



Pipelines



PIPELINES

**Proven track record
in gas and fluid transportation
facilities construction.**

Our total-approach model allows to control and integrate each phase of the execution of the project. Managing every detail at the construction site – from logistics to start-up, workforce planning and smart construction techniques – ensures that our clients' expectations are fully met.

Through our wide-ranging experience, we have significantly improved our performance in plant construction for energy industry, due to the acquisition of new technologies, the optimization of construction methodologies, and the extensive range of lessons learned.

A large fleet of construction equipment combined with a sizeable team of skilled personnel headed by experienced project teams qualify us as a strong and reliable partner in the following fields:

- Civil Construction
- Mechanical Erection
- Electrical, Instrumentation and Telecommunication Works
- Pre-commissioning
- Commissioning
- Start-up Assistance



ENGINEERING: FOCUS ON CONSTRUCTION

Our "total-approach" model allows us to control and integrate each phase of the execution of the project. It all revolves around engineering, where constructability and operability drive the project lifecycle.

Our design competences cover:

- pipeline design
- gathering systems,
- oil and gas treatments
- compression and pumping stations,
- power stations
- water treatment facilities
- biogas plants
- green hydrogen production systems
- CCUS systems
- HV electrical transmission systems

Combined with project management, this approach provides solutions in delivering the most complex projects, reduces schedule delays and cost overruns, while complying with safety and quality requirements.

Managing every detail at the construction site – from logistics to commissioning and start-up, workforce planning and smart construction techniques – ensures that our clients' expectations are fully met.

3 engineering centres:

Fano, Italy

Milano, Italy

San Miguel de Allende, Mexico

700,000 hours/year
engineering capacity

in the last 5 years:

25 EPC projects executed

30 compressors installed

3,800 km of pipelines laid





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MEXICO EL ORO – MAZATLÁN PIPELINE

EPC pipeline for TRANSPORTADORA DE GAS NATURAL DEL NOROESTE (TC Energy)

430 km
24 inches

Delivered 6 months ahead of schedule
Welding: up to 302 joints per day with an average final repair percentage rate of 0.6%

El Oro Mazatlan pipeline supplies natural gas from the El Encino – Topolobampo pipeline to the main cities in the State of Sinaloa.

The route, parallel to the Pacific coast, covers a distance of 430 km and includes more than 400 crossings, as well as a challenging mountainous section around the coastal town of Mazatlan.

CHILE / ARGENTINA GASODUCTO ATACAMA

Pipeline Construction for GASODUCTO ATACAMA / GASODUCTO CUENCA NORESTE

595 km
20 inches

- The scope of work included the crossing of the Andes at 5,000m, currently the highest pipeline even built
- Bonatti was responsible for both the Chilean and the Argentinian sections, working in partnership with local contractors





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KASHAGAN, KAZAKHSTAN PIPELINE REPLACEMENT

Replacement of oil and gas trunklines in onshore, swamp and shallow water sections for NCOC

Total personnel at peak: 1,372 people
Total man-hours worked: 3,297,984
Local workforce employed: 90%
Lost time injury frequency: 0,06

- In the winter, the air temperature drops to -30 °C with extreme blizzard conditions
- The water depth ranges from 4 m at Kashagan Oil Field to 0 m near the shore; the sea becomes ice-bound in winter
- The shallow water and swamp section crosses a special environmental region, installation work is not allowed between 1 April and 15 July
- The welding requirements and acceptance criteria were ultra-demanding, with close to zero porosity. Bonatti's ROB.E 10:01 mechatronic welding system satisfied the demand for high quality
- Project completed **3 months ahead of schedule**

PIPELAYING

total length installed: 90.4 km

onshore stretch: 52.2 km (conventional method)

swamp stretch: 8.2 km (push and pull method – impracticable soil conditions)

shallow water stretch: 30 km (push and pull method)

WELDING PERFORMANCE

Pipe material installed: API 5L X65 15.9 MM + CLAD INCONEL 625 3.0 MM (iso grade cra clad cs pipeline 3183 L415)

Welding best performance: 30 (joints per day with BNT ROB.E 10:01 automatic welding system)

Total joints: 1,288 (executed with BNT ROB.E 10:01 automatic welding system)



MOZAMBIQUE ROMPCO LOOP LINE 2

Gas pipeline construction for SASOL

127 km
26 inches

Total personnel at peak: 600 people
Hours worked: more than 1 million
Mozambican Workforce: 86,7%
Safety performance: zero incidents
Pipe transportation: 1,5 million km on public roads without accidents

Key Features:

- The project was executed by ENH-Bonatti, our Mozambican affiliate company, established in 2013. This combination is able to provide a full range of services to the oil & gas industry in Mozambique with strong cooperation with local players
- Logistics was the most important issue of the project: the construction area is 40 km from Funhalouro, which is the only populated town near the living camp

Delivered 3 months ahead of schedule

BAJA CALIFORNIA, MEXICO PROYECTO «EGRO»

EPC of a pipeline and of a compressor station for IENOVA

The EGRO Project is part of Gasoducto Rosarito system: this energy transportation infrastructure will be located in Baja California. The overall system consists of 3 segments with a total length of 302 km and several compression stations: it interconnects with pipeline systems in the United States.

