

# Plant Construction







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## CONSTRUCTABILITY

We review project processes from the pre-construction phase.

The effective integration of construction knowledge into design, planning and field operations activities allows us to achieve the overall project objectives in compliance with time, accuracy, QA/QC and HS&E requirements.

## EXECUTION

Through our wide-ranging experience, we have significantly improved our performance 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
- Mechanical
- Electrical, instrumentation and telecommunication
- Pre-commissioning and commissioning
- Start-up assistance





**10,000**

**EMPLOYEES  
WORLDWIDE**

**4**

**continents**

**70**

**years in  
Oil & Gas**



**R e v e n u e s : 7 9 0 \***  
2018  **MILLION EURO** \* forecast

**Single Plant  
Construction up to**

**400 million  
euros**

**own equipment value:**

**200 million euros**



# HSE

Bonatti's primary purpose is to run projects with the highest HSE standards. Continuous training ensures that staff are up-to-date with the latest HSE standards and regulations.

Bonatti's HSE culture is communicated top-down, from top management to workers on site.

The core element of our HSE Policy states:

**"All Bonatti's employees and the employees of our subcontractors are entitled to, and indeed have the responsibility to stop work if they feel that such work is being performed under unsafe or potentially hazardous conditions."**



# Quality

Bonatti's goal is the constant performance improvement in accordance with the ISO 9000 regulations, which currently represent the state of the art in the field.

Bonatti is certified in accordance with:

- ISO 9001 quality management system
- OHSAS 18001 safety & health management system
- ISO 14001 environmental management system
- ISO 3834-2 welding management system

The latest developed in-company mechatronic welding system Bonatti ROB.E 10:01 is the result of a process of research and study carried out in the field for over 25 years.



## Our local approach



### WORKFORCE

As a multi-national company with a local culture, we are committed to reducing the current 10% expats working locally to under 5% in the next 3 years.

We are dedicated to recruiting and training the workforce locally, and to partnering with universities and educational institutions to help drive the local economy. We aim to create a highly engaging, motivating environment offering targeted training and growth programmes focusing on individuals' needs and goals.

Our ultimate aim is to achieve high local retention rates and to secure the best services and support.

### LOCAL PARTNERS

To compete effectively on the global energy market and to sustain local communities, it is important to source goods and services locally, without ever compromising on quality, delivery, timing or costs.

Our strict supplier selection and monitoring procedure

ensures every supplier meets our business requirements. Moreover, our tendering and procurement procedures ensure local companies are treated equitably during the bid process.

Our goal is to create a solid network of local partners who comply with our stringent qualification procedures and add value to our client's assets.

### COMMUNITY

We are committed to understanding the social and environmental impact of our activities, so as to achieve mutually beneficial coexistence with the communities in the countries where we operate.

