catalanade
PERFORACIONS

Serving drilling EXPERTISE

- **HDD** - *Horizontal directional drilling*
- **APPROACH** - *Land-sea connections*
- **NEODREN®** - *Seawater intakes*
- **VD** - *Vertical drilling*
- **MINERAL EXPLORATION**
- **GROUND RESEARCH**
- **PROFESSIONAL SERVICES**
- **EPC PROJECTS**

catalanade
PERFORACIONS

Technicians specialised in drilling.

Catalana de Perforacions SA
is a Spain-based contractor
founded in 1968 and integrated in
the **Aquacenter®** holding group.
Specialised in water-well and horizontal
directional drilling.

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2 parallel horizontal directional drillings for installation of a HDPE OD500mm sewage pipeline coupled with a HDPE OD250mm water pipeline in Sagrada Familia temple (Barcelona).

HDD HORIZONTAL DIRECTIONAL DRILLING

A QUICK, COST-EFFECTIVE AND ECO-FRIENDLY SOLUTION FOR INSTALLING UTILITIES.

CATALANA DE PERFORACIONS SA pioneered the implementation of this technology nationwide when imported this know-how into the Spanish market.

This is a quick, clean and eco-friendly technique that allows the installations of utilities such as water, gas, electricity and communications as well as other services under water table such as sea drains, systems for beach recovering and outfall renewal.

ADVANTAGES

- Effective, as it does not require trench excavations nor exert any influence over pedestrians and vehicles, minimising noises and stress.
- Eco-friendly, as it does not exert any influence over natural biotopes nor surface life.
- Quick, since it requires less time to get permits and reduces critical works, thus yielding more than other techniques.
- Equipment is compact, modular and can be mobilised easily across small urban areas.
- Allows the installation of pipelines while keeping drilling layout under control and reaching large lengths. Orientation is real-time monitored by steering systems with cent-metrical accuracy.
- Allows drilling parabolic layouts.
- Does not generate traffic cut-offs, not bothering inhabitants.
- Minimises environmental impact.
- Guarantees occupational health and safety for workers.
- Reduces work schedules and thus project costs.

CHANNEL CROSSING

DRILLING UNDER PARKS

CROSSING OF BUSINESS AREAS AND INDUSTRIAL ESTATES

DRILLING UNDER METRO LINES

SLOPE DRILLING

CROSSING OF HIGH-TRANSIT WAYS

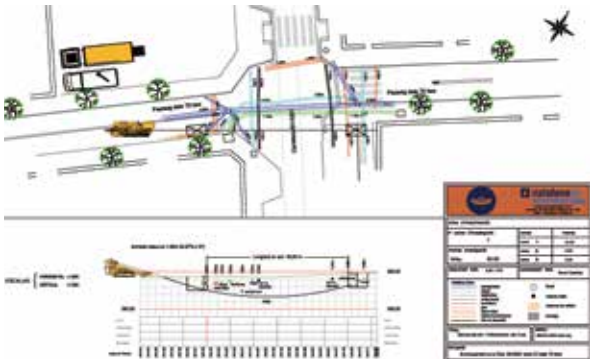
CROSSING OF HIGH-TRAFFIC ROADS

CROSSING OF BIOTOPES

APPLICATIONS

- River crossings
- Canal crossings
- River crossing with riprap
- Drilling under parks
- Crossings under buildings and industries
- Crossings for underground transport systems
- Crossings under biotopes
- Slope drilling
- Crossing under protected trees
- Crossing under stairways
- Pas de diversos camins paral·lels transitats
- Crossing under several streets
- Concrete injection
- Soil decontamination
- Fluid injection into the subsoil

HDD for HDPE OD1400mm pipeline installation at Cartagena desalination plant.



1- Preliminary study

2 - Equipment mobilisation

3 - Pilot drilling

4 - Steering systems

5 - Reaming

6 - Drilling mud recovery and recycling processes

7 - Polyethylene butt welding

8 - Pipe installation

HDPE OD1000mm seawater intake at Santa Eulalia des Rius (Ibiza) desalination plant.

APPROACH

LAND-SEA CONNECTIONS

THE HORIZONTAL DIRECTIONAL DRILLING TECHNIQUE IS COMMONLY USED TO EXECUTE SEAWATER INTAKES AND OUTFALLS

The horizontal directional drilling technique is commonly used to execute sweater intakes, outfalls as well as land-sea connections (or approach connections). As it is an underground methodology, it does not require working offshore, avoiding hard weather conditions but also protecting high-value biotopes.

