

References by activity



Railways





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FERROCARRILES **TÚNEL ATOCHA-RECOLETOS -CHAMARTÍN**

LOCALIZACIÓN ▶ Madrid (España)

CLIENTE ▶ UTE Mediodía Recoletos (Vías y Construcciones+Azvi)

ALCANCE ▶

Sustitución de toda la electrificación existente de catenaria flexible por rígida (doble vía subterránea). Es la primera rehabilitación completa desde su inauguración en 1967 (es el tramo de mayor uso de toda la red española).

IMPORTE ▶ 4,6 millones de euros

INICIO ▶ abril 2019

FIN ▶ noviembre 2019

CARACTERÍSTICAS:

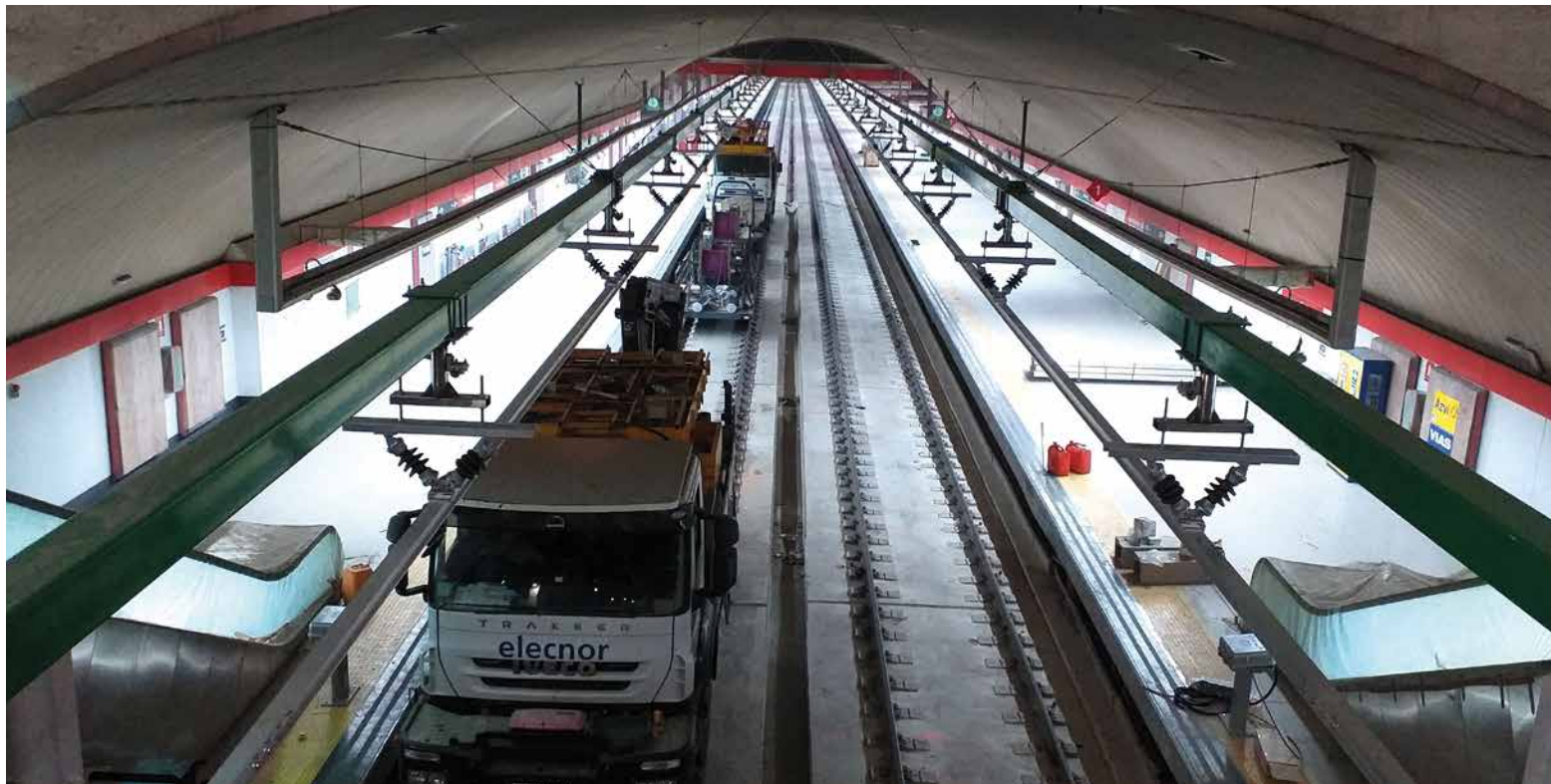
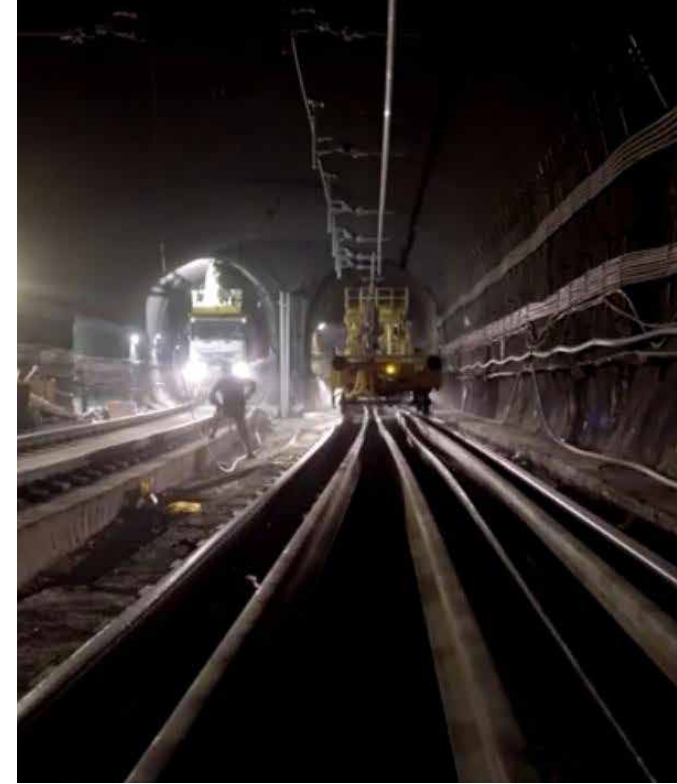
- ▶ 7,287 km de longitud con un sistema eléctrico de 3 kV CC
- ▶ Electrificación de escapes en las estaciones de Recoletos y Nuevos Ministerios
- ▶ Adecuación de las cabeceras de Chamartín y Atocha mediante transiciones de catenaria rígida a flexible
- ▶ Nuevos equipos de corte mediante seccionadores motorizados y telemandados
- ▶ Nuevos aisladores de sección y federes de refuerzo y alimentación a catenaria rígida



