

A high-speed train, likely a TGV, is shown in motion on a railway track. The train is blue and white, with a sleek, aerodynamic nose. It is moving towards the viewer. The background features a complex network of overhead power lines and masts, typical of a high-speed rail system. The sky is clear and blue. The train's headlights are on, and the overall scene is brightly lit.

**Vossloh Cogifer
Points and Crossings**



Vossloh Cogifer, specialised for over one hundred years in the field of fixed installations for all types of railway, is one of the world's leading suppliers of Points and Crossings for railway, metro and tramway networks in France and throughout the world. Vossloh Cogifer is a subsidiary of the Vossloh group, forming part of the Railway Infrastructures Division.

The resources of a major group

A pioneer in many types of technology, the Vossloh group has a substantial research and development capability, backed by a first-class industrial and logistic structure, both in France and worldwide, through its many subsidiaries.

Rail Infrastructure

Vossloh Cogifer
Switch Systems

Vossloh
Fastening Systems

Vossloh
Infrastructure Services

Motive Power

Vossloh
Locomotives

Vossloh
Electrical Systems

Vossloh
Services

Information Technologies

Vossloh
Information Technologies

The Vossloh group is organised in three Divisions.

Railway Infrastructures

- Points and Crossings, safety Products and Signalling Systems
- Rail fastenings
- Track laying and maintenance

Motive power

- Diesel locomotives, maintenance and components
- Electrical systems and components for trams and trolley buses
- Services

Information technologies

- Passenger information
- Operation aid system
- Traffic simulation
- Signalling engineering

Vossloh Cogifer proposes all its expertise in the context of overall solutions: turnkey Points and Crossings, safety Products and Signalling Systems. Our company has built up experience all over the world and developed industrial power enabling us to design and manufacture a range of products meeting all market requirements, both technical and financial.



CONTENTS

A presence in all railway applications	Pages 4-5
A range of high-performance Points and Crossings	Pages 6-7
Points and Crossings and the environment	Pages 8-9
Signalling Products for optimising track and Point and Crossing safety	Pages 10-11
Signalling Systems	Pages 12-13
Powerful human, industrial and logistical resources	Pages 14-15
Services	Pages 16-17
Research and Development	Pages 18-19
Vossloh Cogifer provides a response to all your needs	Pages 20-21
Vossloh Cogifer, an international presence	Pages 22-23
References	Page 24

A presence in all railway applications

Pioneers in many technologies, Vossloh Cogifer's R & D centres have developed for each type of application, products that are perfectly adapted to the market environment, with ongoing innovation.



Very high speed (over 300 km/h)

A pioneer in the high-speed field, Vossloh Cogifer is the company people turn to for the supply of Points and Crossings. The first material was supplied for the south-east TGV (French High-Speed Train System) line in 1980. Vossloh Cogifer's technology, and in particular the patented monobloc movable crossings and the fully inclined running table mean that trains can run at the highest speeds. In 1991, the Atlantic TGV travelled over Vossloh Cogifer designed and manufactured Points and Crossings at a speed of 501 km/h. More than 400 Points and Crossings specifically designed for high-speed trains have been supplied by Vossloh Cogifer to high-speed rail systems throughout the world.

Metros

Vossloh Cogifer offers a complete range of Points and Crossings and signalling systems for all types of steel-wheel or tyre-wheel metros: heavy transit systems, light transit systems, and automatic systems. The company has demonstrated its ability to install and commission pre-assembled and pre-tested switches quickly, which keeps disruption to traffic to a minimum, thus optimising costs. For the VAL, a fully automated, driverless transport system, Vossloh Cogifer developed and patented, in conjunction with system suppliers, special movable switches for route changes.

Tramways

Vossloh Cogifer designs and manufactures complete schemes, Signalling Systems and Points and Crossings for tramways and metro systems in the major cities of the world, whatever the technique or rail profile used. They guarantee comfort, safety and reliability, as exemplified by their machined-from-solid monobloc switches.

Suburban and main line railroads

Vossloh Cogifer is able to adapt to the requirements of each transport system and offers highly industrialised, secure solutions with the highest standards of passenger comfort. This is achieved by adopting principles such as the monobloc manganese crossing with welded legs and operating and safety systems.