ADVANTAGES

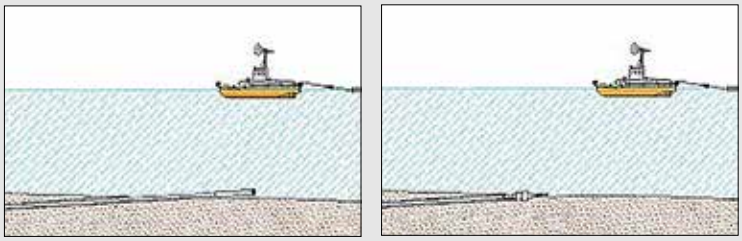
- Effective, as it does not require excavating trenches both by the seashore and offshore, areas where it is much more difficult to perform tasks.
- Eco-friendly, as it does not exert any influence nor damages over natural biotopes, flora and fauna.
- Quick, as it requires less paperwork and minimises critical tasks, achieving a high work yield.
- Equipment is compact and modular.
- Allows pipe installation, keeping the drilling layout under control and reaching remote points, since its orientation is controlled by steering systems with cent-metric accuracy.
- Allows drilling parabolic layouts.
- Minimal environmental impact, as it does not affect flora and fauna. No influence over coastal landscape.
- Guarantees occupational health and safety of workers.
- Reduces work schedule, thus minimising project costs.

APPLICATIONS

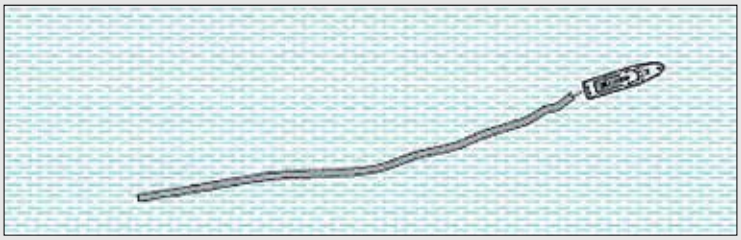
- Land-sea connections
- Oil and gas pipelines
- Outfalls
- Intakes
- Fluid injection into offshore geological formations

PIPELINE INSTALLATION PROCESS

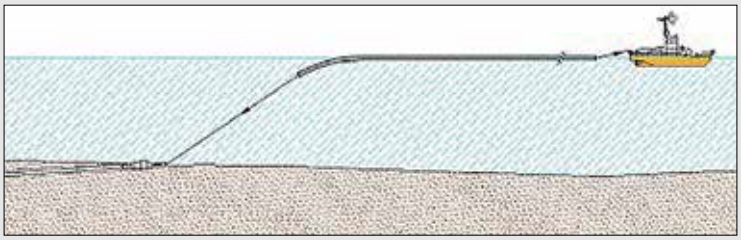
1 - Drilling head appearing offshore / Reaming operations



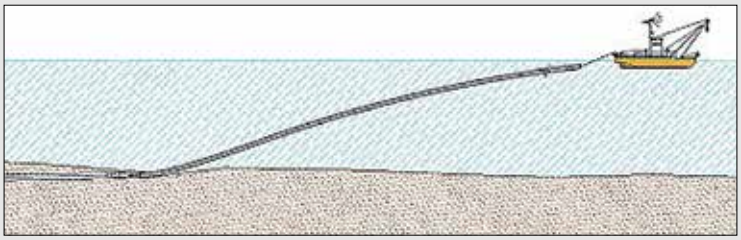
2 - Pipeline transport offshore



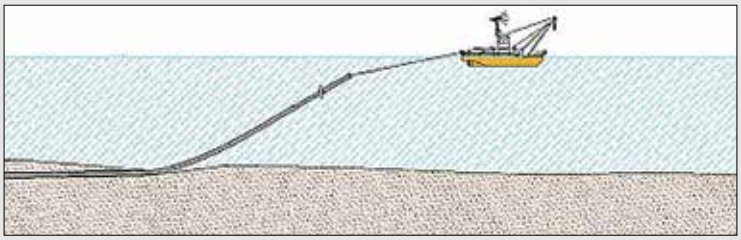
3 - Pipeline end connection



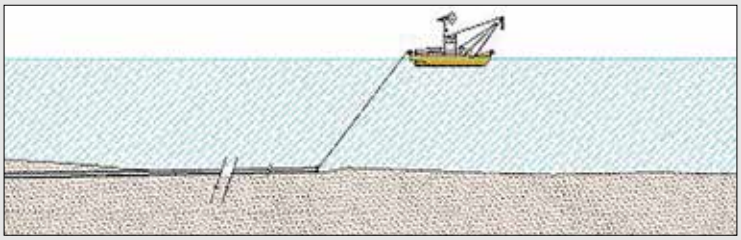
4 - Introduction of pipeline into the hole