ESPAÑA
Madrid

FERROCARRILES

TÚNEL ATOCHA-RECOLETOS -CHAMARTÍN





RAILWAYS

CÓRDOBA- MÁLAGA

LOCATION ▶ Córdoba and Málaga (Spain)

CUSTOMER ▶ ADIF

PROJECT SCOPE:

Project design, installation and maintenance by a consortium - overhead power line and ancillary systems on the Córdoba-Málaga high-speed rail network. The scope includes 155 km of the 25 kV overhead power line

AMOUNT ▶ EUR 107 million (ENO 28.5%)

START DATE ▶ december 2004

FINISH DATE ▶ october 2009

CHARACTERISTICS:

- ▶ 155 km double track
- ▶ 25 km tunnels
- ▶ Design speed: 350 km/h
- ▶ 1x25 and 2x25 kV AC 50 Hz electric traction line
- ▶ 1435 mm UIC gauge
- ▶ Lattice posts
- ▶ Aluminium tube cantilevers



SPAIN

Córdoba and Málaga (Spain)

RAILWAYS

CÓRDOBA- MÁLAGA





MADRID- LEVANTE

LOCATION ▶ Cuenca, Albacete and Valencia (Spain)

CUSTOMER ▶ ADIF

PROJECT SCOPE:

Construction design for electric traction substations, their autotransformer units and remote energy control system on the Levante high-speed rail network, sections Motilla del Palancar-Valencia, Motilla del Palancar-Albacete and Torrejón de Velasco-Motilla de Palancar

