

# References by activity





# References by activity

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## OIL & GAS

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### 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





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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)



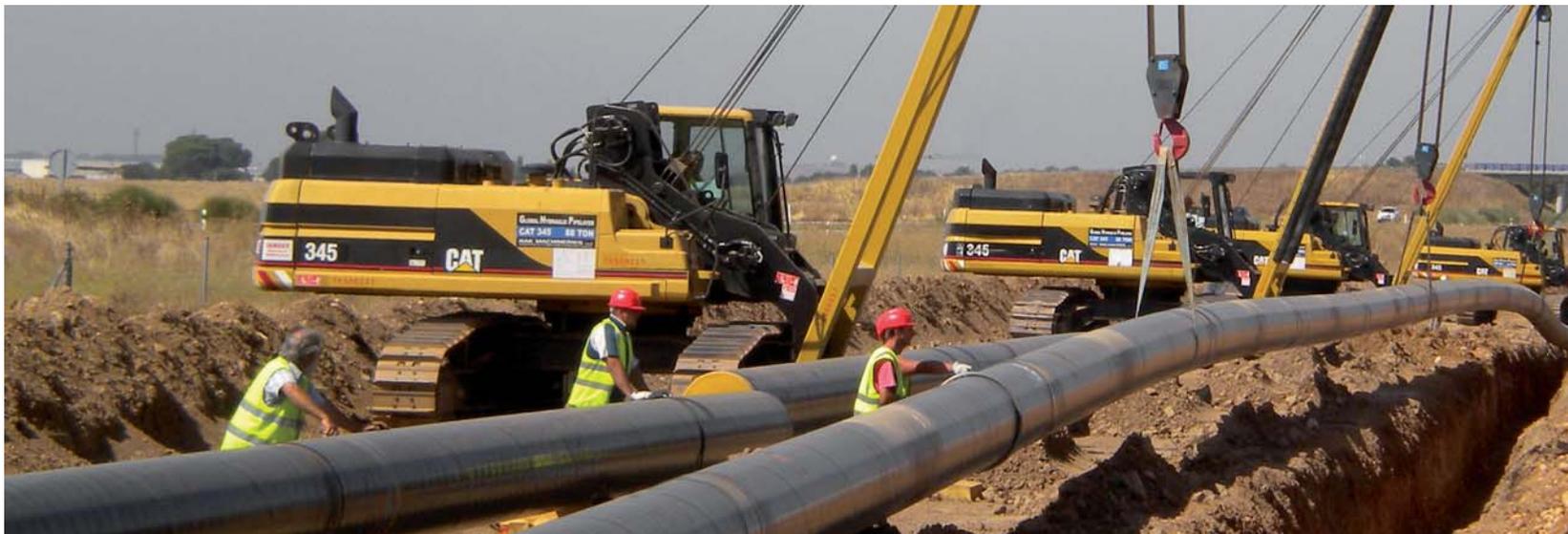
SPAIN



Madrid, Guadalajara, Soria and Cantabria (Spain)

OIL & GAS

# ENAGÁS GAS PIPELINES





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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





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# 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





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## 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 m<sup>3</sup> 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 m<sup>3</sup>/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





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## 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**





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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





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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 m<sup>2</sup>
- ▶ 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, Sarapuí and Miriti rivers on metal supports



SOUTH AMERICA

Duque de Caxias-Rio de Janeiro  
(Brazil)

OIL & GAS

# REFUERZO PRESIDENTE KENNEDY





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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





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OIL & GAS

# SOUTHERN PERUVIAN GAS PIPELINE

**LOCATION** ▶ "Departamento" of Cusco (Peru)

**CUSTOMER** ▶ Consorcio Constructor Ductos de Sur (Odebretch)

## 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:

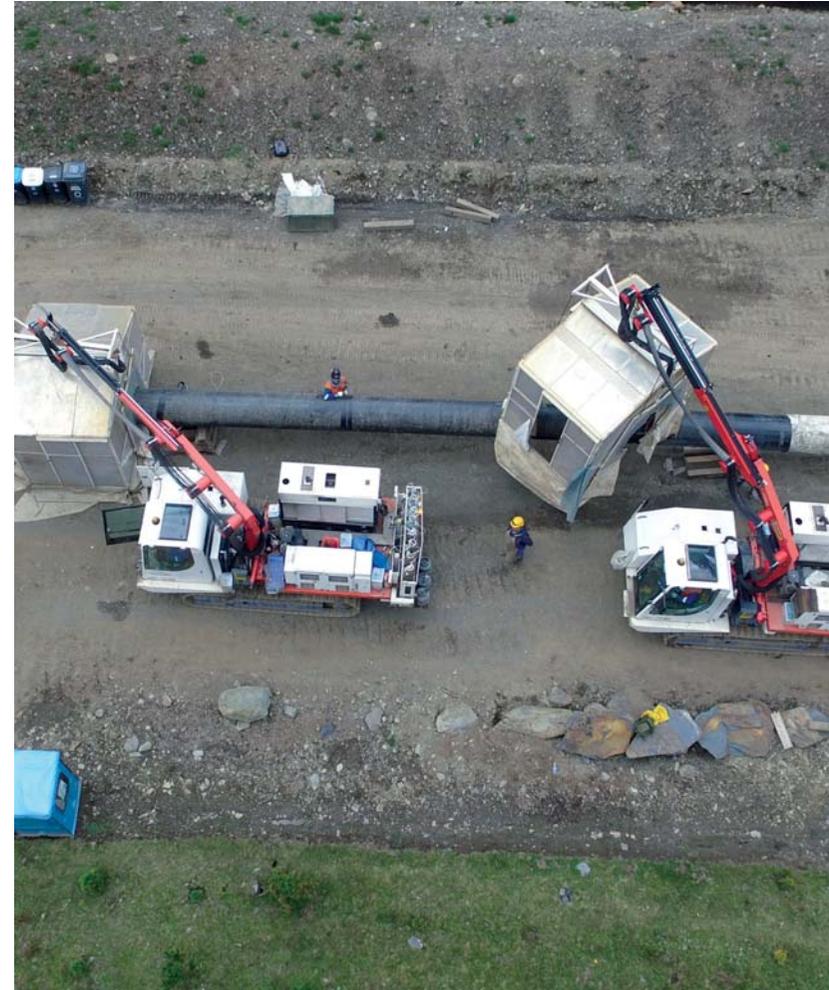
- ▶ Capacity: 500 MMPCD
- ▶ Diameter: 32 inches
- ▶ Length: 108.8 km
- ▶ Design pressure: 150 bar
- ▶ Switching stations: 4



SOUTH AMERICA  
"Departamento" of Cusco (Peru)

OIL & GAS

# SOUTHERN PERUVIAN GAS PIPELINE





## OIL & GAS INFRASTRUCTURE FOR AGL

**LOCATION** ▶ El Furril, 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 Furril 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





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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**





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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

