



# Railway applications couplings



**EXPERTISE DRIVEN | CUSTOMER FOCUSED | SUSTAINABLE THINKERS**

## We connect the world

We are a more than 75 years old family-owned company specialized in designing and manufacturing high-quality custom-made power transmission products.

Because we believe each transmission challenge is different, we create much more than off-the shelf products: we work hand in hand with our customers to develop the coupling solutions that best fit their specific needs.

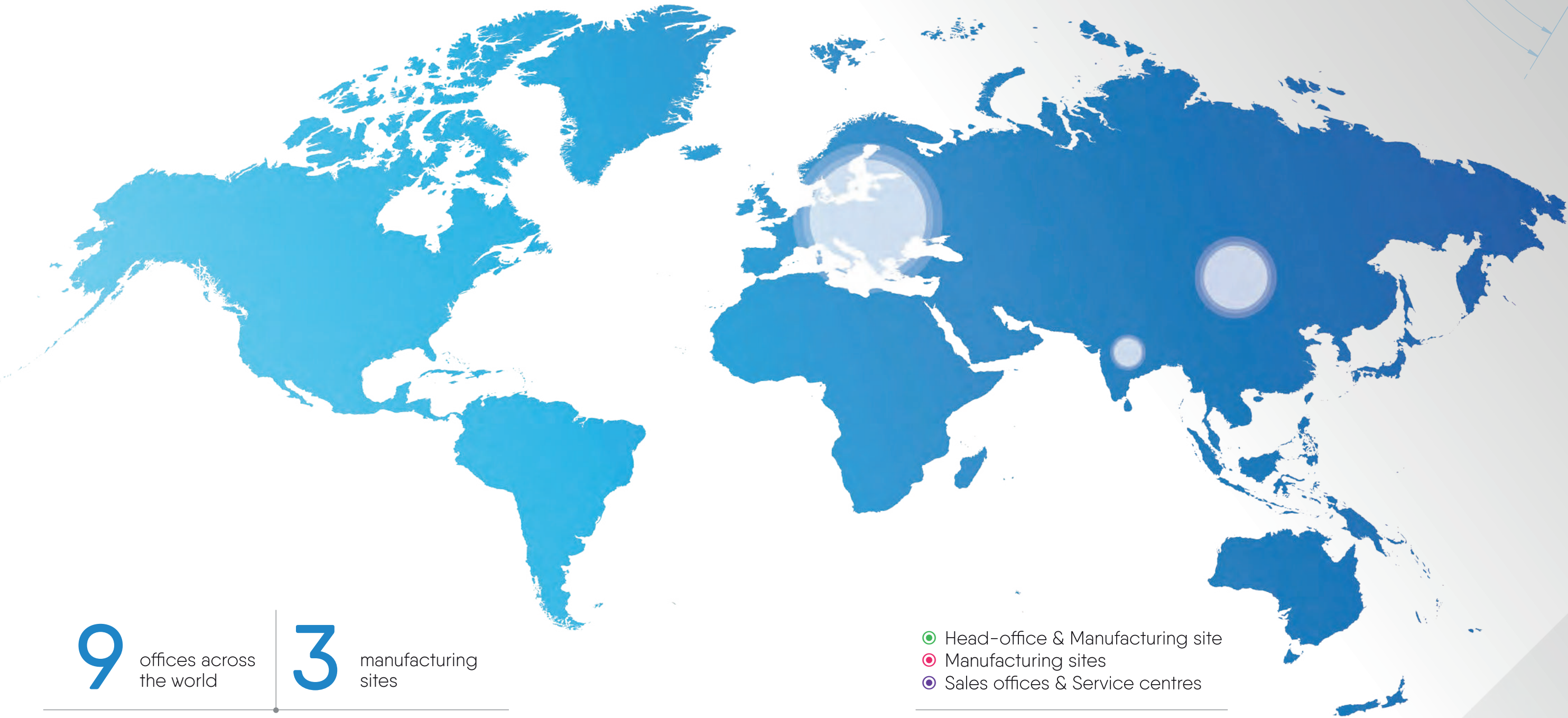
Superior product quality is what guarantees our customers' success, it is what enables us to cherish long term partnerships with them. The ESCO quality has been worldly renown for decades and we work tirelessly to raise these standards even further.

