenance, reduced life cycle cost (LCC), as well as sustainable development and product life benefits, concrete sleepers are increasingly being used in modern networks.

More than 11,000 forgings each year
Signalling products: an offer focused on safety

**VCC clamp lock**

The VCC is an individual locking and switch monitoring device. The two switches are individually locked and monitored in their final positions. Thanks to its high safety levels, the VCC is now in widespread use in all types of networks, notably on very high-speed lines around the world.

**VPM movable point lock**

The VPM locks the movable point on points and crossings. It is attached to the cradle and works in the same way as the VCC. The VPM is tailored to the high-speed market (200 km/h and above).

**Integrated actuation system (Easyswitch-R)**

Within a hollow sleeper, the integrated actuation system includes a motor, a VCC/VPM lock, and a monitoring device. The compact, reliable mechanism handles operating, monitoring and locking functions in a reduced area. This is an incomparable advantage when space is limited, such as in tunnels.

**Easyswitch-R, Lyon tramway line, Meyzieu station, France**
Vossloh Cogifer’s line of switch actuation devices includes 14 different products tailored to every situation. Electrohydraulic or electromechanical, wedged or trailable, each product is adapted to a specific market segment, such as railways, rapid transit systems or tramways. They all have a reliable motor, developed using Vossloh Cogifer’s long-term experience and recognised know-how.

**Paulvé point detector**

This device monitors the operation and opening of point and crossing switches. Reliable and resistant to rail vibration or expansion problems, it is used for all types of networks: tramways, rapid transit systems, and classic and high-speed trains.

**Traffic detector**

This device detects the passage of a train, with or without direction selection. It thus makes it possible to alert teams working on railways, announce the arrival of a train at a station, or control a level crossing.

**Level crossing mechanisms**

Vossloh Cogifer now offers an electrohydraulic operating device that is both cost-effective and reliable.
Vossloh Cogifer offers several lines of signalling products and systems perfectly adapted to a range of different markets.

- **Computer-controlled relay-interlocking stations**: these stations use safety relays to ensure interlocking, offering the flexibility of computer control for non-safety aspects.
- **Computerised interlocking stations**: all interlocking operations are performed by software and centralised in a computer with a Safety Integrity Level 4 (SIL4).
- **Remote control and monitoring systems (SNTI)**: with an SIL2, these systems utilise computerised or traditional stations (TCO) to remotely control computerised or relay-interlocking stations.

Our offer also includes products designed and developed by Global Rail Systems (GRS), a Vossloh Cogifer subsidiary:

- **By-pass stations for heavy-haul networks (FAS-PAS)**: this patented technology employs simplified interlocking principles based on the use of radio-controlled and remote monitoring from inside trains.
- **Marshalling yard management systems (MYA)**: these systems integrate automated control of switches, signals and routes through computerised equipment.
- **A variety of other signalling products**, such as audio railway circuits, coded railway circuits, time delay safety modules, and derailment detectors.

**A customised offer**

Tramway control station, Nice, France

MYA, United States

© Vossloh Cogifer / P. Eranian

© GRS
A global solution

For each project, Vossloh Cogifer sets up an adapted team with all the necessary skills. This offers our customers a number of benefits:

- a global solution fully tailored to their needs, which enables projects to integrate connected telephony and remote maintenance systems;
- competitive pricing;
- a high level of responsiveness in the solution’s design, which helps to reduce and control production time.

A safety level that complies with the strictest requirements

For passenger transportation, Vossloh Cogifer designs signalling systems that comply with the SIL requirements issued by the European Committee of Electrotechnical Standardisation (CENELEC), up to the highest level (4). Our methods and products are also certified.
Track monitoring and preventive maintenance

Vossloh Cogifer and subsidiary SIEMA Applications have developed PRIME, a complete and innovative line of products for preventive and event-driven remote monitoring of railway equipment located on the track, in signalling boxes or in train stations. PRIME’s main products include:

- **SIAM**: dedicated to remote monitoring, this software remotely provides precise and reliable information on equipment status. It serves as a real aid for deciding upon and preparing on-site intervention.
- **SURVAIG NG** and **SURTRACK**: intended for predictive maintenance of points and crossings and track circuits, respectively, these products alert maintenance staff of potential breakdowns and track changes in certain parameters. Teams can then intervene and prevent potential malfunctions.

We also offer **NUMCOM**, a complete line of digital railway telephony products that use the best communications technologies to ensure passenger safety.
**Turnkey offer and services**

From the design of points and crossings to their delivery and related services, our offer is complete and adaptable to all networks.

**Turnkey points and crossings**

**Supply**

Our points and crossings are manufactured and assembled in the plant, tested and ready for pre-assembly and transportation on special trains. This solution limits out-of-service time for tracks, while offering better value for money.

**Services**

Vossloh Cogifer is always focused on meeting customer needs, offering a full range of services:

* Pre-project services
  In the lead-up to a project, we can plan reliable, lasting solutions for customers thanks to our diverse offer: location assessments, route recommendations, point and crossing design consulting, as well as rail/wheel contact analyses.

