Invensys™
Rail

Company Overview

Who we are

Invensys Rail, a division of the global technology group Invensys plc, is a multinational leader in delivering state of the art railway control and communication solutions.

We enable the world's railways to help meet the ever increasing demand for rail services by providing a range of solutions that safely increase the capacity of their networks by increasing frequency and maximising operational effectiveness.

Employing over 3,250 employees worldwide, Invensys Rail operates through a network of regional offices and delivers products and solutions from some of the most famous names in the rail industry:

- Westinghouse Rail Systems;
- Dimetronic Signals; and
- Safetran Systems

"We design, manufacture, supply, install, commission and maintain a range of safety related rail automation and control systems and equipment."

Our broad offering ranges from highly complex integrated control centre solutions that supervise and control complete railways, sophisticated train based systems that automate train operation and protection, interlocking systems that ensure safe running across a network and a complete range of trackside products.

www.invensysrail.com

Our philosophy

We believe rail signalling and control technology lies at the heart of meeting the future demands on transport infrastructure.

We can offer so much more than just safety and protection, with a range of industry leading solutions that can add significant value and benefit to rail operators throughout the world.

Promoting sustainable transport

Rail is widely accepted as the most carbon efficient form of transport compared with road and air with up to 75% less emissions for an identical journey. There is potential, however, for the rail industry to reduce its carbon emissions even further and signalling and control can play a significant role in achieving this.

For example, modern in-cab signalling solutions such as the European Rail Traffic Management System (ERTMS) and Communication Based Train Control (CBTC) systems improve both driving efficiency and minimise braking. Integrated control centre technology can be used to manage and minimise energy use in stationary trains whilst Automatic Train Control (ATC) allows operators to maximise network capacity and therefore energy use.

From signalling to intelligent infrastructure

Our focus on innovation will ensure signalling and control technologies will dramatically improve the performance of the railway. Future systems will give wider operational control beyond safety to manage the entire railway and maximise utilisation of assets by utilising direct train to train communication to orchestrate movements, optimise energy consumption and enhance passenger information and therefore the whole journey experience. Emerging modular technology, being developed today, will further drive down costs, especially for the more remote rural and freight services.

The cost effective capacity investment

The more traditional infrastructure based solutions often used to increase transport capacity, such as new build and widening, are costly, time consuming and cause significant disruption during construction. Re-signalling is, however, one of the most cost effective ways to increase transport capacity.

Our focus on innovation and improvement has seen the cost of signalling reduce dramatically, having fallen by a third over the last 5 years. With further technological developments such as the evolution of more modular systems, this trend is likely to continue reinforcing our cost advantage over the traditional infrastructure solutions.

Our heritage

Invensys Rail has a powerful heritage in the railway industry stretching back over 140 years. We have played a central role in the development of the technologies that have shaped the safety of today's railways. In 1869 George Westinghouse, our original founder, patented the air brake that enabled trains to be stopped with fail-safe accuracy by the locomotive engineer for the first time. Almost a century later in 1968, we were responsible for the introduction of the world's first fully automated passenger railway, the Victoria Line on London's Underground.

Delivering ideas that work

Today our technology is being used by over 100 customers in more than 30 countries. The technological and business innovation on which our success depends stems from the breadth of experience and passion of our employees worldwide. Wherever in the world they are working, our people have a collective voice that speaks of a high performance culture, trust and pride in pursuit of safety and performance across the world's railway networks.

> "our people have a collective voice that speaks of a high performance culture, trust and pride in pursuit of safety and performance"

From advanced train management and control systems to trackside equipment and maintenance, Invensys Rail has the expertise and ability to offer not just standalone products or services but wide ranging solutions incorporating best-in-class products, technology and know-how tailored to the individual needs of each customer.

Safety is at the heart of everything we do

Uncompromising safety is the hallmark of Invensys Rail, whether we are providing you with standalone products or complex, fully integrated systems. The solutions we develop or enhance are often an evolution of existing technology rather than a step change. This allows our customers to build on their legacy systems and protect existing investments while preparing the railway network for a safer future.

Safety engineering begins at the earliest stage of a project with a clear safety management structure implemented throughout each project. This reassures our customers that not only will we work safely and adhere to strict operational safety guidelines but that our products and solutions will have gone through quantitative and qualitative safety analysis at every stage of their development and manufacture.

Wide ranging portfolio

However complex your project, our open approach is focused on delivering the optimum solution, when you want it and within your budget.

Our portfolio of systems and products covers every aspect of integrated control and signalling, from simple products to complex, fully integrated systems.

Control systems and communications
We are a leader in the design, integration and installation of integrated train management and control systems. From simple installations to complex main line control centres, all our products and solutions use leading-edge technology to provide safe, reliable and trustworthy services.

Interlockings and protection systems
Implemented and installed in thousands of locations across the world, our comprehensive range of protection systems are innovative, affordable, flexible and, above all, tested and proven to offer the highest possible safety standards. Our portfolio includes electronic interlockings, safety processors, train control and protection systems, Positive Train Control and the European Rail Traffic Management System (ERTMS).