We strive to be a significant contributor to the development of effective and clean industrial, transportation and energy supply applications. We want our couplings to power a more sustainable world. We strongly believe that both the future of our economy and the best guarantee for long term return lie in sustainable development. And we want to do our part.

Once we get involved into a specific sector, we make sure to embrace the quality standards that the market requires. This is why, on top of the ISO 9001 certification, we are also in the IRIS certification process.



A global footprint, with a family of  
9 companies located all across the world



9

offices across  
the world

3

manufacturing  
sites

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We work with you to design the right solution for your application

If you're reading this, you probably don't need us to describe at length the challenges that the railway industry is facing in this 21<sup>st</sup> century: urban growth, globalization, consolidation, digitalization, climate change... These are only a few of the mega trends that led players in the sector to design and manufacture trains that are more reliable, safer, faster, less expensive and delivered more quickly than ever.

We have been helping our customers do exactly that for more than 20 years:

- **Quality is our moto, our core competency:** ESCO products are amongst the most reliable in the market; so much so that the main hurdle in our capacity to innovate is the lack of market feedback: our couplings just keep running without issues.
- **Safety is another one of ESCO's strong points.** Our couplings connect the engine to the gearbox: if the coupling fails, the train cannot run. Since they are extremely reliable, our products are also very safe: we have hundreds of thousands of couplings running in the market (some for more than 20 years) and we have never had a train stop because of a faulty coupling!
- **Low lifecycle cost might well be the biggest challenge for ESCO to tackle, but we do work tirelessly to optimize the life time value of our couplings:** fair initial price, smaller footprint (space and weight), longer design life, extended maintenance steps...
- **Short lead time has become a key purchasing criteria for many of our**

**customers. We understood this and organised our resources accordingly.** The ESCO rail team operates following the "quick response manufacturing" approach: reducing lead time at each step of the value chain is a critical objective.

- **Service is an important part of our business:** to best serve your needs, you can count on our experienced team and advanced testing capability. We are more than happy to assist in performing field interventions, maintenance and repair.

**ESCO specializes in the design of custom made couplings. If you cannot find a solution that fits your needs, please contact us: we will work hard to engineer the coupling that fits your application specifications.**



# Enabling the fastest train journeys

EMU train applications



ICE3 (Germany)



NTV Italo (Italy)



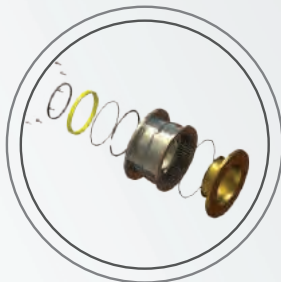
CRH 380-B (China)

With more than 30 years of existence, the ESCO FTRN gear coupling is a simple but reliable concept that has stood the test of time.

Because it has been designed with low life cycle cost in mind and is a breeze to disassemble and maintain, the FTRN gear coupling is the perfect solution for demanding (high-speed) train applications.



A proven sealing system associated with factory-filled high-quality lubricant ensures extended maintenance intervals.



The major components are manufactured to last the entire life of the train, only a few parts need to be replaced during maintenance.



Special gear design and patented trust system reduce vibrations, hence decreasing wear and noise.

Over the years, the requirements have been expanded so that the ESCO DTRN disc coupling now also complements the portfolio for EMU trains.



FTRN gear coupling



DTRN disc coupling



Coradia (France)



# Powering your daily commute

EMU metro applications

Guadalajara (Mexico)



Singapore



Delhi (India)



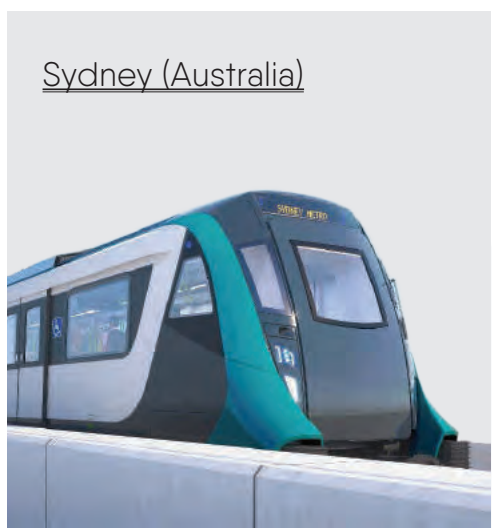
Seoul (South Korea)



Stockholm (Sweden)