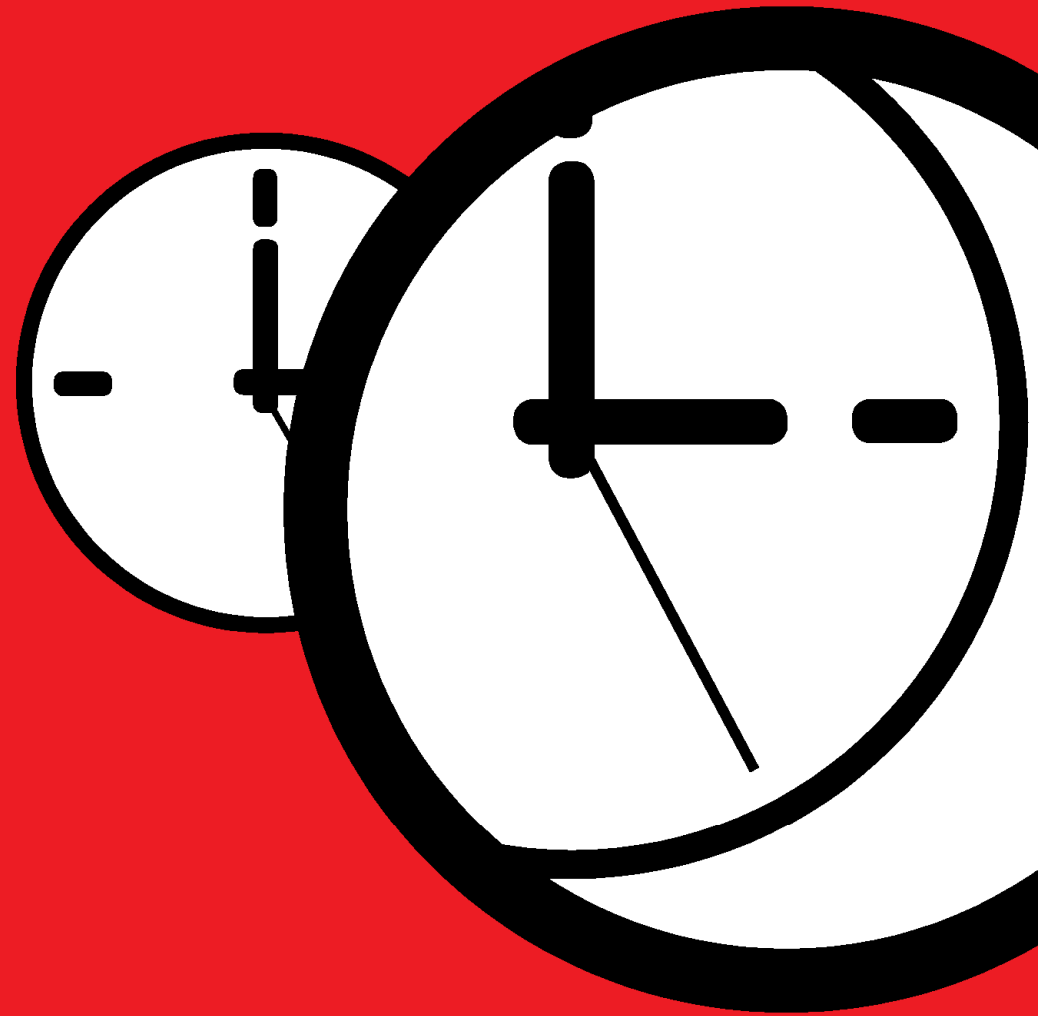
Our strong local rooting consolidates our presence, with positive consequences both for business and for the local communities.

We conduct our activities in full respect of the cultural, religious and ethnic traditions of the local communities, with the aim of contributing to the improvement of the socio-economic conditions of the territory in which we operate.