Special tracks

Vossloh Cogifer's ability to adapt and its extensive experience with all types of track enables its design offices to find solutions for highly specific requirements: heavy tracks such as those for the Ariane space centre at Kourou, "Californian" switch, rack and pinion line for the Lyons metro, tracks for port cranes etc.

A range of high-performance Points and Crossings

Whether for a simple turnout or a complex crossover, all Points and Crossings must satisfy the same safety requirements: to guarantee the highest level of continuity for passing trains, to reduce wear and to improve traffic fluidity.



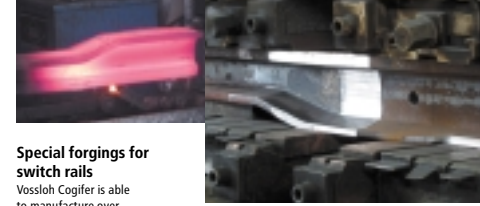
Movable manganese monobloc frog

This product is exclusive to Vossloh Cogifer for High Speed Trains. It allows operating speeds of more than 320 km/h on through tracks and 230 km/h on diverted tracks. Various other applications may be considered in this field; for example, the movable manganese monobloc frogs designed for Points and Crossings used with heavy loads.



Inclined Points and Crossings

Vossloh Cogifer is a leader in this field and, several decades ago, adopted the inclined running table by creating and patenting an innovative switch profile. This system, which is designed for High Speed Trains, guarantees perfect continuity of running over the Points and Crossings. It reduces maintenance and avoids jolting, thus improving passenger comfort.



Special forgings for switch rails

Vossloh Cogifer is able to manufacture over 10,000 forgings for special switch rails every year, thanks to an advanced computerised industrial system which is unique in the world. Forging, of lengths of up to 600 mm, is performed at speeds of 55 seconds, with only one heating cycle.

Manganese frog with welded legs

This is the most important innovation in the field of manganese frogs, which are known for their strength. Vossloh Cogifer design offices have developed an industrial process for welding rails to the frog rather than fish-plating them, thus ensuring perfect continuity on straight or curved tracks. More than 2,000 frogs of this type are produced every year in our workshops. This system has become standard throughout the world.



Points and Crossings and the environment

With Vossloh Cogifer, environmental considerations start at the design stage.



Vossloh Cogifer have tried and tested solutions in the fields of:

- elimination of the lubrication of switches or movable switch diamonds to reduce pollution of the soil, and decrease maintenance costs,

- the use of concrete sleepers to conserve forests.

Similarly, the reduction of noise and vibration is an on-going Research and Development concern, which enables us to propose various types of track laying technique with different vibration dampers capable of meeting the most severe requirements.



LUBRICATION-FREE POINTS AND CROSSINGS

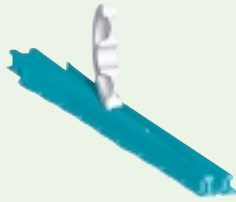
Vossloh Cogifer uses two ways of removing the need for lubricating frog switches or movable switch diamonds - roller slide chairs and Nickel chrome treatment. As well as providing environmental protection, these two processes reduce the maintenance required for Points and Crossings.



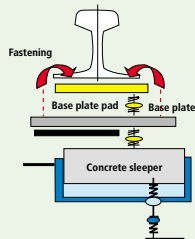
Roller slide chairs

Manufactured with quenched steel rollers and cast iron cages, roller slide chairs reduce mechanical stress and enable points to be moved. They are easy to fit and can be adapted for vertical or inclined mounting.

Optimising contact between rail/wheel and the inclined base



Noise and vibration reduction



Nickel-Chrome treatment

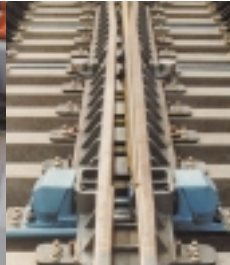
A Nickel-Chrome metallisation operation is applied to the friction points on the Points and Crossings, on the switch and switch-diamond sliding surfaces. The surface treatment, applied to cast iron, engineering steel or carbon steel, is obtained by ultra high speed projection of metal powder with a high nickel and chrome content.

Signalling Products for optimising track and Points and Crossings safety



Clamp lock - VCC

The clamp lock is a positive locking device for Points and Crossings; its operation is linked to that of the switch.



