

References by activity

OIL & GAS



References by activity

OIL & GAS

Spain

- GNF framework agreement (gas)
- Málaga gas pipeline
- Enagás gas pipelines
- Cartagena-Puertollano oil pipeline
- Zaragoza-Torrejón oil pipeline

Brazil

- Gavião Branco Sudeste
- Gavião Caboclo
- Refuerzo Presidente Kennedy

Mexico

- Morelos gas pipeline

Peru

- Southern Peruvian Gas Pipeline

Venezuela

- Infrastructure for AGL
- PDVSA transfer lines
- PDVSA replacement of oil pipelines



OIL & GAS

CARTAGENA- PUERTOLLANO OIL PIPELINE

LOCATION ▶ Murcia and Albacete (Spain)

CUSTOMER ▶ Repsol Petróleo

PROJECT SCOPE:

Construction and laying of Cartagena-Puertollano distillate pipeline, section II

CONTRACT AMOUNT ▶ EUR 14 million

START DATE ▶ june 2010

FINISH DATE ▶ august 2011

CHARACTERISTICS:

- ▶ Construction of 77.3 km of a oil pipeline - opening up a route, trench channelling, directed horizontal drilling, laying of 14" piping protected by reinforced concrete, reworking of asphalt paving, edge protection, cathodic protection etc.
- ▶ Civil engineering work, pipe laying for extensions to 7 valve stations and the Elche de la Sierra pumping station.
- ▶ Drilling to lay 500 ml of 14" piping inside 20" protection piping, and 200 ml of 14" piping with no protection piping.
- ▶ 6" protection pipe was also laid at both junctions to protect the dual communications pipe.
- ▶ S/API 5L Gr.X-60 14" steel pipe



SPAIN

Murcia and Albacete (Spain)

OIL & GAS

CARTAGENA- PUERTOLLANO OIL PIPELINE





OIL & GAS

ENAGÁS GAS PIPELINES

LOCATION ▶ Madrid, Guadalajara, Soria and Cantabria (Spain)

CUSTOMER ▶ Enagás

PROJECT SCOPE:

Construction and assembly of three gas pipelines (Algete-Yela-Villar de Arnedo-Guriezo-Treto and Zierbana-Treto), 255 km, diameter 30 and 26 inches

EPC AMOUNT ▶ EUR 67 million

START DATE ▶ may 2010

FINISH DATE ▶ december 2013

CHARACTERISTICS:

- ▶ Diameters: 30, 26 and 12 inches
- ▶ Length: 255 km
- ▶ Design pressure: 80 bar
- ▶ Switching stations: 14
- ▶ Directed horizontal drilling, River Duero (330 ml) and River Asón (188 ml)



SPAIN



Madrid, Guadalajara, Soria and
Cantabria (Spain)

OIL & GAS

ENAGÁS GAS PIPELINES





OIL & GAS

GNF FRAMEWORK AGREEMENT

LOCATION ▶ Autonomous communities of Madrid, Castilla y León, Navarra, Catalonia, Andalusia, Galicia, Valencia, Castilla La Mancha and La Rioja (Spain)

CUSTOMER ▶ Gas Natural Fenosa (GNF)

PROJECT SCOPE:

Construction and maintenance of Gas Natural Fenosa's gas distribution network in Spain

ANNUAL AMOUNT ▶ EUR 50 million

CHARACTERISTICS:

- ▶ New routings and polyethylene/steel connections and new incoming gas facilities
- ▶ Routing maintenance services
- ▶ Maintenance of the gas distribution system
- ▶ Emergency work
- ▶ Regular inspections of receiver installations, seals and meter changes