THE WORLD IS  
**MOVING FAST.**  
AND IS INCREASING IN  
**CHALLENGES.**

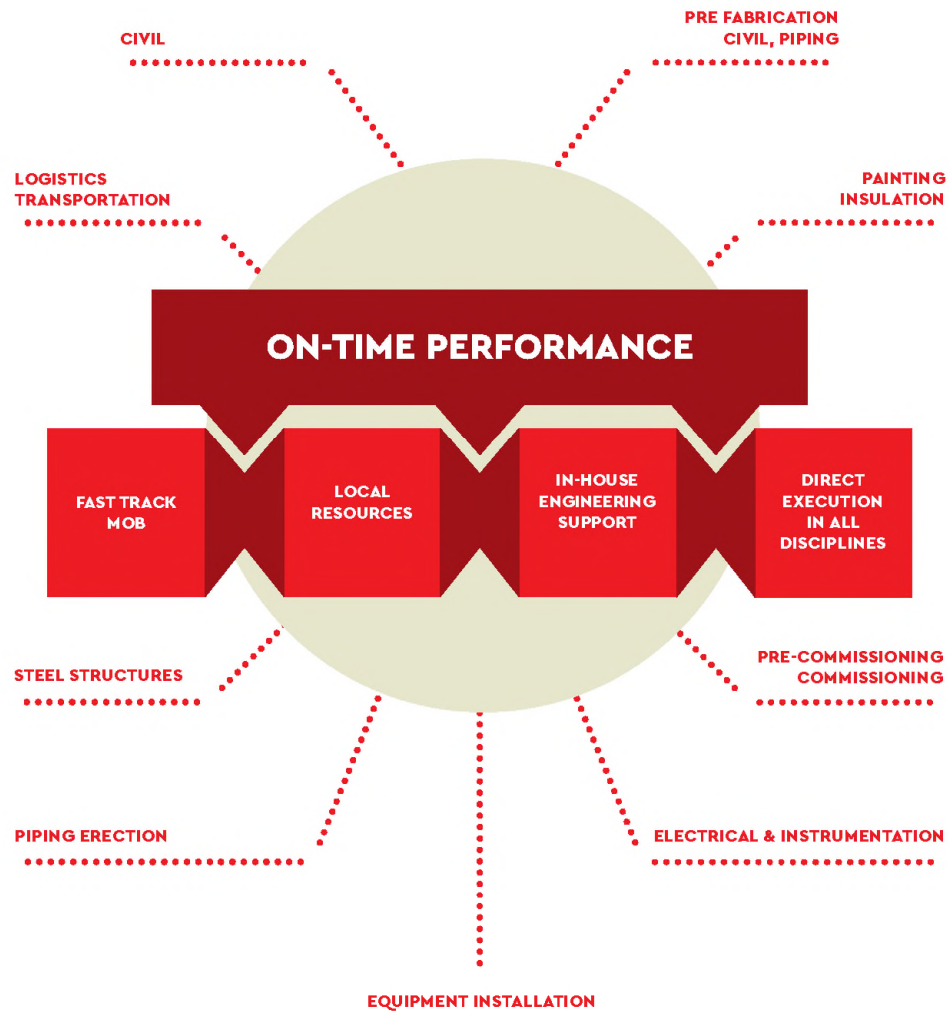
THESE CHALLENGES NEED  
**FAST, FLEXIBLE**  
AND **EFFICIENT**  
**SOLUTIONS.**



THESE SOLUTIONS ARE THE  
**GAME CHANGER.**



# Construction supply chain... we control it





### **GR4 COMPRESSOR STATION, ALGERIA**

**Scope of work:** turnkey construction of a compression station near Hassi R'Mel.

The project will serve to raise the transport capacity of GR4.

The station consists of a filtration section for inbound gas, 4 compression trains of 25 MW each and a metering station, plant utilities, control room and substation.



### **ALRAR FIELD – SEPARATION AND BOOSTING PLANT, ALGERIA**

**Scope of work:** EPC, commissioning and start-up.

**Project highlights:**

- Turbo compressors installed: 8 PGT 25 driven (4 HP + 4 LP)
- Total surface: 500,000 sqm
- Civil works: 30,000 m<sup>3</sup> of concrete
- Mechanical works: construction of equipment 6,000 tonnes, piping 273,000 id (half duplex), steel structures 6,000 tonnes
- Electrical and instrumentation works: pulling of 1,500 km of cables, 2,600 test packages





ALRAR - SEPARATION AND BOOSTING PLANT

**DIRECT PERSONNEL AT PEAK: 2,500 PEOPLE**  
**DIRECT MANHOURS: 5,000,000**

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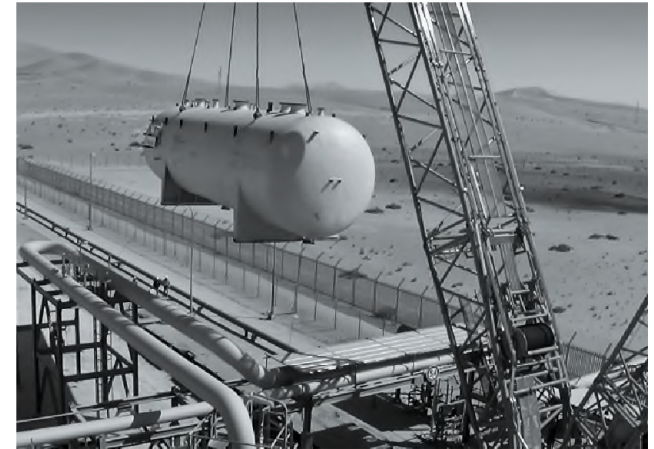


### **OURHOUD OIL FIELD – INCREASED WATER HANDLING, ALGERIA**

Scope of work: EPC and commissioning.

