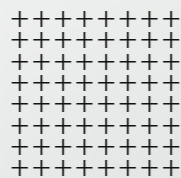


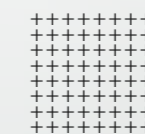
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CUSTOMER SERVICE



TOMORROW'S SOLUTIONS TODAY

CUSTOMER SERVICE



➤ **FRICION PAIRS**

TOMORROW'S SOLUTIONS TODAY

Photos: Faiveley Transport - Christophe Recoura - sxc.hu - mattbuck - Flytoget - La Vie du Rail

OTCF

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Faiveley Transport

CUSTOMER SERVICE

EXPERIENCE

Wherever you are, this WORLDWIDE NETWORK

ensures a rapid intervention, with a whole world of expertise focused on your specific situation.

The skills you need, when & where you need them.

Who better than Faiveley Transport to maintain your equipment?

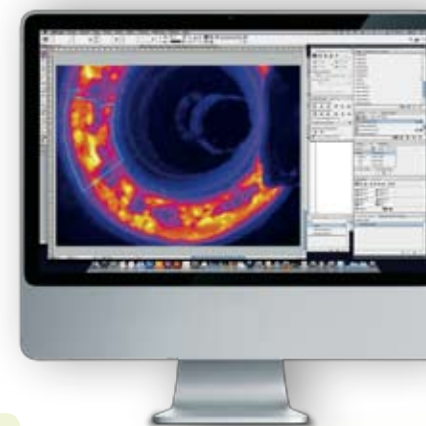
“At Faiveley Transport continuous improvement and customer satisfaction are not aims, but an everyday reality...”

MORE THAN JUST A SUPPLIER

Faiveley Transport is a **hands-on, long-term partner** for installation, commissioning and long-term maintenance contracts with clear, inclusive guarantees.

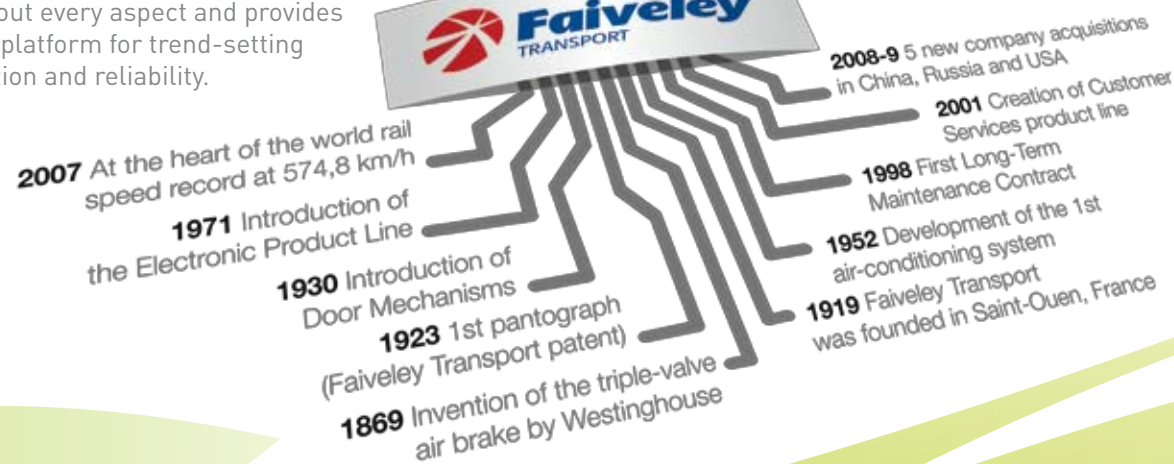
Continuous feedback from customers & engineers in all fields and operating conditions across the globe translates into real progress.

Greater availability, longer intervals between maintenance & overhauls, decreasing labour costs & parts and – in all situations – a faster return to revenue service.



• THE ROOTS OF OUR EXPERTISE

go back to the beginnings of the Railway Industry. Faiveley Transport's long, wide and enviable experience covers just about every aspect and provides a solid platform for trend-setting innovation and reliability.