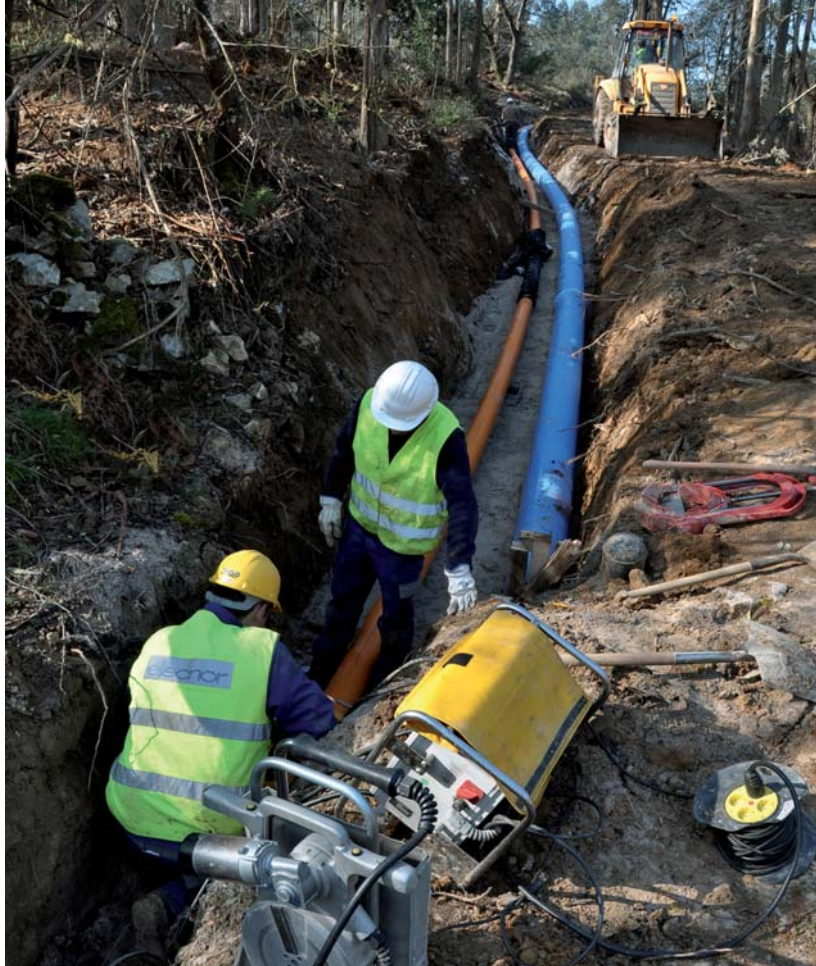
SPAIN

Autonomous communities of
Madrid, Castilla y León, Navarra,
Catalonia, Andalusia, Galicia,
Valencia, Castilla La Mancha and
La Rioja (Spain)



OIL & GAS

GNF FRAMEWORK AGREEMENT





elecnor

OIL & GAS

MÁLAGA GAS PIPELINE

LOCATION ▶ Málaga (Spain)

CUSTOMER ▶ Enagás

PROJECT SCOPE:

Construction and assembly of the Málaga-Estepona-Mijas gas pipeline, length 53 km, diameter 16 inches

AMOUNT ▶ EUR 14 million

START DATE ▶ january 2005

FINISH DATE ▶ march 2006

CHARACTERISTICS:

- ▶ Diameters: 16 inches
- ▶ Length: 53 km
- ▶ Design pressure: 80 bar
- ▶ Switching stations: 4



SPAIN

Málaga (Spain)

OIL & GAS

MÁLAGA GAS PIPELINE





OIL & GAS ZARAGOZA-TORREJÓN OIL PIPELINE

LOCATION ▶ Zaragoza-Torrejón (Spain)

CUSTOMER ▶ Compañía Logística de Hidrocarburos CLH

PROJECT SCOPE:

Construction of section II of the Zaragoza-Torrejón oil pipeline to boost transportation capacity and supplies of oil products in the central zone to a total of 4.5 million m³ per year - length 289 km in the two phases

CONTRACT AMOUNT ▶ EUR 16 million

START DATE ▶ january 2007

FINISH DATE ▶ december 2007

CHARACTERISTICS:

Staking; routing and trenching; discharge, alignment, bending, welding and cladding of pipes; laying and covering pipes in trenches; restitutions; hydraulic tests; cathodic protection for pipes

- ▶ Length: 147 km
- ▶ Diameter: 14 (355.6 mm)
- ▶ Steel quality: API 5L X 52
- ▶ Thicknesses: 7.1 mm, 8.7 mm and 9.5 mm
- ▶ Working pressure: 80 BAR
- ▶ Volume of product to be transported: 4.5 million m³/year
- ▶ Positions of cutout valves: 13
- ▶ Provinces crossed:
 - ✓ Soria: 18 km
 - ✓ Guadalajara: 99 km
 - ✓ Madrid: 30 km
- ▶ Horizontal drilling: AVE high-speed rail network and N-II highway
- ▶ Directed drilling: River Henares