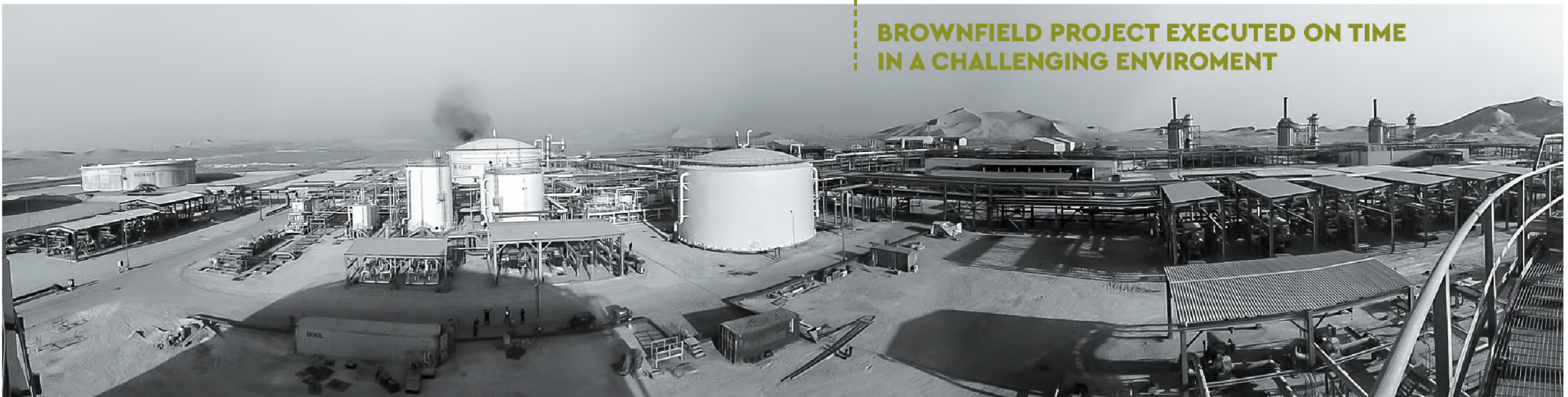
Mechanical works:

- Piping 80,000 id / 1,500 tonnes
- Steel structure 700 tonnes
- Equipment 1,500 tonnes
- Electrical/Instrumentation cables: 150 km
- Pipeline 8,550 m



**DIRECT MAN-HOURS: 1,700,000  
ENGINEERING: 80,000 HOURS**

**BROWNFIELD PROJECT EXECUTED ON TIME  
IN A CHALLENGING ENVIROMENT**





## TUXPAN - TULA: COMPRESIÓN, MEXICO

**Scope of work: EPC of one compression station (3 compressors).**

The project consists of the engineering, procurement and construction of Tuxpan compression station (Cañada Rica, Veracruz).

**Main Equipment:**

- 3 SOLAR Mars 100 turbocompressors
- Air cooler system
- Cyclone separators
- Scrubber unit
- Pig launcher & receiver units
- DCS/SCADA/F&G & TELECOM systems
- Power distribution system, UPS & MCC



## LOS RAMONES I - PHASE II, MEXICO

**Scope of work: EPC of two compressor stations (6 compressors).**

The project consists of the engineering, procurement and construction of Frontera compressor station (Ciudad Camargo, Tamaulipas) and Los Ramones compressor station (Los Ramones, Nuevo Leon).