- Passenger Access Systems
- Spare parts & logistic
- Electronics
- Brakes & Couplers
- Pantographs
- HVAC
- Friction Pairs

Faiveley Transport,

LEADING THE MARKET WITH CUSTOMISED FRICTION PAIR SOLUTIONS

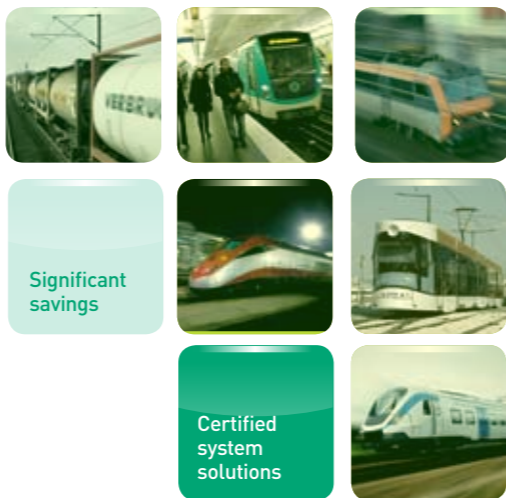
SOLUTIONS

Excessive parts replacement? Premature disc & pad/block wear?

FAIVELEY TRANSPORT PUT ALL THEIR...

... GLOBAL EXPERIENCE & LOCAL PRESENCE

This active presence on every continent not only ensures a real understanding of local conditions and constraints, it also helps communication and rapid response. One local Faiveley Transport contact at your service from start to finish.

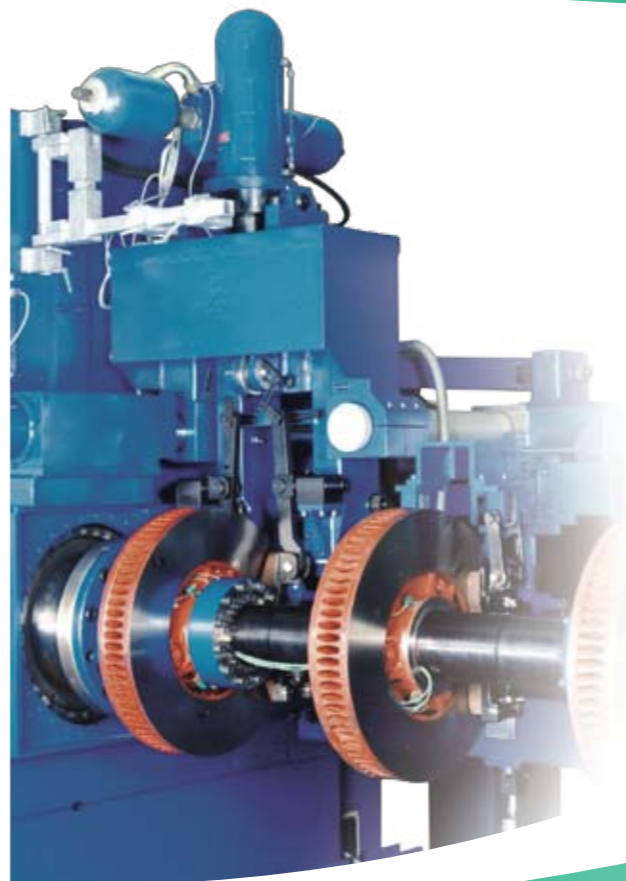


Significant savings

Certified system solutions

TECHNICAL KNOW-HOW

Covering all sectors of the Railway Industry, from world record breaking very high speed trains to trams & metros, Faiveley Transport have unrivalled expertise in discs, pads & blocks.



& EQUIPMENT...

With full scale dynamometers, banks of hardware plus unique, specific test programmes, no-one is better equipped to develop specific energy management systems and optimise the running costs and availability.

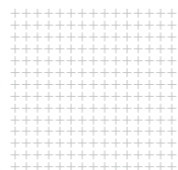


FUTURE NEEDS



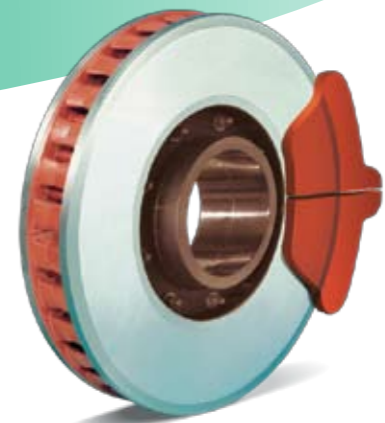
Research & Development at Customer Service, dedicated to extending the working life of existing trains & equipment, is already supplying technical innovations including energy saving technologies and new materials to extend the active working lifespan of existing equipment. Giving an extra advantage to clients & customers all over the world...