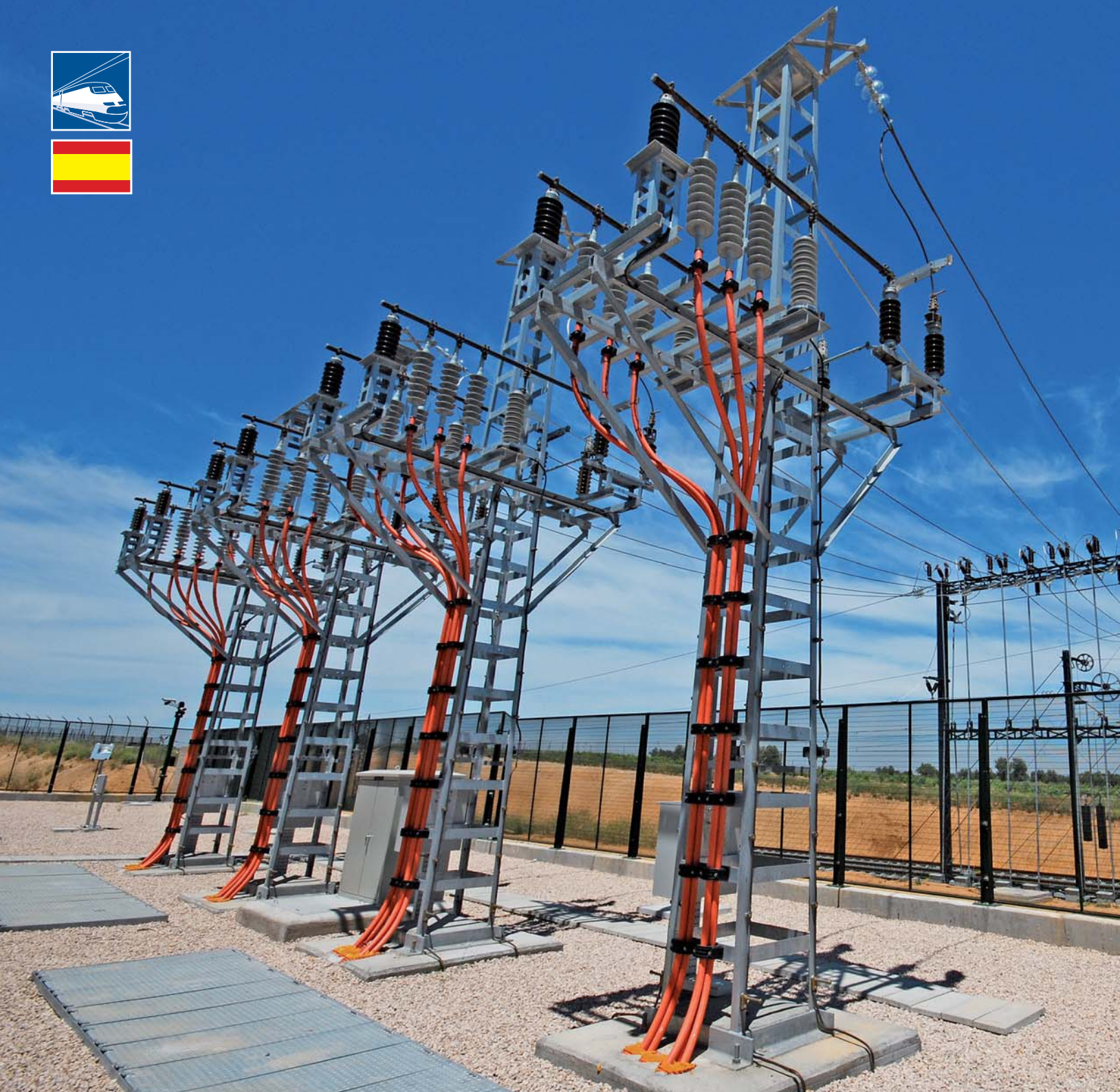
AMOUNT ▶ EUR 64 million

START DATE ▶ may 2008

FINISH DATE ▶ april 2011

CHARACTERISTICS:

- ▶ 8 traction substations, with the following 400 kV basic configuration:
2 x three-phase rotating cutouts with earthing blades. 4 voltage transformers. 4 protection and measurement current transformers. 2 two-phase switches. 4 protection and measurement current transformers. 4 automatic valves. 2 power transformers, 60 MVA, 400/2x27.5 kV.
- ▶ 10 final autotransformer units, with:
4 x 15 MVA power autotransformer units. 10 x 55 kV cells. 2 x 750/230 V auxiliary transformers
- ▶ 30 intermediate autotransformer units, with:
2 x 15 MVA power autotransformer units. 4 x 55 kV cells. 2 x 750/230 V auxiliary transformers