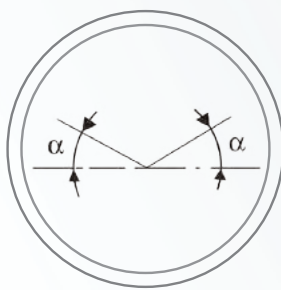


Sydney (Australia)

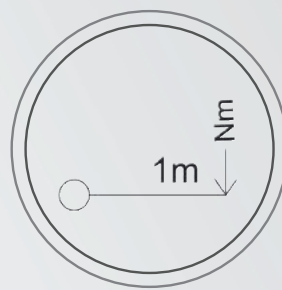
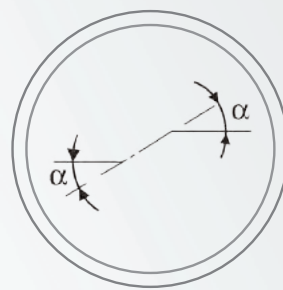


Because each metro application is different, our couplings can be tailored to fit a wide range of technical specifications.

Typical technical requirements



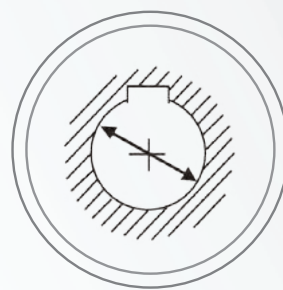
High misalignment capacity (up to 7 degrees angular, 30mm axial)



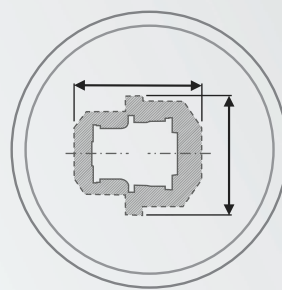
High torque capacity (up to 20,000 Nm)



High rotation speed potential (up to 7,000 RPM)



Shaft diameters from 50mm to more than 100mm



Compact design vs. power transmissions



FTRN gear coupling



DTRN disc coupling



Riyadh (Saudi Arabia)



# Driving better urban mobility

EMU light rail vehicle applications

Nice (France)



Melbourne (Australia)



With the increasing pace of urbanization, mobility has become one of the most important challenges for city planners to tackle in the beginning of this 21st century. Reducing congestion will most likely involve building a diversified panel of tightly interconnected transportation modes. In this context light rail vehicles have a bright future ahead of them.

Tram applications (especially for low floor vehicles) are amongst the most challenging when it comes to technical requirements like confined bogie space, large misalignments, wide torque/speed patterns and harsh vibrations.

These extensive technical demands request a huge variety of different coupling solutions. ESCO's expertise in different coupling technologies ensures we can design the best solution for your application.



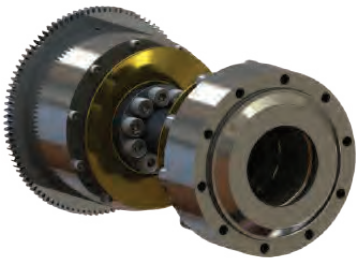
FTRN gear coupling



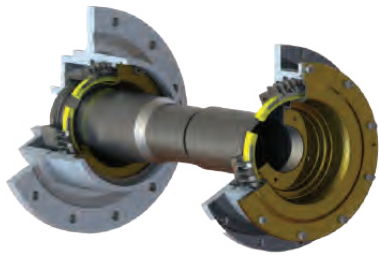
WTR rubber wedge coupling



DITR diaphragm coupling



FTRSE gear coupling



FTRSEC gear coupling

Dubai (UAE)





## Further railway applications

### Tyred metro applications



Mexico City (Mexico)



Santiago (Chile)



Paris (France)



FTRSE gear coupling

The numerous transport modes demand all our know-how and competence. The ESCO FTRSE coupling for the tyred metros is designed to guarantee a direct power transmission, to manage challenging of track courses and to limit the noise emissions.

### Locomotive applications



FTRN gear coupling



DTRN disc coupling

The new understanding of climate-friendly freight transport is leading to shift more and more of our transport routes from road to rail. Both the ESCO FTR and the ESCO DTR couplings are the right choice for different configurations and various modes of assemblies.

