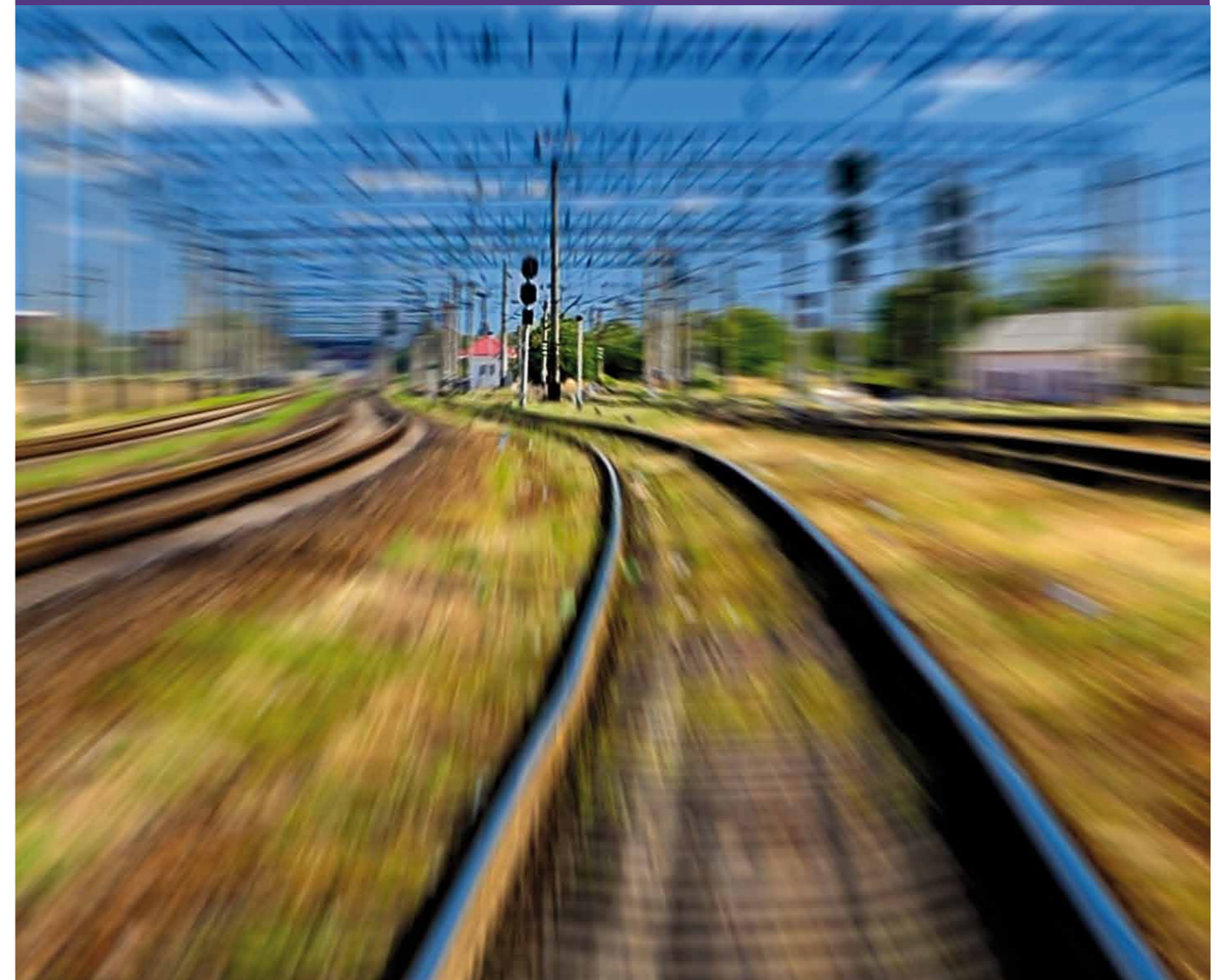


AlTrac ETCS solutions

Customer focused innovation for business performance



Growing your business with ETCS

Smart signalling is at the heart of rail transformation

Every rail business is unique. But all face common challenges. Among them, the need to provide the highest levels of safety and efficiency. In tandem with this, there's a need to increase revenue and attract new customers. Freedom of movement is essential if these goals are to be achieved.