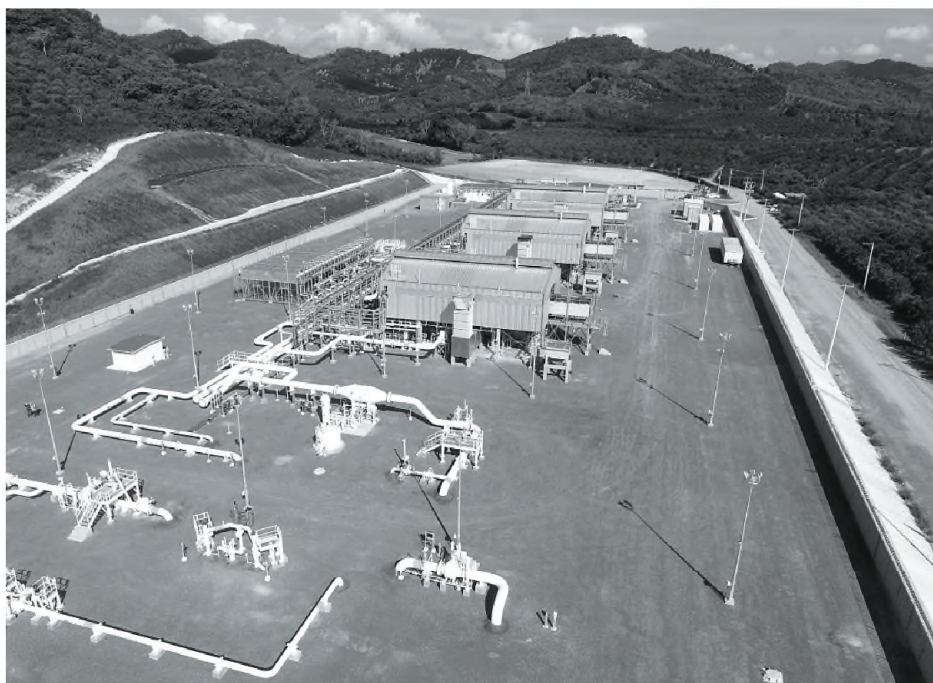
**Main Equipment:**

- Metering and regulating skids: 3 in Ramones, 1 in Frontera
- Horizontal and coalescing filters
- Pig launcher & receiver units
- SOLAR Titan 130 turbocompressors: 2 in Ramones, 4 in Frontera
- Air cooler system
- CAPSTONE microturbine 800 kW: 2 in Ramones, 3 in Frontera
- DCS/SCADA/F&G & TELECOM systems
- Power distribution system, UPS & MCC

**Key Figures:**

- Buildings (main control building, power generation building, auxiliary building, battery rooms, etc...): 8 in Ramones, 8 in Frontera
- Welded inches: 65,000 in Ramones, 63,000 in Frontera
- Kilometers of E&I cables pulled: 200 in Ramones, 280 in Frontera

The successful completion of this project in 24 months proves Bonatti's capacity to deliver complex fast-track EPC projects in full compliance with quality and HSSE requirements.











## **OIL PRODUCTION CENTRE OF BIR REBAA NORTH (BRN), ALGERIA**

**Scope of work:** Mechanical Erection, Electrical and Instrumentation, Painting and Insulation Works for the Second Oil Separation and Treatment Train in the Bir Rebba North Plant.

The Plant, located in the Sahara Desert, gathers hydrocarbons from one of the most important Algerian fields: it includes gas oil separation, oil stabilisation and desalting facilities. In the same plant Bonatti has executed the installation of a 300 cubic metres desalter in one of the oil processing trains.

## **ALRAR POWER STATION, ALGERIA**

**Scope of work:** The project consists in the installation of a cycle power station on an EPC turnkey basis.

The plant is made up of three gas turbine generators rated 18 MW including the dedicated 66 kV gas-insulated substation.

The Alrar Power Station is situated in south eastern Algeria, where important Sonatrach natural gas and oil fields are located. The Alrar power plant serves both industrial and civil users, contributing to the development of the area.





**BOLASHAK ONSHORE PROCESSING  
FACILITY (KASHAGAN PROJECT):  
ONE OF THE LARGEST OIL & GAS PLANTS  
CONSTRUCTED IN THE WORLD.**

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Agip KCO is responsible for the completion of the first phase of development of the giant Kashagan field, which holds some 35 billion barrels of oil in place and reserves of over 11 billion barrels beneath the Kazakhstan section of the North Caspian Sea.

Bonatti delivered Civil, Mechanical and Electrical, Instrumentation & Telecom works.