* Project services
  To help implement our customers’ projects, we design and manufacture railway safety devices. We handle pre-assembly and reception services in our workshops. In addition, we supervise storage and worksite pre-assembly, as well as the installation of our devices and their equipment onto tracks. Lastly, Vossloh Cogifer can also perform the final verification before commercial operation.

* Post-project services
  During commercial operation, we offer inspection, diagnostics, consulting on preventive or corrective maintenance, cleaning, and renovation services. We also provide regular assessment services through multi-annual follow-up contracts for all equipment operated within a single network.

* Training
  Vossloh Cogifer develops partnerships with customers by offering training programmes on installing, operating, cleaning and maintaining our products. Training sessions take place at our training centre in Reichshoffen, France, or on the customer’s site.

**Expertise**

Our service specialists offer high-quality support to customers throughout our products’ entire life cycle and for all types of networks: conventional tracks, high-speed lines, rapid transit systems, tramways and special tracks.
Industrial excellence: a state

At Vossloh Cogifer, industrial development and excellence mean continually seeking new ways to work and produce in order to better satisfy our customers.

Five improvement areas

1. **Continuous training** of personnel helps our employees to improve the quality of their work and efficiently carry out our improvement projects.
2. A **lean manufacturing** approach helps to identify and eliminate efficiency gaps throughout the entire company. It notably aims to optimise flows within group entities (organisation of production, work posts, etc.).
3. The introduction of **key performance indicators** makes it possible to measure the performance of employees and group entities in critical areas of our activities, such as customer service, safety, environmental respect and quality assurance.
4. The **simplification of management processes** applies to all areas, including entry of customer orders, delivery plans and financial reports. It is put into practice by informing and training teams.
5. The identification of **best practices** throughout the company promotes the best solutions developed by all group entities.
A participatory approach

To pursue our goals, Vossloh Cogifer has opted for a participatory approach. Teams devoted to industrial development and excellence are responsible for properly managing changes and encouraging employees to develop new ideas. Each idea is analysed according to several parameters (feasibility, production time, etc.) and employees systematically receive feedback.

In 2006, the Vossloh Cogifer plant in Reichshoffen, France, won the industrial excellence trophy awarded each year by the French magazine *Usine Nouvelle*, its German counterpart *Wirtschaftswoche*, INSEAD (European Institute of Business Administration) and the German management institute WHU (Wissenschaftliche Hochschule für Unternehmensführung).

Certifications

Many entities that make up the Vossloh Cogifer group have been certified, a testament to the professionalism of our teams:

- ISO 9001 (Quality)
- ISO 14001 (Environment)
- ILO OSH (International safety)
- OSHAS (European safety)
- AQF2 (SNCF quality)
- M1003 (US points and crossings quality)

Top-notch technical resources

To achieve industrial excellence, Vossloh Cogifer has many modern, flexible and high-performance production plants that reflect its ongoing objective: ensuring the safety and flawless quality of its products while respecting the environment.
Developing points and crossings

Vossloh Cogifer’s Research and Development (R&D) teams are dedicated to designing ever more innovative products that improve performance, combine comfort and safety, reduce maintenance costs and protect the environment.

The ongoing pursuit of high performance

In an effort to improve product performance and adapt to ever higher railway speeds, our R&D teams focus their research on the following fields:

- analysing rail/wheel contact to decrease noise and vibration,
- honing systems and developing new materials to reduce the need for maintenance,
- optimising the life cycle cost (LCC) of products,
- certifying parts from new suppliers,
- approving designs.

These projects lead to the development of products that are innovative in design or composition. Vossloh Cogifer registers a number of patents each year. With their global experience and extensive knowledge of many different rail networks, our R&D teams have the technical capacity to develop tailored solutions for our customers.

Vossloh Cogifer, member of the i-Trans competitiveness cluster

i-Trans is the first European cluster dedicated to the development of innovative transportation systems. It was created to respond to the challenges of increased haul and passenger transportation. The cluster brings together a range of different players: industry, laboratories, public and private research centres, universities, etc.
Developing points and crossings for tomorrow’s world

Our portfolio of development, analysis and testing equipment enables us to carry out projects in the best possible conditions:

- 3D modelling and finite element calculation tools
- Mobile equipment for performing life-size tests on tracks
- Testing laboratory, including high-capacity test benches for performing fatigue, endurance and accelerated aging tests
- Testing methods that replicate the dynamic conditions of railways
- Specific equipment for validating various processes (welding, caulking, etc.)
- Metallurgy laboratories

Solid research partnerships

Vossloh Cogifer is associated with the best available experts in mechanics, electronics, acoustics, energy and materials through its projects with:

- its customers, especially for field tests;
- universities and engineering schools;
- the research sector, especially INRETS (French National Institute for Transport and Safety Research);
- members of international research projects and the i-Trans competitiveness cluster.

In addition, Vossloh Cogifer participates in several working groups of the European committee for establishing railway standards.

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Sustainable development: at the heart of point and crossing projects

At Vossloh Cogifer, we naturally integrate sustainable development into all of our projects through:

- the development of grease-free products that avoid the use of polluting substances,
- the search for alternative solutions to wooden sleepers.

Furthermore, R&D teams pay particular attention to recycling end-of-life products. Developments to date have increased our products’ recyclability rates to over 98%.