SPAIN

Cuenca, Albacete and Valencia
(Spain)

RAILWAYS

MADRID- LEVANTE





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RAILWAYS

MADRID- LLEIDA

LOCATION ▶ Madrid, Guadalajara, Zaragoza, Lleida (Spain)

CUSTOMER ▶ ADIF

PROJECT SCOPE:

Project design, installation and maintenance - overhead power line and ancillary systems on the Madrid-Zaragoza-Barcelona-French border high-speed rail network, section Madrid-Lleida. The scope includes 917 km of the 25 kV overhead power line

AMOUNT ▶ EUR 90 million

START DATE ▶ april 2000

FINISH DATE ▶ april 2006

CHARACTERISTICS:

- ▶ Design speed: 350 km/h
- ▶ 1x25 y 2x25 kV AC, 50 Hz electric traction line
- ▶ 1435 mm UIC gauge
- ▶ Lattice posts
- ▶ Aluminium tube cantilevers
- ▶ Copper-magnesium contact wire: 150 mm²
- ▶ Nominal contact wire height: 5,300 mm



SPAIN



Madrid, Guadalajara, Zaragoza,
Lleida (Spain)

RAILWAYS

MADRID- LLEIDA





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RAILWAYS

METRONORTE SS

LOCATION ▶ Madrid (Spain)

CUSTOMER ▶ Madrid Metro

PROJECT SCOPE:

1,500 Vdc electrical substations on Madrid's MetroNorte line

AMOUNT ▶ EUR 17 million

START DATE ▶ september 2006

FINISH DATE ▶ may 2007

CHARACTERISTICS:

- ▶ Outfitting of substations
 - ✓ Station 1 (Tres Olivos)
Installed capacity: 9,000 kW
3 x 3,000 kW transformer/rectifier units
3 feeder cells
1 by-pass cell
 - ✓ Stations 6 (La Moraleja) and 9 (Bautana)
Installed capacity: 6,000 kW
2 x 3,000 kW transformer/rectifier units
2 feeder cells
1 by-pass cell
- ▶ Interconnections
 - ✓ Fuencarral substation and Station 1 substation
– one 5 kV cable
 - ✓ Station 1 substation and Station 3 substation
– two 15 kV cables
 - ✓ Station 3 substation and Station 6 substation
– two 15 kV cables
 - ✓ Station 6 substation and Station 9 substation
– two 15 kV cables
 - ✓ Station 9 substation and Station 11 substation (Hospital del Norte) – two 15 kV cables
- ▶ Work on Alto Arenal control centre and Puerta del Sur replication post (for control of substations)



SPAIN

Madrid (Spain)

RAILWAYS

METRONORTE SS





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RAILWAYS

ORENSE-SANTIAGO

LOCATION ▶ Orense and A Coruña (Spain)

CUSTOMER ▶ ADIF

PROJECT SCOPE:

Project design, installation and maintenance - overhead power line and ancillary systems on the Orense-Santiago high-speed rail network. The scope includes 85 km of the 25 kV overhead power line

AMOUNT ▶ EUR 29 million

START DATE ▶ april 2010

FINISH DATE ▶ december 2011

CHARACTERISTICS:

- ▶ 85 km double track
- ▶ 28 km tunnels
- ▶ 19 km viaducts
- ▶ Design speed: 350 km/h
- ▶ 1x25 y 2x25 kV AC, 50 Hz electric traction line
- ▶ 1435 mm UIC gauge
- ▶ Lattice posts
- ▶ Aluminium tube cantilevers



SPAIN

Orense and A Coruña (Spain)

RAILWAYS

ORENSE-SANTIAGO





RAILWAYS

PEDRALBA-VILARIÑO TUNNELS

LOCATION ▶ Zamora and Orense (Spain)

CUSTOMER ▶ ADIF Alta Velocidad

PROJECT SCOPE ▶

Execution and maintenance of the construction project for protection and safety facilities in the tunnels on the high speed Madrid-Galicia line. Section: Pedralba-Vilariño including 3 years of maintenance

AMOUNT ▶ EUR 27.3 million

START DATE ▶ march 2019

FINISH DATE ▶ march 2023

CHARACTERISTICS:

- ▶ KEY ACTIONS
 - ✓ Evacuation signage
 - ✓ Emergency lighting
 - ✓ Fire-fighting points
 - ✓ Pressurisation system for ventilation in emergency exits
 - ✓ Ventilation in technical rooms
 - ✓ TETRA system for emergency systems
 - ✓ Fire detection and extinguishing system
 - ✓ Emergency doors
 - ✓ Medium and low-voltage electrical installations
 - ✓ Safety control systems
- ▶ AFFECTED HIGH SPEED TUNNELS
 - ✓ Pedralba tunnels (1.7 km twin-tube tunnel)
 - ✓ Requejo tunnels (2.4 km twin-tube tunnel)
 - ✓ Padornelo tunnels (6.4 km twin-tube tunnel)
 - ✓ Avedimas tunnels (0.4 km twin-tube tunnel)
 - ✓ Hedroso tunnels (0.9 km twin-tube tunnel)
 - ✓ Lubián tunnels (1.7 km twin-tube tunnel)
 - ✓ La Canda tunnels (7.3 km twin-tube tunnel)
 - ✓ Vilavella tunnels (0.9 km twin-tube tunnel)
 - ✓ O Cañizo tunnels (5.4 km single-tube tunnel)
 - ✓ Espiño tunnels (7.9 km single-tube tunnel)