## KASHAGAN FIELD DEVELOPMENT - GAS PACKAGE, KAZAKHSTAN

**Scope of Work: Civil and Mechanical Construction – Gas Package (Tr. 1 & 2).**

### Performance:

Bonatti, in consortium with a local general contractor was awarded the contract for mechanical construction of the gas treatment plant area. The oil, condensate, and associated gas is treated and separated at the Bolashak ("future" in the Kazakh language) Onshore Processing Plant, located 40 km north west of Atyrau, Kazakhstan.

- Civil works: 35,000 m<sup>3</sup> of concrete
- Mechanical works: prefabricated erection of piping 6,300 tonnes erection of steel structures 27,000 tonnes erection of equipment 18,000 tonnes
- A semi-automatic painting tunnel (186 m long) has been installed to continue steel structure painting activities during extreme weather conditions



## PRIMARY AND SECONDARY CABLES: 5,800 KM



## KASHAGAN FIELD DEVELOPMENT - ELECTRICAL INSTRUMENTATION & TELECOMMUNICATION WORKS, KAZAKHSTAN

**Scope of work:** electrical, instrumentation and telecommunication installation for oil, gas, sulphur, slug catcher and flaring plants and systems.

### Project highlights:

- Total man-hours: 12,000,000
- Staff at peak: 2,650
- Electrical buildings: 13 (9 substation + 4 satellite buildings)
- Primary and secondary cables: 5,800 km
- Instruments: 12,000 (calibration on 4,000 + items)
- Junction boxes: 2,700
- Electrical cabinets: 220
- Wiring connections: over 380,000



### **CENTRO OLIO VAL D'AGRI, ITALY**

**Scope of work: EPC, plant debottlenecking.**

Civil works: concrete 7,200 m<sup>3</sup>.

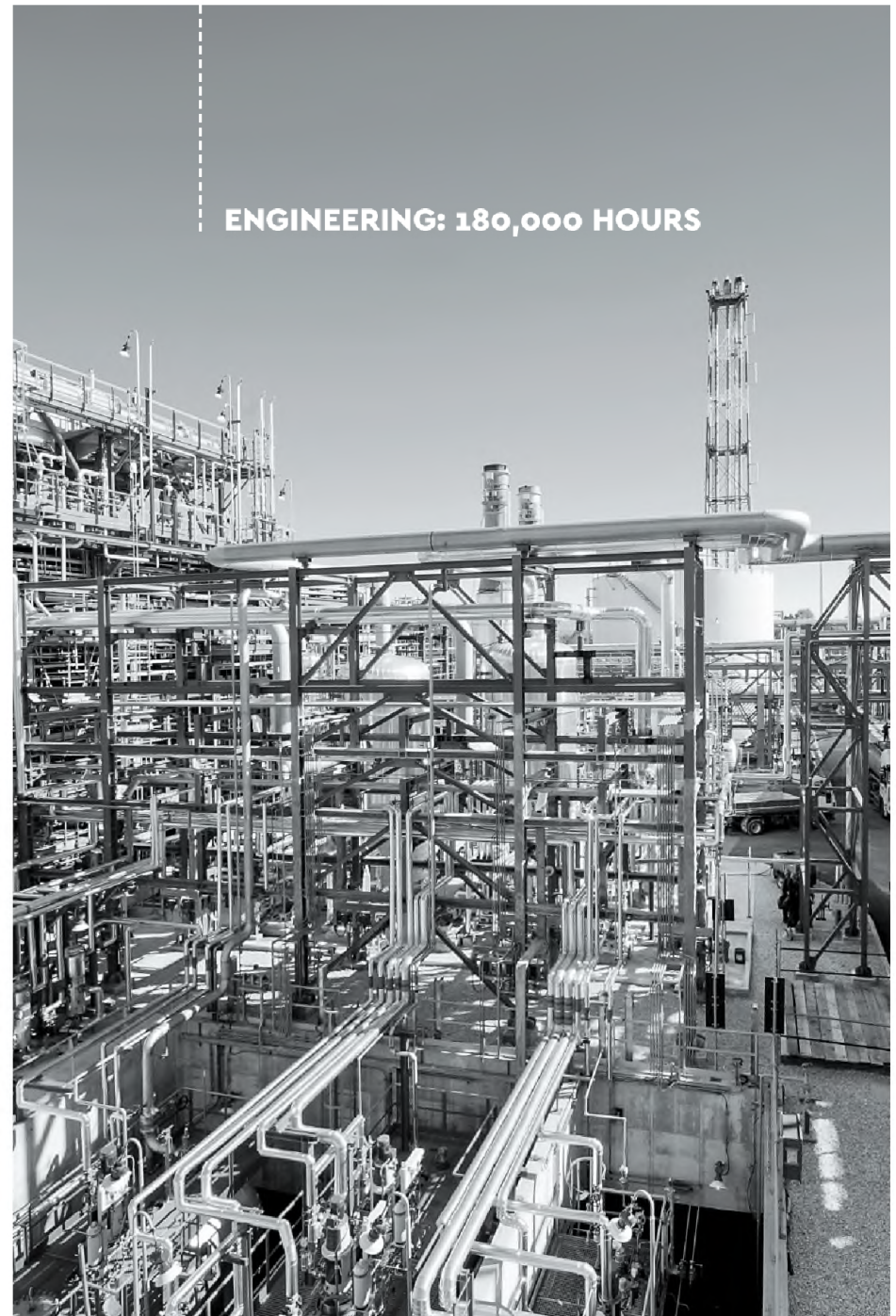
Mechanical works:

