Trackguard WESTLOCK

Cost-effective, highly available and reliable
With several hundred Trackguard SSIs in use worldwide, Trackguard WESTLOCK provides a migratory path forwards, rather than in a totally new direction. Consequently, though highly advanced, Trackguard WESTLOCK safeguards investment in existing infrastructure and is also fully retro-compatible with SSI.

A Trackguard WESTLOCK interlocking can manage an area equivalent to four SSIs.

Trackguard WESTLOCK’s capacity allows interlocking cross boundaries to be eliminated or repositioned, significantly accelerating route setting times.

**Architecture**
Trackguard WESTLOCK’s flexible design permits the interlocking to be connected in a variety of ways, to provide the most appropriate architecture for each situation. Trackguard WESTLOCK’s inherent flexibility allows it to be applied adjacent to existing SSIs, to recontrol existing SSIs or to be applied directly in its own right.

This diagram shows typical Trackguard WESTLOCK architecture.
Each trackside interface (TIF) communicates with the trackside data links either directly to data link modules (DLM), or via long distance terminals (LDT), with a maximum of 63 trackside functional modules (TFM) on each link. The Trackguard WESTLOCK central interlocking processor (CIP) can handle 252 TFMs (4x63) in total.

The SSI Interface (SIF) allows Trackguard WESTLOCK to communicate with existing SSIs via internal data links. Where a group of SSI central interlockings are being upgraded to Trackguard WESTLOCKs, use of the SIF enables a gradual and staged migration, without a requirement to modify existing data within the remaining SSIs.

The CIP communicates with existing panel-based or computer-based control systems via the control system gateway (CSG). Where a Controlguide WestCAD control system is provided, a CSG is not required since Controlguide WestCAD can communicate directly with the Trackguard WESTLOCK CIP.

Each CIP is provided with its own technician’s workstation (TW) which incorporates event logging, and provides performance and diagnostic reporting that can be used during set-up, testing, commissioning, fault-tracing and maintenance. Diagnostic reporting can be provided remotely using the remote version of the technician’s workstation. An event replay facility is provided which enables replay and analysis of the event logs.

All of the Trackguard WESTLOCK subsystems communicate via a high-speed network, so they do not have to be co-located. For example, a TIF may be located at the trackside, whilst a SIF may be installed with a group of SSIs in an adjacent control centre.

Safety certification
The platform used by the CIP, TIF and SIF is two out of three, triple modular redundant (TMR) hardware, with dual diverse software providing high levels of safety and equipment availability. This platform has been developed from a proven high-integrity control system used widely in process control industries.
Hardware
Trackguard WESTLOCK’s functionality is contained within core components, with each function using dedicated hardware that allows a system to be tailored to its specific application. However, the core safety-critical systems all use identical hardware elements.

At the heart of Trackguard WESTLOCK is the central interlocking processor (CIP) which performs the interlocking function. Each CIP can communicate with up to four other CIPs.

Communicating with the CIP are the trackside interface (TIF) and the SSI interface (SIF). The TIF and SIF handle the specialist interface functions allowing the CIP to be solely dedicated to the main interlocking processing function.

The three main processors perform extensive internal diagnostics and communicate over a triplicate bus. Trackguard WESTLOCK modules are hot-swappable, allowing module changes online and without pre-programming, to minimise disruption. Separate direct inputs to the interlockings (e.g. for “emergency all signals on control” inputs) also offer the potential to simplify a number of vital operations.

Software
Programming Trackguard WESTLOCK is user-friendly and straightforward, with data preparation, office testing and site testing based on conventional SSI principles, but made easier by using Windows™ based design tools. A detailed graphical representation of the track layout is created within the design package, which incorporates functionality enabling the user to custom build interlocking function reports, allowing designer and tester to undertake comprehensive configuration and simulations as required. This interface also provides the human machine interface (HMI) for the TW, and dramatically improves the presentation, range and availability of diagnostic and event information.
Trackguard WESTLOCK

Developed from a proven high integrity control system used widely in process control industries

Building on the past, looking to the future
Full retro-compatibility with SSI allows infrastructure owners to upgrade their existing SSI installations with Trackguard WESTLOCK, so they can easily benefit from greatly enhanced capability, maintainability and availability. Engineering and retraining time is minimised by using an industry-proven platform and long-established SSI principles. Therefore migration to Trackguard WESTLOCK offers a high degree of inherent safety, whilst minimising the exposure to risk normally associated with new technology.

The architecture of Trackguard WESTLOCK has been designed with high-speed data link capability at its core. Its network communications ability and processor capacity enable faster communication with a range of control centre solutions, trackside equipment and with ETCS/ERTMS radio block centres (RBC).

Examples of where Trackguard WESTLOCK is used:

Australia   Queensland Railways
           New South Wales

Great Britain   Network Rail (including Glasgow Central, Scunthorpe and Leamington Spa)

Portugal   REFER
The information in this document contains general descriptions of the technical options available, which do not always have to be present in individual cases. The required features should therefore be specified in each individual case at the time of closing the contract.