SPAIN

Zaragoza-Torrejón (Spain)

OIL & GAS
ZARAGOZA-TORREJÓN
OIL PIPELINE





OIL & GAS **GAVIÃO BRANCO SUDESTE**

LOCATION ▶ Maranhão State (Brazil)

CUSTOMER ▶ Parnaíba Gás Natural (PGN)

PROJECT SCOPE

Engineering, construction and start up of 5 gas extraction wells grouped into 2 clusters, joining them through a double gas pipeline of 6" and the connection of the second cluster to the gas treatment plant through a pipeline of 10. The purpose of this project is to feed the largest gas-fuelled thermoelectric power generation complex in the country, with a capacity of 1,425 MW

AMOUNT ▶ EUR 4 million

START DATE ▶ November 2015

FINISH DATE ▶ May 2016

CHARACTERISTICS:

- ▶ Length
- ▶ 50 valves of 6" and 10"
- ▶ 1,800 metres of stainless steel piping of 1/2"
- ▶ Route of 20 metres of minimum width
- ▶ Trench 1.80 metres deep
- ▶ Earth excavation of up to 40 metres high



SOTH AMERICA
Maranhão State (Brazil)

OIL & GAS
**GAVIÃO BRANCO
SUDESTE**





elecnor

OIL & GAS

GAVIÃO CABOCLO

LOCATION ▶ State of Maranhão (Brazil)

CUSTOMER ▶ Parnaíba Gás Natural (PGN)
ENEVA Group

PROJECT SCOPE:

Engineering, construction, start-up and assisted operation of 8 (5+3) gas extraction wells grouped in two clusters, joining them via a 10-inch and 6-inch twin pipeline and connecting the second cluster with the Gavião Branco energy production station via a 16-inch pipeline. In addition, the expansion and modification of the Gavião Branco production station and connections and structure to connect with the future Gavião Caboclo energy production station.

The goal of this project is to feed the country's largest gas thermal power generation complex with rated power of 1,425 MW

AMOUNT ▶ EUR 17 million

START DATE ▶ february 2017

FINISH DATE ▶ n ovember 2017

CHARACTERISTICS:

- ▶ 2 new 13.5 kV power lines, 2.4 km in length, and addition of 13.5 km phase
- ▶ Use of 32 tonne drilling machine employing a non-destructive method on 500 m of gas pipeline
- ▶ 1,850 16 inch welds
- ▶ Installation of 420 tonnes of valves, flanges, reductions, etc.



SOTH AMERICA
State of Maranhão (Brazil)

OIL & GAS

GAVIÃO CABOCLO





OIL & GAS

REFUERZO PRESIDENTE KENNEDY

LOCATION ▶ Duque de Caxias-Rio de Janeiro (Brazil)

CUSTOMER ▶ CEG-Compañía Distribuidora de Gas de Rio de Janeiro (GNF)

PROJECT SCOPE:

Construction of natural gas supply system, 20" steel, 16 bars of pressure, to back up the current 16 bar high-pressure metropolitan system in Rio de Janeiro

CONTRACT AMOUNT ▶ EUR 22 million

START DATE ▶ april 2013

FINISH DATE ▶ july 2015

CHARACTERISTICS:

- ▶ Total length 20.5 km in the urban area of Duque de Caxias, Belford Roxo and Rio de Janeiro
- ▶ Construction of an RMS in the Pilar district of Duque de Caxias
- ▶ RMS built over an area of 2,108 m²
- ▶ Seamless supply connection by blocking and fitting the existing piping. Two 14" locking valves and one 20" locking valve are fitted
- ▶ Open trench with a covered section over 8.2 km (112 directed drills from 48 m to 260 m) built using directed drilling
- ▶ Raised routing to cross the Iguazú, Sarapui and Miriti rivers on metal supports



SOUTH AMERICA

Duque de Caxias-Rio de Janeiro
(Brazil)

OIL & GAS

REFUERZO PRESIDENTE KENNEDY





OIL & GAS

MORELOS GAS PIPELINE

LOCATION ▶ Tlaxcala, Puebla and Morelos States (Mexico)

