

# CASE STUDY

TCMS FOR SHUNTING LOCOMOTIVES  
*Tülomsas (Turkey)*



TÜLOMSAS Shunting Locomotive

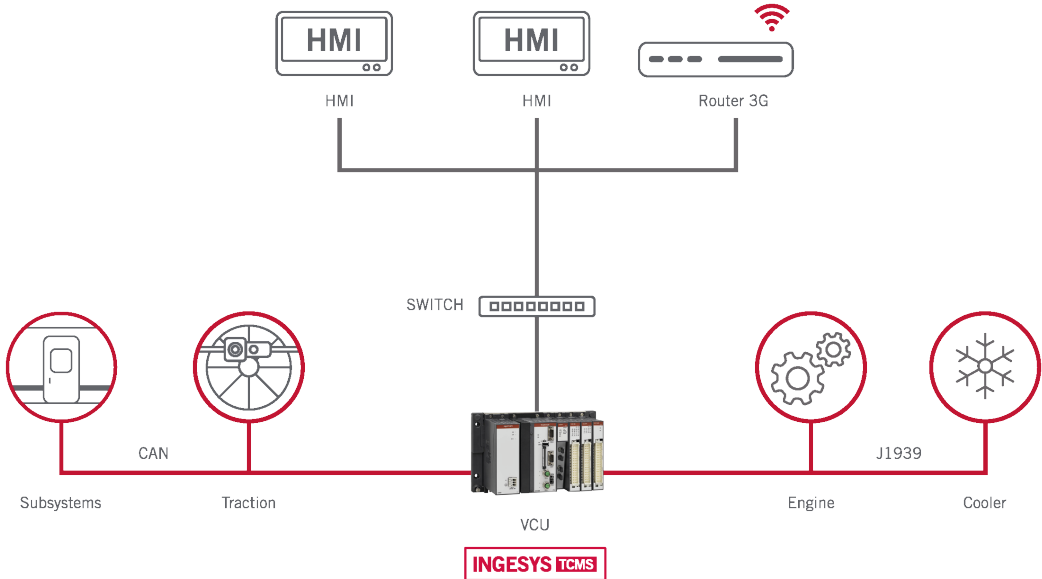
## TCMS solution for Shunting Locomotives

In 2019, Ingeteam supplied the TCMS systems for seven new-generation, diesel-electric locomotives to the Shunting Locomotive manufacturer TÜLOMSAS.

Ingeteam supplied the TCMS based on a modular INGESYS IC3 solution with EN50155 and EN45545-2 railway certification.

The TCMS application has been developed and commissioned entirely by the Shunting Locomotive Manufacturer.

## Ingeteam’s TCMS solution for Shunting Locomotives



# TCMS FOR SHUNTING LOCOMOTIVES

## Tülomsas (Turkey)

### Scope of Supply

#### INGESYS TCMS

##### TECHNICAL FEATURES

INGESYS TCMS Components

- 1X24 V Power Supply Module
- 1xCPU (2 CAN + 2 Ethernet with 8 I/O Backplane)
- 1x2 CAN Bus Module
- 3x32 Digital Input Module
- 1x32 + 1x 16 Digital Output Module
- 1x16 Analogue Input Module

##### INGESYS TCMS GENERAL FEATURES

System

- Wide range of processing units, I/O modules, communications modules, etc.
- Distributed I/O architecture based on CAN buses, MVB, ETHERNET
- DIN 41612 F connectors or terminal blocks for I/O modules

Programming

- IEC61131-3 standard languages
- C/C++
- MATLAB@/SIMULINK®

Integrated supervision

- Events and data log module
- Active alarms and historical data viewer
- Events viewer
- Remote access for parameterising and diagnostics via web services

Centralised supervision

- Centralised supervision of the information on all vehicles
- Architecture in the cloud (centralised diagnostics data)
- Communication between trains and station using GSM, WLAN, GPRS links

High Availability

- Soft and Host Standby redundancy
- Redundant power supply and I/O topologies
- Communications redundancy
- Hotswap modules

Standards

- EN 50155:2007 [Class TX (-40°C at +70°C)]
- EN 45545-2



INGESYS TCMS

The technical data in this catalogue is subject to change without prior notice. CS47/PTT01B/0925