



RAILWAY SIGNALING

In a railway exploitation, traffic safety is a critical issue of maximum priority. Solutions and equipment certified by independent agencies are required, having a demonstrable track record on-live operation on a well-known railway operator.

SICE offers a portfolio of rail safety solutions built on the solid foundation of 90-year industrial experience implemented solutions of railway signaling.

Through the company Enclavamientos y Señalización Ferroviaria - ENYSE, a subsidiary 100% owned company, SICE offers integral line management solutions:

- EiS23 Electronic Interlocking,
- Centralized Traffic Control (CTC) ENYSIC.
- Level crossings

These systems have been designed and certified under the maximum safety level SIL-4 "fail safe".

Manufactured and configured in ENYSE facilities, such equipment has been tested in operation demonstrating its robustness, reliability, availability and easy to maintenance.

Maintenance of signaling, energy and communications systems is of supreme importance for guaranteeing safety and quality. This implies taking responsibility for making efforts to maintain this equipment, from both the perspective of availability and the implementation of any necessary human and material resources. SICE and ENYSE solutions include all the elements necessary for the safe management of the lines.

ETCS / ERTMS

iCAB M series is fully compliant with the European ERTMS / ETCS Level 1 standard and is designed to provide advanced levels of rail safety through continuous protection and train control.

These series include wayside equipment subsystem (SST) and on board subsystem (SSB), who are closely integrated.

The ENYSE-MERMEC solution has features that allows Train Control according to aspects of the signals; to maximum allowed speeds and inclinations of the line (in normal and degraded conditions); to maximum speeds of rolling stock; and finally according to the rules of speed reduction.

ELECTRONIC INTERLOCKINGS AND BLOCKS (EiS23)

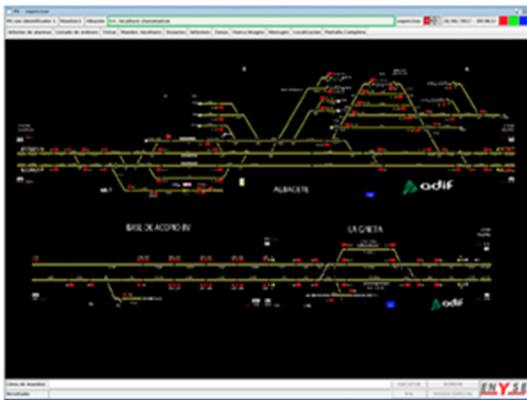
INTEGRATED CENTRALIZED TRAFFIC CONTROL SYSTEM

The ENYSIC Traffic Control System integrates three tools:

- Centralized Traffic Control (CTC)
- Assets Management System (AMS)
- Operation Assistance Systems (OAS)

ENYSIC CTC allows monitoring, commanding and controlling a set of interlocking. ENYSIC system also provides added features to this basic CTC functionality, such as:

- Train numbering and dispatching
- Graphical train monitoring
- Automatic routes scheduling
- Playback event recorder
- Operational Support to schedule and change timetables
- Interface with Passenger Information System



EiS23, an manufactured system with a proven design, robust and easy to maintain, provides an Electronic Interlocking system that complies with the most rigorous standards for Reliability, Availability, Maintainability and Safety (RAMS), thanks mainly to the fact that it complies with the CENELEC Standards (EN-50128 and EN-50129), and to its Architecture based on "2 out of 3" redundancy, where all the processing, internal communication and input and output control elements are triplicated.

This interlock is easily integrated with modern ATP systems, providing a solution for railway administrations ranging from European Rail Traffic Management System (ERTMS) to suburban railways and low-traffic railway lines.



LEVEL CROSSINGS

With over 800 level crossings installed at various railway administrations, SICE's level crossings have a proven, robust, and easy to maintain design.



The E-300 level crossing is "fail-safe" SIL-4 according to CENELEC standards, allowing different configurations both wired or radio communications.

ENYSE manufactures, supplies and installs a full range of safety level crossings:

- SLA - Automatic open crossings locally monitored (fully automated with sound and light signals)
- SBA - level crossings with automatic half-barriers (open track or affected by the proximity of an interlocking).
- SBE - interlocked level crossings with half-barriers (controlled by the interlocking at the station)