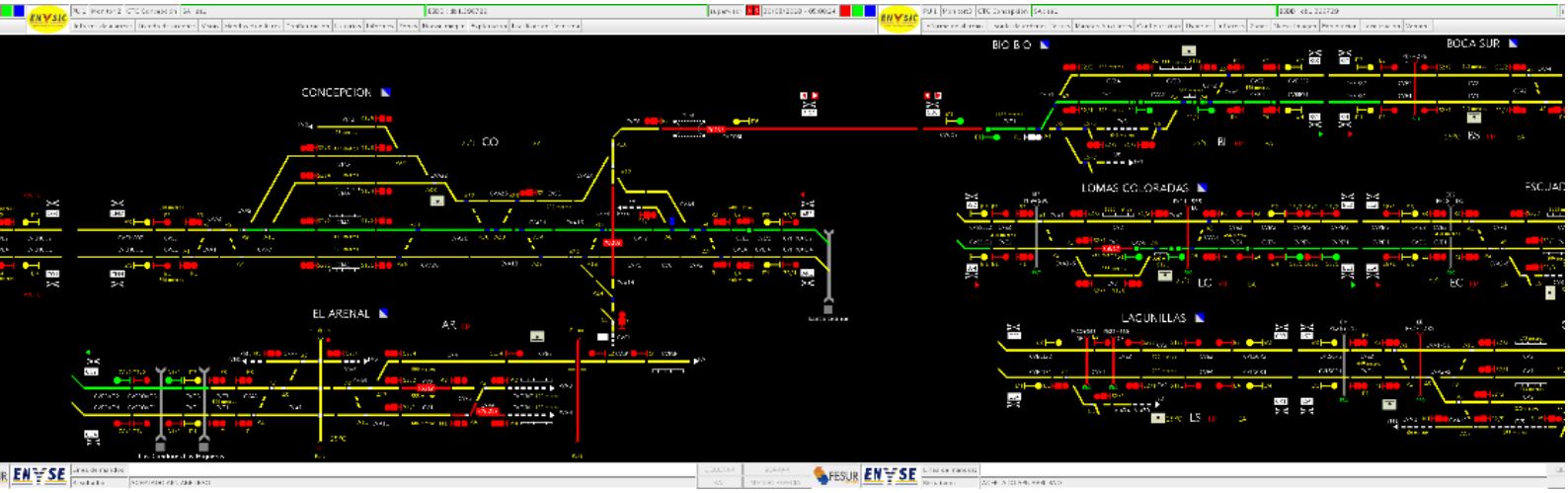

INTEGRATED SECURITY SYSTEMS (ENYSIC)

ENYSE's extensive experience in the design, installation and configuration of Signaling Systems, as well as Remote Control and Centralized Traffic Control (CTC) Systems, allows it to adapt to the operational needs demanded by the various administrators.

The ENYSIC Integrated Security System makes it possible to remote control (supervise and monitor) interlock lines as well as the set of associated peripheral systems such as passenger support systems, monitoring of Level Crossings on route, monitoring of invoicing by weight on carriages, etc. To achieve this objective, ENYSIC communicates with the various systems to receive information about the status of the different elements that it monitors, as well as to send the commands requested by the operators. The various operator stations that may be equipped in the control center are used to monitor, in real time, the various applications implemented in the rail environment.

The CTC receives and stores alarms related to the management of the interlocks, the commands requested by the operators and the status of the CTC system, making it possible to carry out audits and to reconstruct past situations.

The ENYSIC Integrated Security System is made up of:

- Centralized Traffic Control Centers (CTC)
- Centralized Maintenance Support Systems (SAM)
- Operational Support Systems
- Application for traffic display
- Application for the monitoring traffic in its control environment

Main Features

It is designed using a modular architecture, **flexible and scalable**. Easily adaptable to future extensions and new functionalities.

Each system is divided into functional modules, which shall communicate with each other through a **single interface.** This guarantees easy integration with other systems.

The architecture used corresponds to that of an **open and flexible system**, in which it is possible to update and interconnect new equipment (communications hardware, interlocking, work stations, rear projectors, printers, etc.) by simply connecting and adding them to the system's databases.

The CTC is a system that operates 24/7, that is, any extension or maintenance work must be done while the system is operating.

The system includes a set of printers and gives the option for users to print information of interest to them, for example, an alarm log book, graphic screens, reports or statistics.

The CTC is a **high HW/SW availability** system, for which it has:

- A duplicate LAN network and the equipment that is connected to it do so through two independent interfaces.
- Dual configuration of the system's basic hardware components (servers, communication devices, etc.)
- If the equipment that is not duplicated fails, such as the operator station, it allows for transferring its functionality to another equipment that can carry out the same functions.
- If the redundant equipment fails, the system will provide tools for recovery and commissioning in the same mode in which it was operating before the failure.

Additional Functionalities

Other functionalities that the CTC system provides are:

- Numbering and monitoring of traffic: The CTC assigns a train number to the various routes within its area of control and thus, the operators may perform their monitoring on the different graphic views. It is also responsible for monitoring numbered trains based on the analysis of the logical sequences of occupation and liberation of track circuits.
- Automatic itinerary planning: The CTC has a system called AIP (Automatic Itinerary Planning) which allows for establishing itineraries automatically without the manual intervention of the operator depending on the train number, the track circuit that it occupies and its time control.
- Reconstruction of sequences: The CTC allows for reproducing a real situation processed in the system, thus facilitating the analysis of the information that arrives from the field, the alarms that were produced, and the actions carried out from the CTC.
- Operational Support - graphing of trains: The CTC provides reliable data on the precise location of each train to redirect them towards the automatic train operating system, which dynamically regulates the speed of the trains to:
  - Adjust the cumulative earliness or lateness of the trains with respect to the operating schedule.
  - Regulate the time interval between successive trains passing through a certain station.
- Exchange of data with other systems: The CTC provides a series of generic interfaces with other non-CTC systems for the exchange of information between them.