CUSTOMER ▶ Federal Electricity Commission (CFE)

PROJECT SCOPE:

Construction, commissioning, maintenance and operation by a consortium of a 172 km gas pipeline from Tlaxcala State to Morelos State, to transport natural gas to the CFE commission for 25 years

EPC AMOUNT ▶ EUR 220 million (ENO 50%)

INVESTMENT ▶ USD 274.3 million (ENO 50%)

START DATE ▶ december 2013

FINISH DATE ▶ december 2015

CHARACTERISTICS:

- ▶ Capacity: 337 MMPCD
- ▶ Diameter: 16 inches
- ▶ Length: 172 km
- ▶ Design pressure: 76.6 bar
- ▶ Switching stations: 10
- ▶ Regulation and metering stations: 3
- ▶ Control centre: 1 in Mexico DF (another redundant centre in Spain)



CENTRAL AMERICA



Tlaxcala, Puebla and Morelos
States (Mexico)

OIL & GAS

MORELOS GAS PIPELINE





OIL & GAS

SOUTHERN PERUVIAN GAS PIPELINE

LOCATION ▶ "Departamento" of Cusco (Peru)

CUSTOMER ▶ Consorcio Constructor Ductos de Sur (Odebretcht)

PROJECT SCOPE:

Detailed engineering, construction and assistance with start-up of a section of the project known as "Improvements to the country's energy security and development of the Southern Peruvian Gas Pipeline"

AMOUNT ▶ EUR 205 million

START DATE ▶ may 2015

FINISH DATE ▶ december 2016

CHARACTERISTICS:

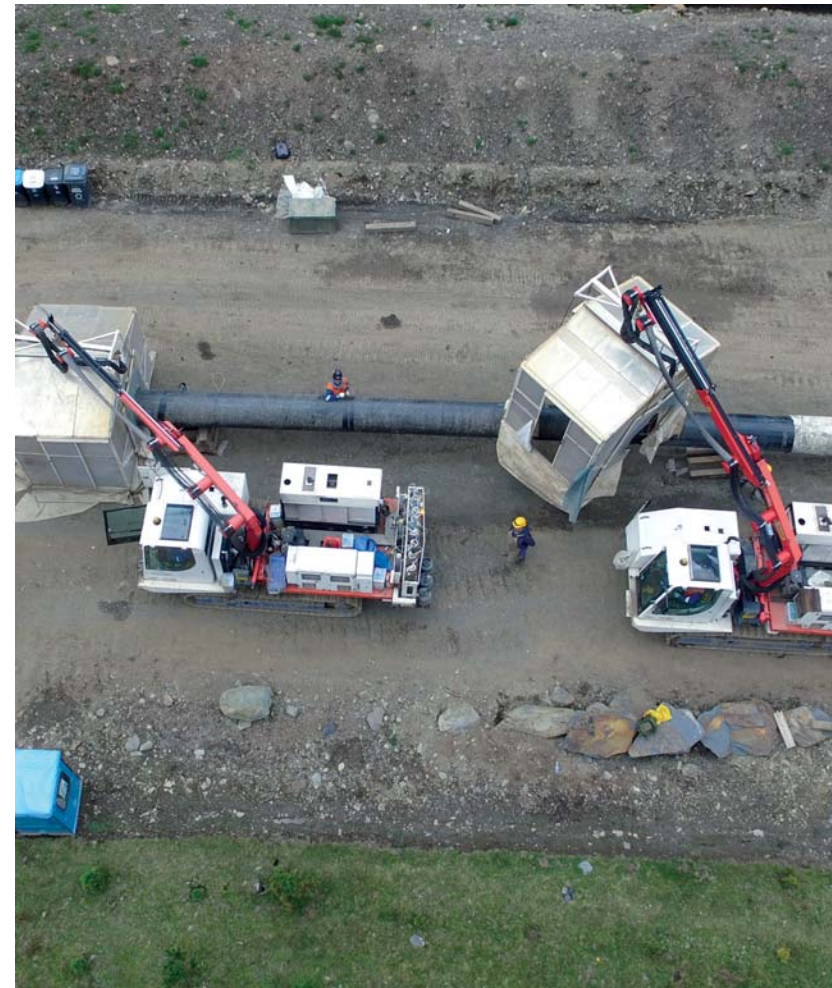
- ▶ Capacity: 500 MMPCD
- ▶ Diameter: 32 inches
- ▶ Length: 108.8 km
- ▶ Design pressure: 150 bar
- ▶ Switching stations: 4



SOUTH AMERICA
"Departamento" of Cusco (Peru)

OIL & GAS

SOUTHERN PERUVIAN GAS PIPELINE





OIL & GAS INFRASTRUCTURE FOR AGL

LOCATION ▶ El Furrial, Monagas State
(Venezuela)

CUSTOMER ▶ PDVSA
(Petróleos de Venezuela, S.A.)