### Jerez de los Calebreros (Spain)





# Anytime the right options for your requirements

## ESCO's technical add-ons

We are confident you will find a coupling that fits your requirements in our product line. In case the drivetrain needs to be protected from unwanted stresses (either mechanical, electrical or both), our couplings can be equipped with the following options:

### Torque limiter

Torque limiting devices will protect the gearbox in case of a higher torque than usual (e.g. a short circuit torque). ESCO has three different types of overload systems - FTRNOH in hub, FTRNO in sleeve, FTRNOD additional overload device.



FTRNOH gear coupling

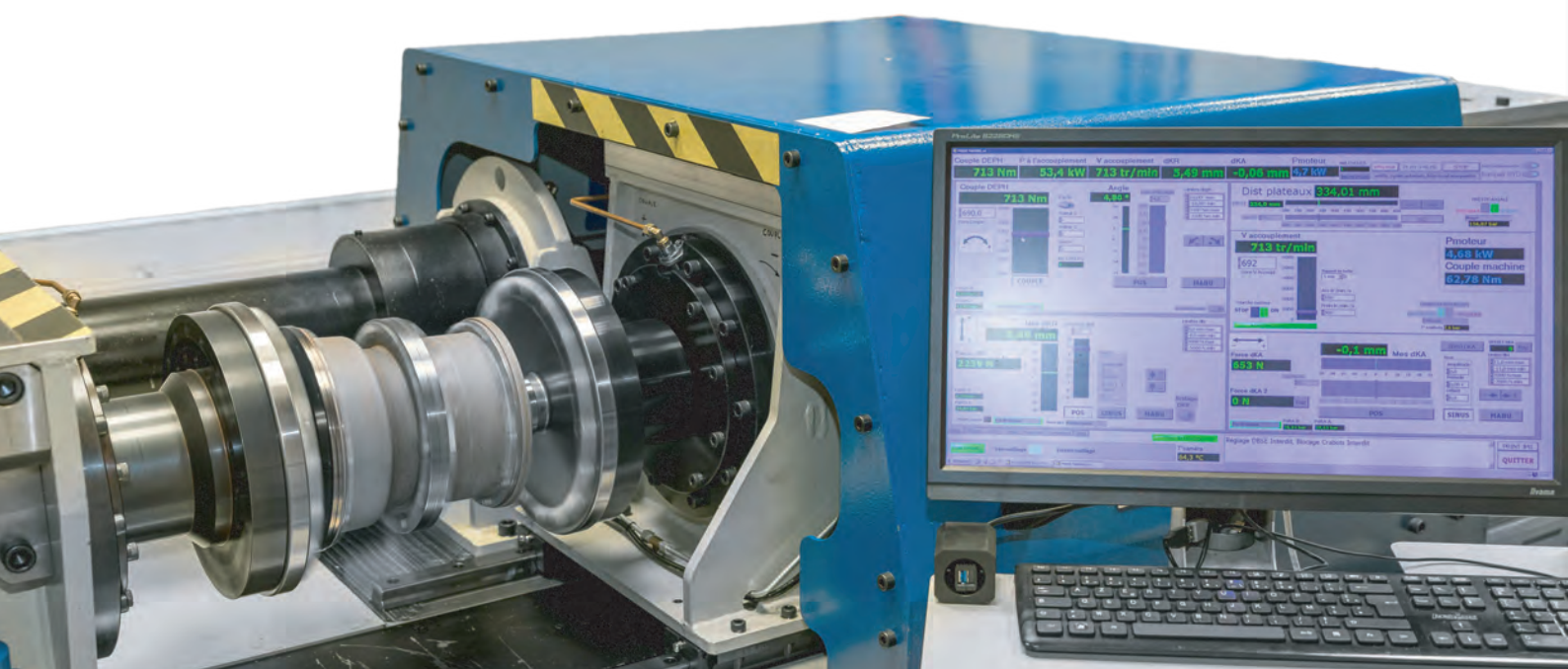
- Compact and affordable overload
- Designed to slip in specified torque range
- Also available with additional or combined overload/insulation

FTRNO gear coupling

- Overload perfectly calibrated in-house to disengage the gearbox from the motor at a specific true threshold

FTRNOD gear coupling

- Advanced system
- Permanently disengagement of the motor from the gearbox



### Electrical insulation

Electrical insulation device will protect the bearings and the gears of the gearbox from current leaks which may be originating from the electrical motor. ESCO has two different types of insulation systems - FTRNIN between flange faces or hub integrated.