Movable point lock - VPM

The movable point lock locks the movable point on Points and Crossings. These locks can be fitted to any type of Points and Crossings, and incorporate an electrical lock monitor.



Paulvé point detector

The Paulvé detector monitors the closing and opening of Points and Crossings at the point, heel or frog.



Switch mechanisms

Vossloh Cogifer's Signalling Department has developed a complete range of electrohydraulic and electromechanical switch mechanisms, wedged or trailable, suitable for national rail networks, urban transport systems (metros, LRT or tramways) and industrial networks.



Integrated mechanism

This electromechanical or hydraulic operation device is integrated into a Point and Crossing sleeper which is exactly the same size as the sleepers on either side. It can provide point, heel or movable point frog control, while locking and monitoring Points and Crossings. Its shape makes mechanical packing considerably easier.

Traffic detector

This electromechanical device, with temperature-compensated hydraulic time delay, detects the passage of a train, with or without direction selection, enabling control of level crossings or of work site announcement systems.



Level crossing mechanism

Electrohydraulic operating system which can be fitted with polyester or light alloy barriers.

Signalling Systems

A vast range of route control interlocking stations, partially or fully computerised, has been developed by Vossloh Cogifer's Signalling Department. These interlocking stations have been chosen by many railway networks, including the French railway system SNCF, and public transport systems in France and abroad.



PRS with interlocking simulator

TURNKEY SOLUTIONS

Making full use of its engineering and design office resources, Vossloh Cogifer's Signalling Department routinely produces turnkey Signalling installations, including associated services such as training and maintenance and incorporating in particular interlocking stations, automatic and manual blocks, level crossings and centralised controls.

Relay interlocking stations - PRS

Relay interlocking stations consist of railway safety relays controlled using dedicated consoles and panels.

Computer-controlled relay interlocking stations - PRCI

These interlocking stations, developed and installed for many years by Vossloh Cogifer, combine the advantages of computer control for the non-safety part and the use of safety relays for interlocking.

Computerised interlocking stations - PIPC

Produced using industrial PC-compatible computers, the PIPC is a generation of computerised signalling stations suitable for centralised stations of railway stations.

Computerised interlocking stations - ALISTER

ALISTER is an electronic interlocking system suitable for small and medium-size railway stations. It uses off-the-shelf hardware components and software modules used in many areas of industrial automation. For the maintenance teams, it incorporates diagnostic tools that can be consulted remotely and interfaces easily with the existing interlocking system environment. It has been specified and developed in conformity with CENELEC Standards to ensure a SIL 4 safety level.

ALISTER station with input/output module and diagnostic tool



PRCI control station - Tramway

PIPC operator station

Powerful human, industrial and logistical resources



With a team of 1,300 railway specialists, Vossloh Cogifer and its numerous subsidiaries provide their customers with first-rate human, industrial and logistical resources.

Vossloh Cogifer has two pioneering production units in France, with more than 50,000 m² of covered workshops, able to accommodate pre-assembled Points and Crossings more than 200 metres long (used mainly for the TGV).

For export, Vossloh Cogifer, with its subsidiaries, has more than several thousands square metres. Every year, it designs and manufactures more than:

- 4,000 Point and Crossing units,
- 10,000 special forgings for switch rails,
- 2,000 welded monobloc manganese frogs.



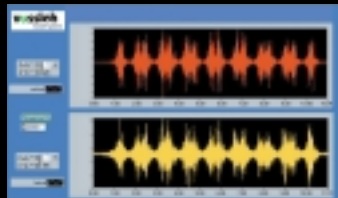
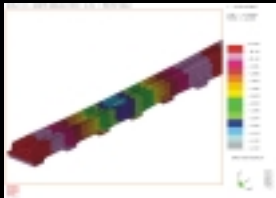
A wide design capability

Vossloh Cogifer has extensive design offices which develop and adapt new technology to Points and Crossings and Signalling Products and file a large number of patents. In particular, Vossloh Cogifer has the capacity to design Points and Crossings with the greatest possible mechanical strength. This structure is the best guarantee of Vossloh Cogifer's solutions being suited to the needs of its international clients.