PROJECT SCOPE:

Construction of the infrastructure required to apply the Artificial Gas Lift (AGL) method in wells that have low productivity and/or have stopped flowing naturally, in order to guarantee the production of approximately 24 MBD of crude oil of between 21 and 32° API and to drain the remaining reserves in the deposits at the El Furrial field. In addition, the intention is to build the infrastructure of the new generation wells by laying 68 kilometers of pipe from the producing wells to the distribution manifolds

AMOUNT ▶ EUR 32 million

START DATE ▶ april 2013

FINISH DATE ▶ may 2015

CHARACTERISTICS:

- ▶ Length: 68 kilometers
- ▶ Diameter: 3", 6", 8" and 10"
- ▶ Steel quality: API 5L X 42
- ▶ Thicknesses: 3.92 and 27.94 mm
- ▶ Service pressure: 900 Psi
- ▶ 76,889 welding inches
- ▶ Production volume to be transported: 24,000 barrels per day
- ▶ Horizontal directional drilling: 1,370 m



SOUTH AMERICA

El Furrial, Monagas State
(Venezuela)

OIL & GAS INFRASTRUCTURE FOR AGL





OIL & GAS

PDVSA REPLACEMENT OF OIL PIPELINES

LOCATION ▶ Anaco. Anzoátegui State
(Venezuela)

CUSTOMER ▶ PDVSA

PROJECT SCOPE:

Replacement of 16" Lateral Z piping from the Anaco tank unit to the Anaco 1 valve station, and replacement of 16" "Evengas" piping from the Anaco tank unit to the UDO Anaco sector

AMOUNT ▶ EUR 4 million

START DATE ▶ april 2015

FINISH DATE ▶ april 2016

CHARACTERISTICS:

- ▶ Characteristics: Staking, trenching, transportation, discharge, alignment, bending, pipe welding, laying pipes in trenches and covering, restitutions and hydraulic tests
 - ✓ Length: 10 km
 - ✓ Diameter: 16" (406.4 mm)
 - ✓ Steel quality: API 5L X Gr. B.
 - ✓ Thicknesses: 9.53 mm
 - ✓ Working pressure: 160 Psi.
 - ✓ Horizontal drilling: 11 throughcuts



SOUTH AMERICA

Anaco. Anzoátegui State
(Venezuela)

OIL & GAS

PDVSA REPLACEMENT OF OIL PIPELINES





OIL & GAS

PDVSA TRANSFER LINES

LOCATION ▶ El Furrial. Monagas State (Venezuela)

CUSTOMER ▶ PDVSA

PROJECT SCOPE:

Construction of two 16" 7 km transfer lines from the MPF-5 multiple production facility to EPJ-2 in Jusepín, in PDVSA's Furrial district. Work is carried out in two areas, from MPF-5 to the intersection with the River Guarapiche (Furrial), and from the river to the EPJ-2 unit (Jusepín)

AMOUNT ▶ EUR 6 million

START DATE ▶ march 2015

FINISH DATE ▶ december 2015

CHARACTERISTICS:

- ▶ Detection, staking, trenching, manufacture and positioning of supports, transportation, discharge, alignment, bending, pipe welding, painting, interconnections, laying pipes in trenches and covering, and hydraulic tests.
- ✓ Length: 7 km
- ✓ Diameter: 16" (406.4 mm)
- ✓ Steel quality: API 5L X 42
- ✓ Thicknesses: 14.27 mm
- ✓ Working pressure: 600 Psi
- ✓ Volume of product to be transported: 24,000 barrels/day



SOUTH AMERICA

El Furrial, Monagas State
(Venezuela)

OIL & GAS

PDVSA TRANSFER LINES