ETCS – the European Train Control System – brings that freedom a step closer, replacing some 20 incompatible national signalling systems with a single interoperable standard, so trains can cross frontiers without stopping.

ETCS also contributes to enhanced performance in an economic way, with increased capacity, better network utilisation and more frequent services. That's good news for both infrastructure owners and train operators.

And it addresses a range of critical operating challenges, allowing rail businesses not only to cut energy consumption but also to get more out of their track infrastructure. It's for reasons like these that ETCS is fast becoming established as the global standard for signalling and train control.

ETCS is the core signalling and train control component of ERTMS, the European Rail Traffic Management System. ETCS continuously calculates a safe maximum speed for each train, with cab signalling for the driver and on-board systems that take control if the permissible speed is exceeded.

62,000km

track kilometres of ETCS contracted or in service

50%

proportion of ETCS sales now made in countries outside Europe

7,800

number of ETCS-equipped rail vehicles contracted or in service

40%

potential capacity gain when ETCS is implemented on a network

500km/h

ETCS allows line speeds that far exceed current high-speed standards

Innovation for performance

Thales leads the ETCS infrastructure market with a complete Level 1 and Level 2 offer

Getting the most out of ETCS starts with choosing the right supplier. Infrastructure owners need an expert partner who not only has complete mastery of the technology, but who also understands their operational needs – including the need for enhanced performance and easy migration.

Thales is a global leader in signalling technology and the world leader in ETCS, with a 31% share of the global market. For more than a decade, Thales has been at the forefront of ETCS deployment, leading the way with the very first implementations.

An example of this is our energy-saving ETCS solution. This optimises traffic flows through Switzerland's strategic Lötschberg base tunnel, while reducing power consumption by more than 10%.

Another is our ERTMS optimisation solution for Saudi Arabia's new North-South Railway. This offers dramatic cost reductions with fewer base stations on long-distance lines. It's the first solution of its kind.



These include the first commercial deployment of ETCS Level 1 in Bulgaria in 2001 and the first Level 1 cross-border corridor link – between Vienna and Budapest – in 2005. And we put the first NRBC interface into operation for the first high-speed ETCS Level 2 cross-border link, between the Netherlands and Belgium.

Through our membership of UNISIG and UNIFE, and by working closely with the rail community, we support the continuing evolution of ETCS. Thales remains dedicated to innovation, enriching our offer with new functionalities that optimise railway efficiency.

Our strong customer partnerships, our long experience in ETCS implementations and our ability to innovate are at the heart of our offer – and they're your assurance of our ability to deliver the most demanding projects.



Thales' AlTrac ETCS solutions

Our family of ETCS solutions – AlTrac – is first choice for the world's leading rail businesses. Thales' AlTrac is proven in service over more than a decade, with implementations in 20 countries worldwide. Our solutions are optimised to meet customers' requirements, including the need for seamless migration, enhanced operational performance and maximum ROI.



Services

Consultancy – meeting your needs with expert assistance to help you identify the best ETCS migration strategy for your network.

Interoperability testing – Thales' IOP lab can test any on-board unit, built by any manufacturer, with any ETCS system, greatly reducing the need for costly trackside testing.

Maintenance – 24/7 support for vital ETCS high-speed routes delivered by our locally-based rapid response teams.

Key management – secure handover of safety critical ETCS radio data across national borders and between different infrastructure owners.



Vehicle systems

Failsafe and fully-integrated **on-board unit** (OBU) for ETCS Level 1 and Level 2. Level 2 solution incorporates European Vital Computer (EVC), antenna unit, radio system, Juridical Recorder Unit (JRU) and driver-machine interface (DMI). Designed for easy installation in locomotives and trainsets.

Trackside systems

Thales equips the entire trackside environment for ETCS Level 1 and Level 2, with **Eurobalise** beacons for spot transmission and **Euroloop** for semi-continuous data transfer. Signalling interconnection is provided via **Lineside Electronic Units** (LEUs).