Turnkey Point and Crossing

Vossloh Cogifer has developed turnkey Point and Crossing systems. They are produced and assembled in the factory, tested, transported by special trains and laid on site. This solution limits the time track is out of service and provides better value for money.



Services

Vossloh Cogifer has been involved in the success of the most important railway projects throughout the world, and has developed a range of services to assist its customers, from the laying of Point and Crossing on new rails, up to maintenance and survey of existing material. This offer applies to all types of transport systems: high-speed and standard rails, tramways, metros, special rails.



Points and Crossings for new tracks

- laying and assembly procedures, plus related training;
- assistance with laying;
- installation of mechanisms, locks, mechanism, command & control and heating elements;
- testing and commissioning Points and Crossings.

Maintenance

- drafting maintenance and operating procedure manuals;
- advice for maintenance programmes and policy;
- theoretical and practical training in network maintenance.

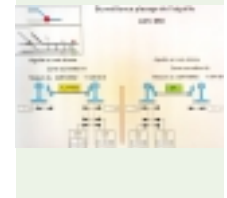
Survey

Diagnosis of Points and Crossings in operating situation with technical recommendations.



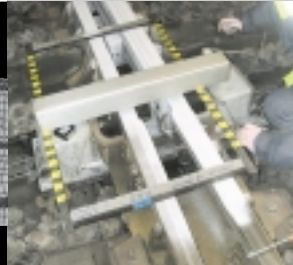
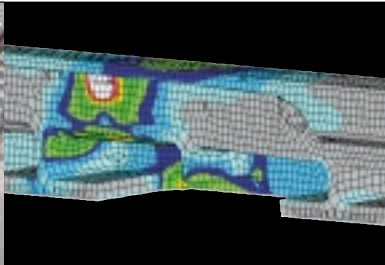
Remote maintenance

Based on experience in remote monitoring, Vossloh Cogifer and its subsidiary Siema Applications provide complete predictive maintenance for Points and Crossings, by giving information or triggering alerts before malfunctions occur. Survaig® NG provides a significant reduction in Point and Crossing running costs, through anticipating failures and damage liable to cause traffic disruption.



Research and Development

Constant improvement in rail/wheel contact, increase in product life and reduced wear, plus minimised maintenance operations - these are the main aims of Vossloh Cogifer's R & D teams.



Expertise with impeccable credentials

- rail/wheel interaction and contact optimisation;
- filing patents and new products such as Ni Cr chairs, rollers, Translohr tramway;
- European and international Standards;
- geometry plotting.

Rail measurements

- displacement;
- acceleration;
- throw effort;
- stress;
- laser geometry readings (frog/cradle, interlock).

Modelling and simulation

- behaviour of components and sub-assemblies;
- finite element calculations for strategic components.