The scope of work includes:

- Tijuana – Mexicali pipeline (200 km / 30 inches)
- 1 compressor station





GERMANY EUGAL PIPELINE

Gas pipeline construction for GASCADE (JV GAZPROM / BASF)

292 km
56 inches

- EUGAL pipeline runs parallel to the OPAL gas pipeline and aims to enhance the distribution of gas in the heart of the European Continent
- Executed with Bonatti SAFE-T-REX 130 pipelayers
- **Delivered 7 months ahead of schedule**



TIMIMOUN, ALGERIA GAS GATHERING

EPC for GROUPEMENT TIMIMOUN

- Extensive rock excavation
- 18 wells
- The Timimoun field is one of the most important areas for development in southwest Algeria, with a strategic importance for the future of the country's energy industry
- Logistics are a critical point: the site is located in a particularly remote part of the Algerian desert, situated between Adrar and Timimoun. Ouhrou, the closest built-up area, is 120 km away and there is no road leading to the site
- Extreme environmental conditions (over 60°C and frequent sand storms)

CANADA TRANS MOUNTAIN EXPANSION PROJECT (SPREAD 5B)

Oil pipeline construction and pre-commissioning for TRANS MOUNTAIN PIPELINE L.P.

- The 5B Spread (85 km) consists of rugged terrain that requires extensive engineering and construction planning
- Bonatti utilizes a trenchless method under multiple watercourse and road crossings to minimize disruption to the surrounding area





GREECE TRANS ADRIATIC PIPELINE

EPC Pipeline for TAP (SOCAR, SNAM, FLUXYS, ENAGAS, AXPO)

365 km
48 inches

- Extremely challenging geographic conditions
- Mountain slopes up to 30°
- This pipeline connects Western and South Eastern Europe to the abundant gas sources of the Caspian basin

BNT ROB.E 10:01: OUR IN-HOUSE DESIGNED AND MANUFACTURED MECHATRONIC WELDING SYSTEM

Cutting-edge technology to deliver top performances

The latest pipeline automatic welding system BNT ROB.E 10:01 is the result of a process of research and study carried out in the field for over 25 years.

Designed to weld pipes of above 10" in diameter, of any thickness and composition, our automated system has been refined at the construction sites to ensure the profitability of our clients.

any composition,
including clad steel pipes

any thickness

diameter from
10" up to 56"



WATCH
THE VIDEO



BONATTI MCL MACHINE: OUR ENGINEERED AND MANUFACTURED IN-HOUSE COATING EQUIPMENT

Coating operations are necessary to achieve a complete pipe-laying workflow: this phase guarantees protection and anticorrosion function to the welded joints.

Due to the experience achieved in our construction sites during decades of executed projects, we were able to analyze in detail the coating activity with the aim of raising the level of quality outcomes.

The total control of coating operations and their industrial reproducibility are a key-element to guarantee the maximum quality of pipeline construction to our clients. We thought about engineering and automation of the coating process: this is how our "Bonatti MCL Machine" was born.

Our "MCL Machine" applies an even, smooth and uniform coating that provides repeatable quality throughout the length of any project. To guarantee uniformity of coating thickness the speed of movement is precisely controlled. Such system has improved features for the monitoring of material parameters, along with automatic checking of the pumping equipment to ensure that the material is being applied at the correct conditions and in the correct mix-ratio, at all times during and after the application.

Using an automated system reduces costs for both working activities and material, whilst providing a significantly safer and green application process to traditional hand applied techniques.

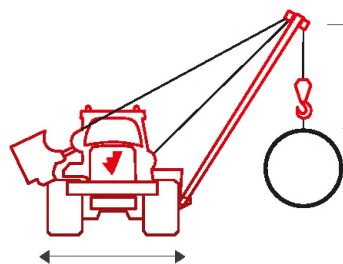


BNT SAFE-T-REX 130: OUR IN-HOUSE DESIGNED AND MANUFACTURED PIPELAYER

A new safety performance industry standard

Our pipelayer optimises the work both at construction sites and at workshops. The BNT SAFE-T-REX 130 ensures the safety of all the staff present at the site.

For this, we have been awarded the IPLOCA Health and Safety Award. Moreover, what makes our pipelayer stand out is undoubtedly its 130-ton lifting capacity.



Optimum weight distribution

40 cm wider
than the main market reference

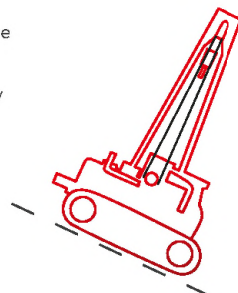
Lower center of gravity
for maximum maneuverability



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**Wireless lift
locking system**
to ensure no tampering
or wiring error during
laying operations

130-ton lifting capacity



Hydrostatic technology on board
for maximum safety in case
of mechanical problems



- 2 work modes** for maximum control of load capacity and laying parameters
- Electro-hydraulic system** to ensure maximum reliability in critical conditions
- Full monitoring** of the skills, qualifications and experience of the operators
- Full control** of machine parameters via satellite any time in any part of the world
- Maintenance facilitated** by machine design
- Unique dashboard** to control every machine parameter at a glance

www.bonatti.it