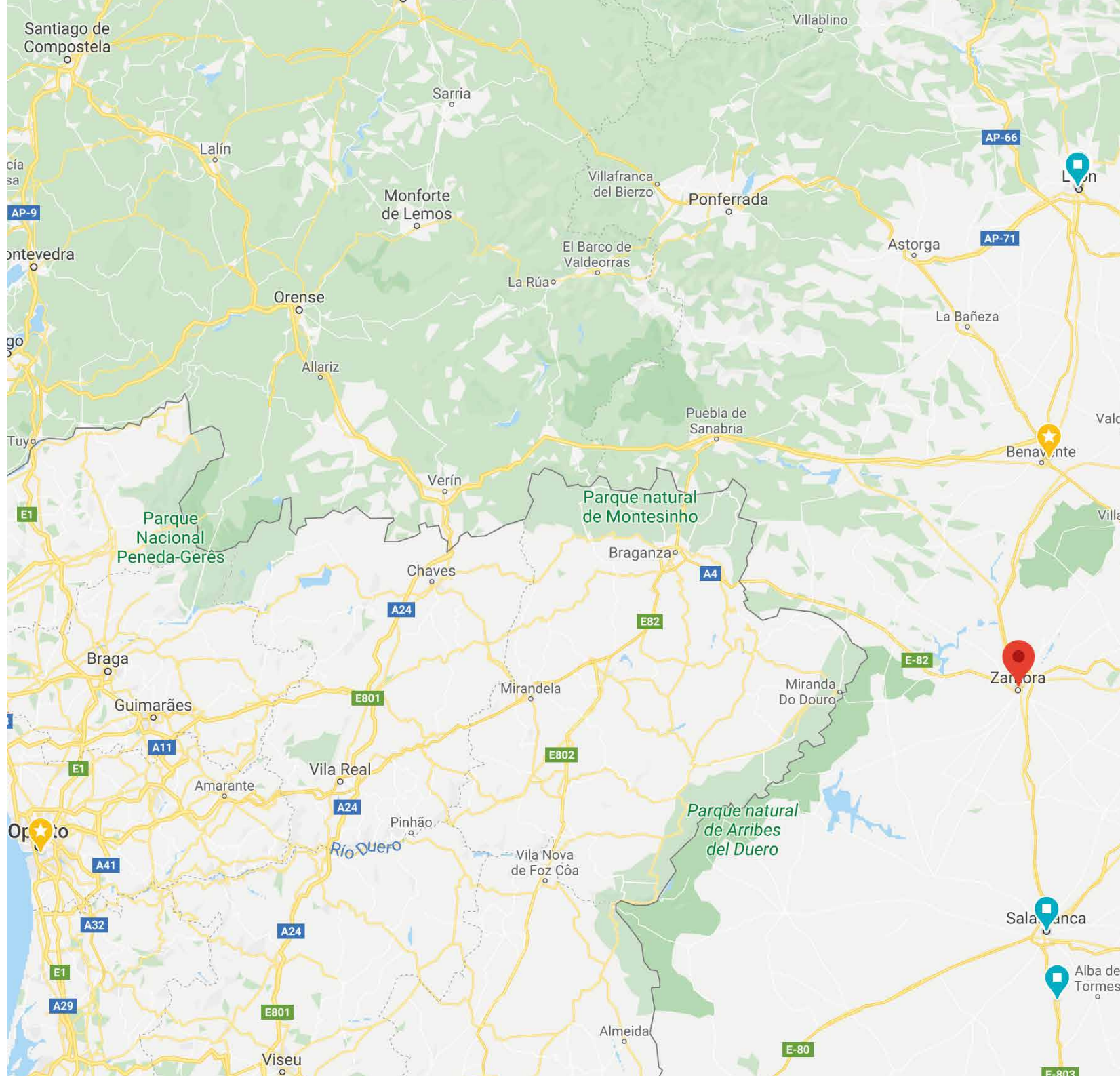


SPAIN

Zamora and Orense (Spain)

RAILWAYS

PEDRALBA-VILARIÑO TUNNELS





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RAILWAYS

SALAMANCA- FUENTES DE OÑORO RAILWAY ELECTRIFICATION

LOCATION ▶ Salamanca (Spain)

CUSTOMER ▶ ADIF

PROJECT SCOPE ▶

Scope: Two traction substations, two autotransformation centres and the expansion of an existing and operational centre, two high voltage overhead lines, channelling and cable laying for telecontrol, all integrated into ADIF control centres. The interventions include work being carried out on two substations owned by Red Eléctrica de España (REE), the extension of Salamanca station and compensatory measures for the protection of birdlife.

AMOUNT ▶ EUR 21.3 million

START DATE ▶ october 2018

FINISH DATE ▶ june 2020

CHARACTERISTICS:

- ▶ Ciudad Rodrigo substation: 400 kV and 55 kV, 2 x 30 MVA traction transformers
- ▶ Barbadillo substation: 220 kV and 55 kV, 2 x 30 MVA traction transformers
- ▶ Fuentes de San Esteban autotransformer: 55 kV, 2 x 10 MVA autotransformers
- ▶ Fuentes de Oñoro autotransformer: 55 kV, 1 x 10 MVA autotransformer
- ▶ Expansion of Salamanca autotransformer: 55 kV, 1 x 10 MVA autotransformer
- ▶ Telecontrol: Laying pipelines and over 20 km of cable along the railway
- ▶ Ciudad Rodrigo substation high-voltage overhead line (REE)-Ciudad Rodrigo traction substation (ADIF): 400 kV, 4.44 km, 18 lattice towers and double circuit, 2 phases per circuit (biphase), 2 conductors per phase and 2 OPGW shielding conductors
- ▶ Villamayor substation high-voltage overhead line (REE)-Barbadillo traction substation (ADIF)



SPAIN

Salamanca (Spain)

RAILWAYS

SALAMANCA- FUENTES DE OÑORO RAILWAY ELECTRIFICATION





OUARGLA TRAMLINE

LOCATION ▶ Ouargla (Algeria)

CUSTOMER ▶ Enterprise Métro d'Alger

PROJECT SCOPE:

Infrastructure contract to build the city of Ouargla's first tramline, from Hai Nasr to the old town centre, known as the Ksar Loop, in two sections, 8.1 km and 4.5 km

AMOUNT SECTION 1 ▶ EUR 230 million
(ENO 60 M)

START DATE ▶ november 2013

FINISH DATE ▶ october 2016

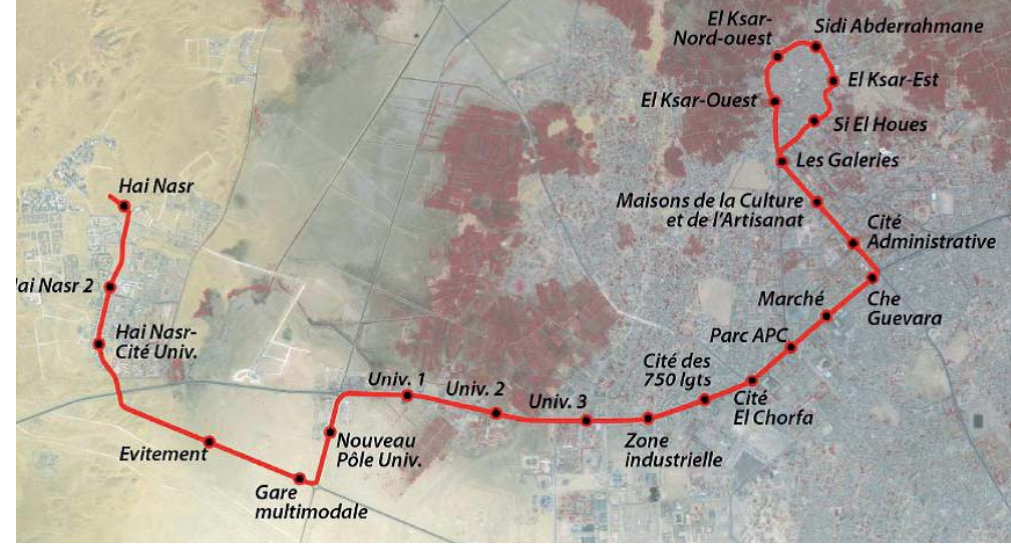
CHARACTERISTICS:

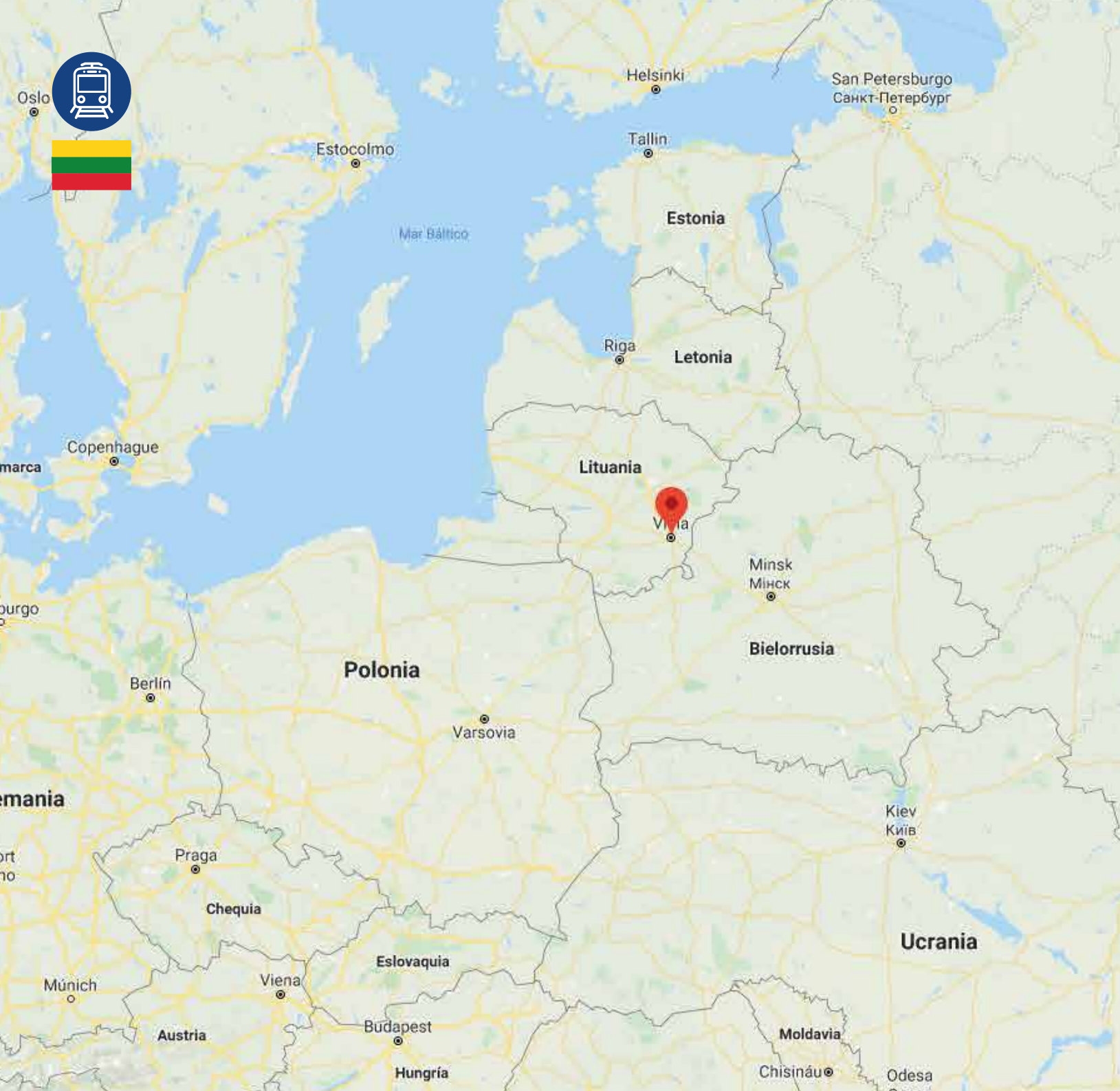
- ▶ Total length of 12.6 km, 2.4 km of which are single-track, on the Ksar Loop
- ▶ 6 HA living quarters for 300 people
- ▶ Structure in the Hai Nasr area over the RN49 highway: metal bow-string bridge
- ▶ Hydraulic construction in the Hai Nasr area
- ▶ Two metal pedestrian walkways: Multimodal station and "Université 1" station
- ▶ Rerouting of water, lighting, electricity services etc.
- ▶ Construction of rail platform and track work
- ▶ Work on road systems in public areas
- ▶ Supply and assembly of the overhead tram power line
- ▶ Work on public lighting system
- ▶ Work on illuminated traffic signs
- ▶ Construction of buildings for workshops and depots
- ▶ Construction of control buildings and command centre
- ▶ Construction of high-voltage unit
- ▶ Construction of 25 operating units along the tramline