... AT YOUR SERVICE



This expertise & equipment allows specific, customised system solutions that avoid abnormal wear, improve availability and reduce life cycle costs with all the security and reliability you expect from a world-leader.

WHY PUT UP WITH LESS?



EXPERIENCE - TECHNOLOGY - COMMITMENT

Behind every reference
is a story of flexibility and adaptability

United Kingdom

Bombardier - DEMU class 220-222
Friction pair optimisation - 2007

Turkey

TCDD - EMU E14000
Cast iron block replacement - 2006

Finland

VR - 250 320 UIC
Cast iron block replacement - 2000

Norway

FLYTOGET - Class 71
Friction pair optimisation - 2003

Turkey

TCDD - Locomotive
Toshiba E43000 & DE 24000
Cast iron block replacement - 2006

Hong Kong

KCRC - Eastrail
Friction pair optimisation - 2003

Austria

ÖBB - Rh1016, Rh1116
Friction pair optimisation - 2008

United Kingdom

Eurostar - TGV
Pad replacement - 2006

United Kingdom

Bombardier - DEMU class 221
Friction pair optimisation - 2007

Australia

PTA - DMU
Pad replacement - 2006

United Kingdom

Alstom - Class 175
Friction pair optimisation

Customised solutions

Norway

Electrical Multiple Unit Bombardier Flytoget Class 71

The EMU's entered service in 1998
Today 16 of these units with 3 & 4 cars are running in Norway

During the first operation period the installed friction pair showed wear & cracks on the discs and excessive pad wear.

The target was to reduce by 40% the wear & crack development to get a better life cycle cost.

After detailed theoretical & practical analysis of the operating conditions was undertaken and several dynamometer tests and field trials in close cooperation with Bombardier and the Operator, an optimized friction pair & energy management concept was developed.

A third brake disc was introduced on the trailer combined with a UIC organic brake pad and a high performance conforming sinter pad on the motor axles. The blending concept was revised to optimize the energy distribution and equipment management for normal service conditions and degraded modes. This has significantly improved the general & wear performance. Lifetime extensions up to 50% for brake discs & up to 60% reduction for total pad costs are now possible. In addition the crack development on the axle mounted disc and the deflection development on the wheel mounted disc has been eliminated.



Customised solutions

Austria

Taurus Rh1016, Rh 1116 high performance locomotives

The locos entered service in 2000.
Today up to 425 are in daily service in Austria.

ÖBB have up to 425 locos running in service in Austria, operating on main lines with both passenger coaches and freight cars. Similar types are in service in Hungary and Germany. ÖBB was not satisfied with the wear situation of the friction pair and contacted friction material specialists like Faiveley Transport and asked for improved pad material.

Faiveley Transport R&D department analysed the friction pair condition and selected a specific sinter material mix to fit that application. After successful bench testing in the lab an endurance test in the field was planned in mid 2008.

1 years rigorous testing in the field satisfied ÖBB. The improved Faiveley Transport friction material in combination with its axle mounted disc shows a significant improvement in disc & pad wear and gave the best results compared with other friction material. The service life for discs and the pads increased significantly.

With the friction pair improvement, ÖBB is now able to save several hundred thousands of Euros per year.



Customised solutions

United Kingdom

Diesel multiple unit Alstom Coradia (Class 175)

The DMU entered service in year 2000/01.
Today 37 DMUs are running in service in the UK.

Unhappy with excessive disc wear (< 1 million km life) Alstom wanted to achieve > 1.2 million km service life. This was not possible with the existing friction pair (Steel discs & High temperature organic pads).

Faiveley Transport assessed the real life duty of the vehicle and started the optimisation process (under the worst case safety capability consideration).

This process showed that the targets could not be achieved with the existing friction pair, so Faiveley Transport optimised the disc - pad materials (for normal operation and an appropriate disc design).

The result, a compacted graphite iron disc with conforming pads, was duly tested & certified. This solution allows disc wear life > 2.4 million km and disc crack life of 2.4 million km. The friction pair improvement for the total car contract on wheel sets provides substantial savings over the next ten years.

FAIVELEY TRANSPORT
CUSTOMER SERVICE

HELP YOU
FACE THE
FUTURE
WITH CONFIDENCE

FOR THE LATEST INFO



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WITH FAIVELEY
TRANSPORT...