- Piping 1,500 tonnes
- Steel structure 2,200 tonnes
- Equipment 3,000 tonnes

New technology installed: Cansolv® unit (amine scrubber and regeneration – Shell patent)



**ENGINEERING: 180,000 HOURS**









## YANBU EXPORT REFINERY PROJECT, SAUDI ARABIA

**Scope of work: construction of utilities package and water-treatment plants.**

The Yanbu Export Refinery has great strategic importance for Saudi Arabia. The refinery will go towards enhance the petrochemical infrastructures of the Yanbu industrial district.

The contract includes the construction of several plant, such as:

- Collection and treatment of seawater for continuous supply to refinery services
- Utilities with steam production and regeneration of process streams
- Treatment of used water

**Performance:**

- Civil works: 50,000 m<sup>3</sup> of concrete
- Mechanical works:
  - prefabricated erection of piping 3,200 tonnes
  - erection of steel structures 4,500 tonnes
  - erection of equipment 4,000 tonnes plus tanks 3,000 tonnes
- Electrical and instrumentation works: pulling of 630 km of cables plus n°4 substation (amine scrubber and regeneration)



## ABU ALI PLANT, SAUDI ARABIA

**Scope of work: upgrade of crude treatment plant.**

The Abu Ali Plant is located on the Saudi Persian Gulf coast, north of the Jubail and Al-Khobar area.

The Project includes an upgrade of the existing Water Injection Pump (WIP) System, the Saltwater (produced water) Disposal System and the Distributed Control System (DCS/SCADA) located in the existing Abu Ali Plant.





## MELLITAH COMPLEX, LIBYA

**Scope of Work:** civil, mechanical, electrical instrumentation and construction works for the NC41 gas and sulphur removal facility.

The Mellitah Complex is located 100 km west of Tripoli, and gathers oil condensate and gas from the Wafa desert plant and the Sabratah platform. This plant mainly consists of gas, liquid and sulphur extraction units and in addition, storage facilities and jetty.

**Project highlights:**

- Civil works: 30,000 m<sup>3</sup> of concrete
- Mechanical works: construction of equipment 11,000 tonnes, piping 6,000 tonnes, steel structures 8,000 tonnes
- Electrical and instrumentation works: pulling of 600 km of cables and carrying out 5,000 loop checks



## MELLITAH GAS COMPRESSOR STATION, LIBYA

**Scope of work:** EPC/Lump Sum Turnkey Project for 5 turbo - compressors.

Each unit is composed of a GE MS 5002-D gas turbine, equipped with a DLN combustion system driving two GE centrifugal compressors, model BCL 455 and BCL 356. The gas plant includes a Wafa gas receiver and exhaust gas heat recovery system for steam production.