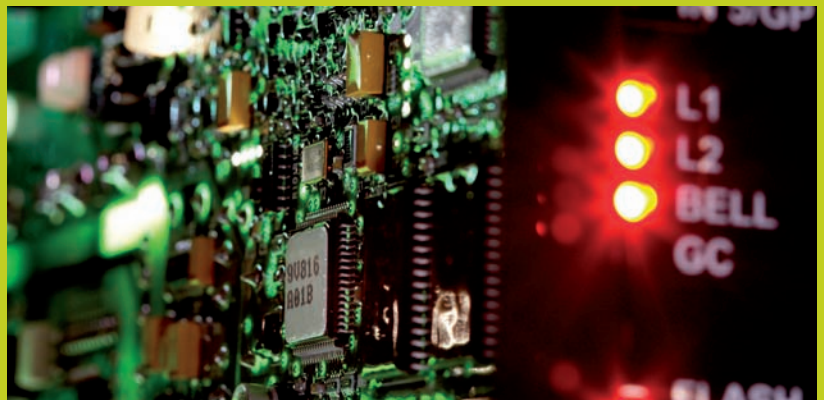
CBTC and driverless solutions
Invensys Rail has been at the forefront of developing and implementing state of the art automation solutions to some of the world's leading cities. Our layered approach to introducing new systems on top of legacy systems minimises disruptions to both operators and passengers. Our state of the art solutions include the very latest communication Based Train Control (CBTC) and Distance-to-Go Radio (DTG-R).

Trackside equipment
We design, develop and supply a complete range of proven and robust trackside equipment for a range of applications. These include level crossings, signals, track circuits, point machines, train stops and safety relays.

Maintenance and service
We offer a range of flexible and bespoke services to help you maintain and improve operational efficiency. You can construct your own dedicated support contracts from a comprehensive range of maintenance options.

Project and system engineering and design
With over 140 years of experience, Invensys Rail is the ideal consultancy partner, bringing our expertise to help with all aspects of project and system engineering and design.

"Our portfolio of systems and products covers every aspect of integrated control and signalling, from simple products to complex, fully integrated systems."



Flexible delivery

We can either work as your main contractor, taking control of a complete project that includes design, supply, commissioning and product lifecycle support, or we can take care of just certain elements of a project, such as the provision of standalone equipment, feasibility studies or implementation strategies.

Our project management skills enable us to take control of the most challenging projects. We have established a project management framework with ongoing delivery reviews that ensure we use best practice methodologies to deliver complex programmes on time and ahead of schedule.

Our customers appreciate the way we listen to what they say and the fact that we make every effort to learn about their business and operational challenges before tailoring solutions to match their needs.

Our ideas in action

Invensys Rail's solutions are helping customers around the world to increase capacity safely and cost effectively and to modernise often decades' old infrastructure. The following examples give just a flavour of the diverse nature of our work.

Modernising metros

We are a key player in the plans to upgrade signalling and train control on the London Underground network, working on a number of lines including the busy Central and Victoria lines. In Madrid, the entire Madrid Metro network is equipped with our Automatic Train Protection (ATP) systems. Numerous lines also operate with the Automatic Train Operation (ATO) system and expansion plans have seen the introduction of innovative, state-of-the-art driverless technologies that reduce headway and increase capacity.

We were a key player in Beijing's plans to upgrade their metro for the 2008 Olympics and we have been working in Singapore since 1984 helping to deliver one of the world's most efficient metro systems, a relationship that saw us chosen in 2008 to provide a CBTC system for their new Downtown Line.

Integrated control

In 2006 we were awarded the contract to design, install and commission an Integrated Control and Communication System (ICCS) for the Canada Line Rapid Transit Project in Vancouver, a key transport link for the Winter Olympics in 2010.

Already proven in service in Hong Kong, the Systematic*ICS* control system lies at the heart of the system. It manages the integration of each of the power, tunnel ventilation and communications sub-systems, which come together in a single operator interface.

High speed line and mainline capacity

We are involved in all on-going high speed line contracts in Spain with our ERTMS solution for Levels 1 and 2, FUTUR, which is being used on a number of prestigious contracts including the Madrid to Valencia and the Barcelona to Figueras lines. We are also installing our ERTMS solution for Madrid's busy commuter network. Building on our success in Spain, we are now involved in ERTMS projects around the world including Turkey, New Zealand and Australia.

Our award winning interlocking solutions are helping to increase capacity on mainlines throughout the world from major rail hubs in the UK to busy lines in Portugal and Australia.

Innovative product solutions

In the USA, our industry leading Crossing Automated Inspector System is being installed on Class 1 railroads. The system monitors crossing warning systems for proper operation and performs many of the required monthly tests both automatically and on-demand. Reports and test data is then sent to a central office location or a mobile device thereby reducing the need for expensive site visits.

To find out how Invensys Rail can help you meet the demands of the 21st Century visit us at:

www.invensysrail.com, email **rail.enquiries@invensysrail.com** or call **+44 1249 441 049**

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