A complete range of testing facilities

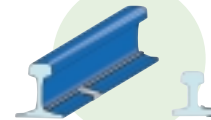
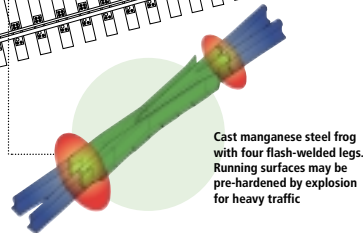
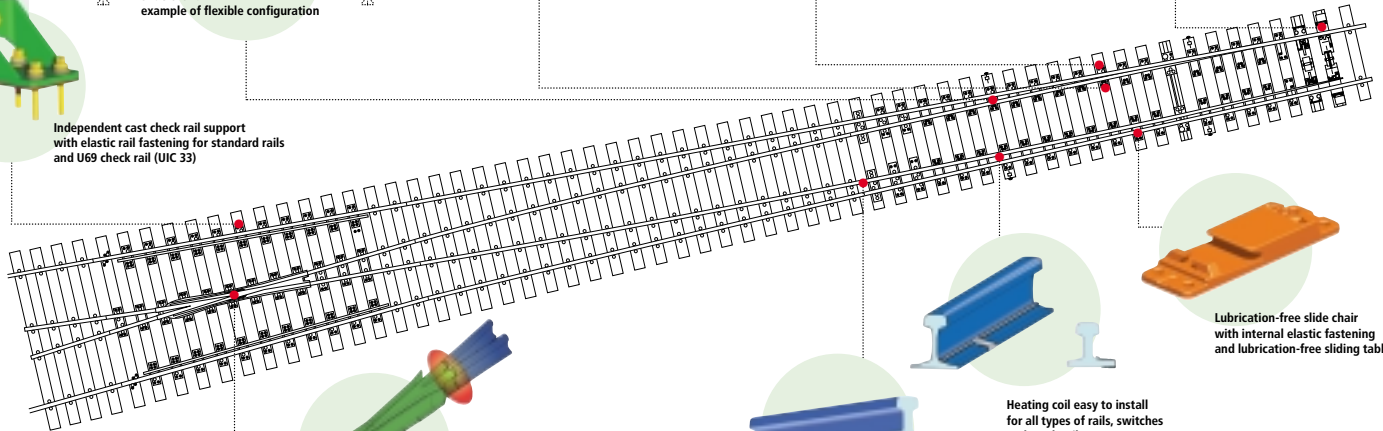
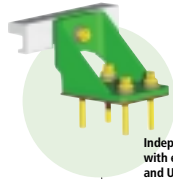
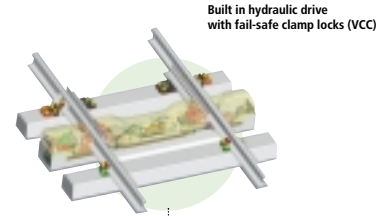
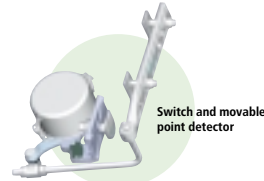
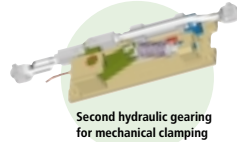
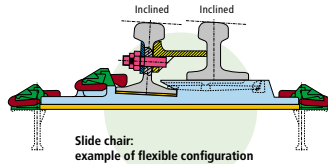
- hydraulic pulsator, 500 kN and 150 kN;
- signal acquisition and processing system;
- multiple sensors for displacement, acceleration, pressure etc.
- 50 Hz vibrator for fatigue tests;
- TGV 1/46 interlock for testing roller slide chairs and grease-free operating, stress measurement and component testing;
- PM TGV 1/65 crossings;
- metallurgy laboratory (samples, micrography, hardness).

Complete laboratory tests

- fatigue;
- static;
- artificial ageing;
- stiffness measurements;
- process validation (welding, bonding).

Vossloh Cogifer provides a response to all your needs

As soon as you start drafting project specifications, feel free to test the listening skills of Vossloh Cogifer staff and sample their advice.



Vossloh Cogifer, an international presence



VOSSLOH COGIFER SA

Head Office
54, avenue Victor Hugo
BP 56606
92566 Rueil-Malmaison Cedex
Tel.: +33 (0)1 55 47 73 00
Fax: +33 (0)1 55 47 73 92



Points and Crossings Department



REICHSHOFFEN
Rue des Forges
BP1
67110 Reichshoffen
Tel.: +33 (0)3 88 80 86 00
Fax: +33 (0)3 88 09 67 33



FÈRE EN TARDENOIS
Zone Industrielle
02130 Fère en Tardenois
Tel.: +33(0)3 23 82 58 88
Fax: +33 (0)3 23 82 71 99



JACQUEMARD AVR
389, rue des Frères Lumière
Zl de Molina la Chazotte
42650 St-Jean Bonnelfonds
Tel.: +33 (0)4 77 47 69 69
Fax: +33 (0)4 77 47 68 69

Signalling Department



REICHSHOFFEN
4, rue d'Oberbronn
Reichshoffen - BP 02
67891 Niederbronn Cedex
Tel.: +33 (0)3 88 80 85 00
Fax: +33 (0)3 88 80 85 18/19



SIEMA APPLICATIONS
88190 rue Hippolyte Kahn
69628 Villeurbanne Cedex
Tel.: +33 (0)4 78 85 14 14
Fax: +33 (0)4 78 68 98 44



Germany

VOSSLOH LAEIS
Ruwerer Strasse, 21
D-54282 TRIER
Tel.: +49 651 5 58-0
Fax: +49 651 5 58-15