The Gas Compression Plant is able to deliver 8 billion cubic meters of natural gas per year to Italy at a pressure of 150 Bar.





## MLN FIELD GAS CAPACITY INCREASE PROJECT, ALGERIA

**Scope of work:** the project consists in engineering, procurement, construction, pre-commissioning, commissioning and assistance to start-up.

**Project highlights:**

- Installation of 2x37,5 mmscfd compressors
- 1 dehydration train and related systems
- Works executed in brown field
- Concrete: 1,700 m<sup>3</sup>
- Structures 580 tonnes
- Piping 47,000 id
- Electrical instrument. cables 119 km



## WEST NILE DELTA PROJECT, EGYPT

**Scope of work:** mechanical erection, electro-instrumental works, telecommunications and fire-fighting systems, commissioning activities.

**Project highlights:**

- Cables trays 125 km
- Cables 1,700 km
- Connection boxes 1,500
- Mechanical erection:
- Structures 800 tonnes
- Piping 20 km
- Piping spools 9,800





## ZOHR FIELD DEVELOPMENT, EGYPT

**Scope of work: electrical and instrumentation works, telecommunication, fire and gas equipment.**

The Zohr gas field is an offshore natural gas field located in the Egyptian sector of the Mediterranean Sea. The field is estimated to lie in an area of 100 square kilometers (39 sq mi) and it is located at a depth of 1,450 meters (4,760 ft). The field is the largest ever natural gas find in the Mediterranean Sea.

### Project highlights:

- Cables 1,620 km
- Instruments 2,389
- Lighting system equipments 2,124
- People at peak 1,000
- Egyptian workers 99%
- Fast-track project





## WAFA AREA, LIBYA

**Scope of work: implementation of the Inlet Gas Compressor Station (IGCS) and 9 additional oil and gas production wells.**

Two independent EPC projects are progressing in Wafa site in the Libyan Western Desert remote area. Both projects aim to maintain the production level, against the natural wells depletion.

The IGCS is boosting the gas arriving from the wells to the existing treatment plant by the installation of four (4) new compressor units driven by four (4) Frame 5 GENP gas turbine.

Nine new additional wells will be also connected to the existing gathering via new flow lines and two trunk lines. Process and operational control will be integrated in the existing Plant Control System by expanding (hardware and software) the actual in operation.

# A short list of Bonatti's main equipment

## Q. ty/ Type of Equipment

4	Tracked Cranes 200-350 tons
75	Cranes from 16 tons up to 150 tons
10	Tower Cranes
70	Sandblasting & Painting Equipment
120	Motor Driven Compressors
208	Power Generator Sets
34	LP & HP Hydraulic Test Pumps
79	Dewatering Pumps
30	Heavy Tractors
25	Semitrailers
94	Multipurpose Trucks
27	Buses 4X4 & 4X2
16	Dumpers Trucks
300	Off-road Pick-up & Vehicles
200	Cars
34	Fork Lifts
145	Pipelayers up to 90 tons
34	Pipe Bending Machines up to 60"
32	Paywelders for Automatic Welding
100	Crawled and wheeled Pay Welder for manual welding
180	Motor Welding Machines
1000	Electrical Welding machines
30	Dozers, Motor Gradeys, Loaders, Rollers
50	Excavators
31	Jack Hammers
31	Soil Compactors
7	Rock Drills
10	Crushing Plants & Self Propelled Crusher
10	Padding Machines
32	Motor Vehicles up to 50 tons
72	Internal Clamps up to 60"
42	Internal Mandrels up to 60"
24	Bevelling Machines up to 60"
37	Concrete Mixed Trucks
9	Concrete, Asphalt and Soil Laboratory
36	Man Lifting Platforms
4	Self-Lift Platforms
16	Water Treatment Plants
10	Batching Plants





PROVIDING FAST, FLEXIBLE  
AND EFFICIENT SOLUTIONS  
MEANS WINNING CHALLENGES.

**WE JUST DO IT.**





**[www.bonatti.it](http://www.bonatti.it)**

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