Thales' **Radio Block Centre** (RBC) provides safety critical track-to-train transmission and offers significant capacity enhancements. Our RBC is designed for use and has a proven operational capability with both Thales' and third-party interlockings.

ETCS Levels

Level 1

Overlay solution that works in tandem with existing signalling. Track-to-train communications via Eurobalise transponders, with infill loops to provide extra data and boost capacity.

Level 2

Conventional trackside signals are eliminated. Secure track-to-train communications provided by digital GSM-R radio.

ETCS business benefits

Interoperability

Non-stop cross-border rail operations, with no need to swap locomotives, trainsets or crews at national frontiers.

Interconnectivity

Ability to overlay Thales and third party interlocking systems with ETCS.

Migration strategy

Proven expertise from Thales, including parallel operation of ETCS and national train control systems achieved via trackside and/or dual-equipped trains.

Safety

Highest level of safety assurance with continuous train protection.

Capacity enhancements

Get more out of existing networks with smarter track utilisation, improved headways, fewer bottlenecks and reduced conflicts.

Lower cost of ownership

Optimised operational, maintenance and capital costs with less trackside infrastructure.

Energy savings

Enhanced driver advisory strategies cut energy consumption and prolong the life of track infrastructure – with no additional hardware required.

Ongoing support

ETCS has industry-wide backing, so infrastructure owners can invest in new signalling with the assurance of life-long support.



Thales, number one in ETCS

MAIN REFERENCES

Switzerland

Lötschberg base tunnel

ETCS Level 2 signalling, interlocking and integration for the world's longest high-speed land tunnel.

Customer: SBB.

Benefits

- Rebalance transport modes and shift road traffic to rail
- Operational conflicts reduced to optimise throughput
- Energy savings

Spain

High-speed rail network

Design and installation of ETCS Level 1 and 2 signalling and communications systems to support expansion of Europe's biggest high-speed network. Since 1992, Thales has also provided corrective, preventive and predictive maintenance covering signalling and telecommunications systems on Spain's high-speed and conventional rail networks.

Customer: ADIF.

Benefits

- Increased speed and capacity
- Expert maintenance support
- Guaranteed alignment with latest technology

Saudi Arabia

North-South Railway

World's largest single implementation of ETCS Level 2 and GSM-R technology for new main line network.

Customer: SAR.

Benefits

- All mission-critical systems supplied
- Turnkey delivery
- ERTMS optimisation

Mexico

Mexico City suburban

Design, delivery and maintenance of ETCS Level 1, including interlocking and supervision, for the Cuautitlán-Buenavista line.

Customer: CAF.

Benefits

- Complete renewal of signalling infrastructure
- Continuous speed supervision
- Cost-effective operation
- Suburban operational application

Why Thales?

Major project capability

Thales is the name behind the world's biggest and most complex ETCS projects, including Spain's high-speed network, Switzerland's Lötschberg base tunnel and Saudi Arabia's 2,400km North-South Railway.

Migration expertise

Unmatched experience in network modernisation, including migration strategies for nationwide projects such as Denmark's ETCS Level 2 programme. Our position is enhanced by an ability to deliver total automation, including signalling, telecoms and supervision.

Turnkey delivery

Thales designs and delivers fully-integrated signalling and telecoms solutions, so you can be confident that your system is optimised from the outset, with benefits that include lower costs, minimal risk and easier implementation.

Partnership

We work with customers to identify needs right from the start. Customers benefit from smooth implementation and delivery, with minimal impact on operations, all backed by through-life services that help you to get the most out of your infrastructure.

Dedicated to signalling

Thales is acknowledged as the world's leading ETCS provider, with the best deployment record and widest experience. With more than 3,500 signalling specialists in 20 countries, our capacity to deliver is unique.

Services that add value

Support for customers every step of the way, from initial consultancy and interoperability testing using our own purpose-built laboratories, right through to long-term maintenance support and upgrades, with round-the-clock support from expert local teams.