AFRICA
Ouargla (Algeria)

RAILWAYS
**OUARGLA
TRAMLINÉ**





RAILWAYS

ELECTRIFICATION OF VILNIUS–KLAIPĖDA

LOCATION ▶ Regions: Dzūkija, Aukštaitija and Samogitia (Lithuania)

CUSTOMER ▶ Lietuvos Geležinkelių Infrastruktūra (LGI)

PROJECT SCOPE ▶ Electrification of Vilnius–Klaipėda section to complete IXB Corridor, which will enable electric trains to travel at speeds of 160 km/h from the border with Belarus to the seaport of Klaipėda

AMOUNT ▶ EUR 363 million (50% ENO)

START DATE ▶ February 2020

FINISH DATE ▶ March 2024

CHARACTERISTICS:

- ▶ Design and construction for electrifying 730 km of railway to 25 kV on the orbital line around Vilnius (34 km) and from Kaišiadorys to Klaipėda (320 km), crossing the country from west to east
- ▶ Construction of eight new traction substations and the modification of two existing ones, the connection of all of these substations to the national electricity grid using 110 kV lines, and the modification and expansion of the signalling, communications and control network for the entire section of the railway being electrified
- ▶ The project has three implementation stages:
 - ✓ Vilnius detour
 - ✓ Kaišiadorys–Radviliškis
 - ✓ Radviliškis–Klaipėda



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RAILWAYS

FOLLO LINE TUNNELS

LOCATION ▶ Oslo (Norway)

CUSTOMER ▶ Norwegian Rail Administration
(through the Acciona-Ghella consortium)

PROJECT SCOPE:

Rail infrastructure for the high-speed (200 km/h) twin railway tunnels to link up Oslo with the city of Ski. The tunnels will span 20 kilometres, making them the longest to be found in Scandinavia

AMOUNT ▶ EUR 80 million

START DATE ▶ July 2015 (design)

FINISH DATE ▶ December 2020 (15 month of construction, testing and start-up)

CHARACTERISTICS:

- ▶ 2 single-tube tunnels measuring 20 km plus a section of approximately 80 m²
- ▶ Interconnections link up the two tunnels every 450 m along their route, along with rescue areas and evacuation zones
- ▶ Rail systems needed to ensure the proper functioning of the electromechanical installations and systems (ventilation, fire protection and control and firewalls)



EUROPE

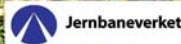
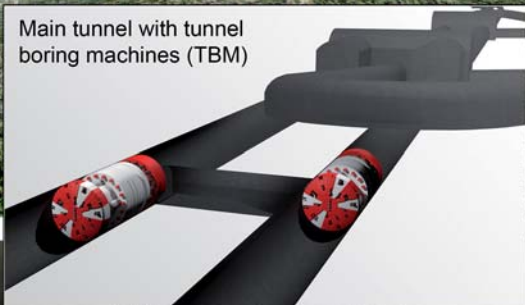
Oslo (Norway)

RAILWAYS

FOLLO LINE TUNNELS



Sketch: The rig area at Åsland between Oslo and Ski





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