Belgium

EAV-DURIEUX
138, rue d'Andelwees
B-7741 CARRIERES
Tel.: +32 64 43 14 00
Fax: +32 64 45 86 32



Spain

AMURRIO
Maskurbita, 10
01470-AMURRIO (Alava)
Tel.: +34 945 89 16 00
Fax: +34 945 89 24 80



Finland

VOSSLOH COGIFER FINLAND
Telakkatie 18
25570 - TEIJO
Tel.: +358 27366 010
Fax: +358 27366 020



United Kingdom

CORUS COGIFER
Hebden Road
Scunthorpe DN 15 8XX
North Lincolnshire
Tel.: +44 1724 862131
Fax: +44 1724 295243



India

J.S. INDUSTRIES
104, Amarchand Sharma Complex
Sadar Patel Road
Secunderabad - 500 003 A.P. INDIA
Tel.: +91 40 2780 5226
Tel.: +91 40 2780 5431
Fax: +91 40 2780 5027



Factory
Plot No. 145/A,
IDA, Bholaram Village
Jinnaram Mandal
Medak District



Italy

VOSSLOH COGIFER ITALIA
Via Tommaso Colombo, 7
70123 Bari
Tel.: +39 0805343596
Fax: +39 0805340791



Luxembourg

KIHN SA
17, rue de l'Usine BP. 20
3701 RUMELANGE
Tel.: +352 56 47 78-1
Fax: +352 56 58 54



Norway

VOSSLOH COGIFER NORWAY
Storgata 21
Postboks 292
2001 Lillestrøm
Tel.: +47 64 84 35 90
Fax: +47 64 84 35 99



Poland

COGIFER POLSKA
85-502 BYDGOSZCZ
ULLUDWIKOWO 2
Tel.: +0-4852 322 52 24
Tel.: +0-4852 322-46-7634
Fax: +47 64 84 35 99



Portugal

FUTRIFER
Edificio COOPALI
Rua José Afonso nº4 - Espaço H
1600 130 Lisboa
Tel.: +351 217 200 580
Fax: +351 217 200 589



Serbia and Montenegro

VOSSLOH MIN SKRETINCE
Sarajevska 2
18 000 Nis
Tel.: +381 18 521 735
Fax: +381 18 521 738



Sweden

VOSSLOH COGIFER NORDIC
Sodra Grev Rosengatan 1
Box. 1502
S. 70115 ÖREBRO
Tel.: +46 19 17 25 00
Fax: +46 19 17 24 50



Sweden

SWEDISH RAIL SYSTEM
Förskoppsgatan 8
PO Box. 1512
SE - 271 00 YSTAD
Tel.: +46 411 694 00
Fax: +46 411 183 08



Thailand

ATO
Italthai Tower - 2034/134 New
Petchburi Road - Bangkok, Huaykwang
BANGKOK 10320
Tel.: +66-2 716 14 19
Fax: +66-2 716 14 20



Some of our references

Railways

Algeria, Argentina, Balkans, Belgium, Brazil, Cameroon, China, Congo, Croatia, Czech Republic, Egypt, Finland, France, Germany, Guinea, India, Italy, Ivory Coast, Korea, Luxembourg, Malaysia, Morocco, Norway, Poland, Portugal, Senegal, Slovakia, Spain, Sweden, Switzerland, Thailand, Tunisia, United Kingdom...

Metros / Tramways / VAL / MRT-LRT

Amsterdam, Athens, Bremen, Brussels, Buenos Aires, Cairo, Caracas, Chicago, Cologne, Cracow, Grenoble, Hong Kong, Jacksonville, Lille, Lisbon, Lubeck, Lyon, Manila, Marseille, Mexico, Montpellier, Montreal, Mulhouse, Munich, Nantes, New Delhi, Oslo, Paris, Porto, Rennes, Rio, Roma, Rouen, Saint-Etienne, San Francisco, Santiago, Singapore, Strasbourg, Taipei, Toulouse, Turin, Valenciennes, Warsaw...

Vossloh Cogifer SA
Head Office
54, avenue Victor Hugo
BP 56606
92566 Rueil-Malmaison Cedex - France

Tel.: +33 (0)1 55 47 73 00
Fax: +33 (0)1 41 29 19 18
contact@vcsa.vossloh.com



www.vossloh-cogifer.com