FTRNIN: hub integrated

FTRNIN: between flange faces

### Combination of overload

Combination of overload and insulation systems (FTRNOHIN). Before mentioned devices can be put together either as arrangement of single features or as fusion in a single component.

### Baffles

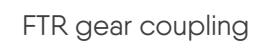
Baffles and shrouded screws will protect the couplings against sandy or dusty environments...



FTRN(L)B gear coupling

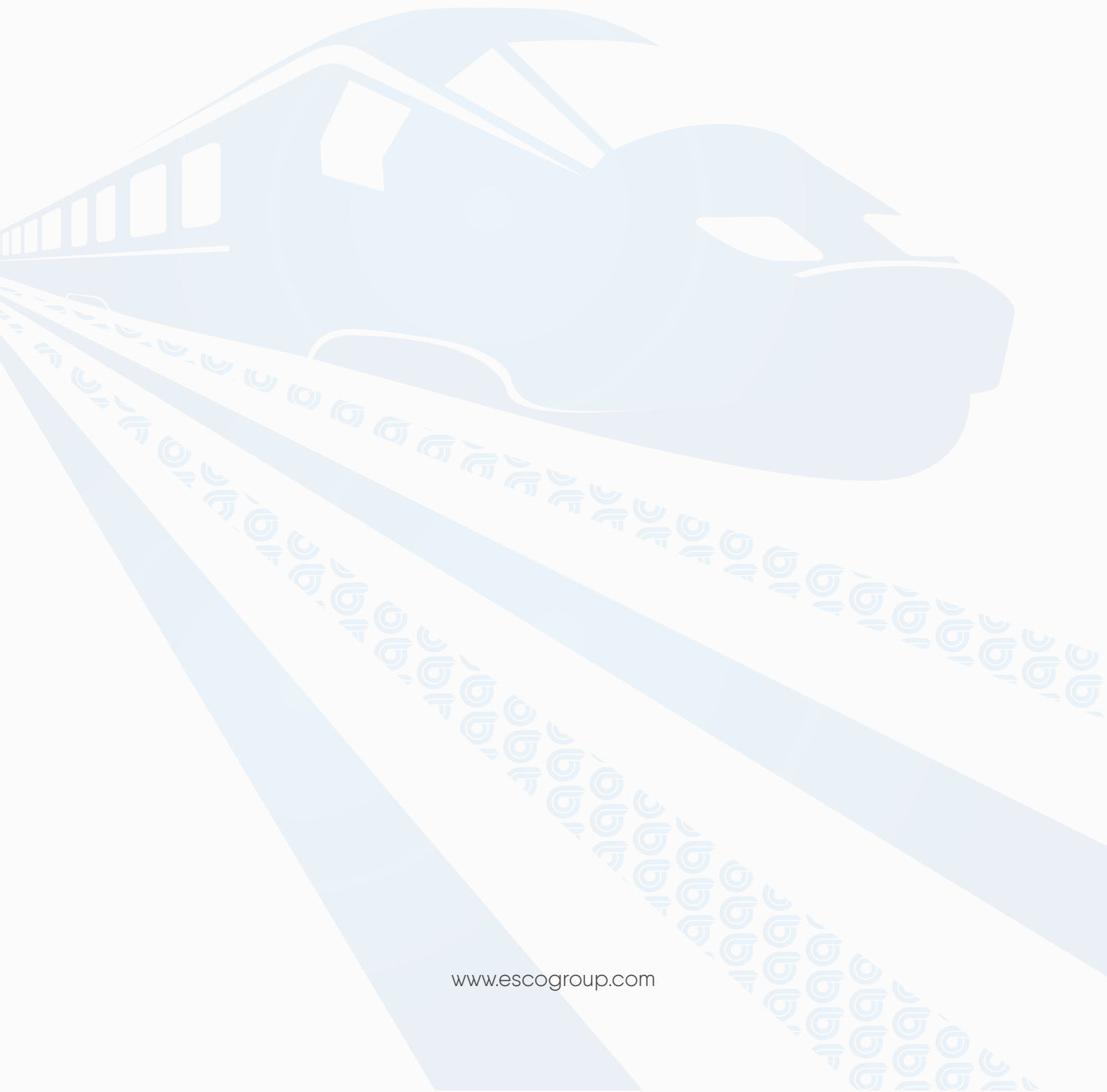


## ESCO's range of coupling technologies



Please contact us, we will design the right coupling for your application.





[www.escogroup.com](http://www.escogroup.com)