5 - Pipeline is no longer on the surface but completely installed inside the hole



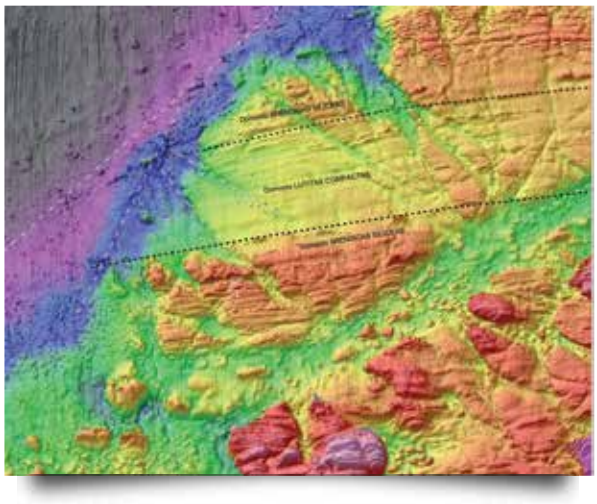
6 - Pipeline on service



1- Preliminary study

This first step seeks soil characterization and risk minimization through studies such as:

- Marine survey: non-invasive technique that allows soil characterisation leading to minimising geological risks as well as identifying potential utilities installed underground across the surrounding area.
- Topography and bathymetry survey
- Electrical tomography survey
- GPR survey



2- Execution

Performed through horizontal directional drilling, following the same steps:

- Pilot drilling
- Steering systems
- Reaming process
- Polyethylene butt welding

3- Pipeline installation

Pipeline is installed pulling towards the coast. In other words, pipeline is taken offshore, connected to the train of roads over the seabed and pulled into the tunnel toward the entry pit.

The pipeline goes smoothly through the tunnel thanks to the mud suspension, remaining finally without tensions, defects and losses of shape.

NEODREN®

SELF-DEVELOPED SEAWATER INTAKE SYSTEM FOR MEETING HIGH-QUALITY WATER DEMAND

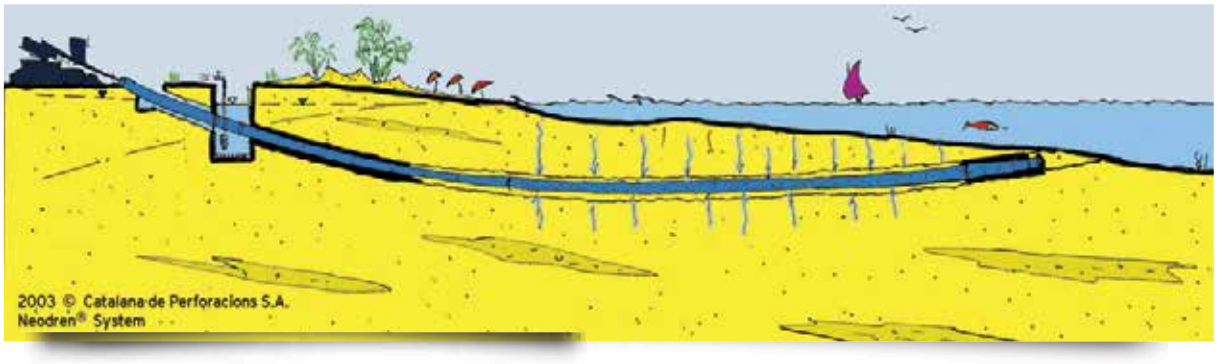
SEAWATER INTAKES THROUGH HORIZONTAL DIRECTIONAL DRILLINGS

Neodren® is a seawater-intake system developed by Catalana de Perforacions SA in order to provide high-quality water in places where they lack it.

Neodren® supposes an innovative sweater-intake system as it consists of the installation of horizontal drains in a permeable formation of the marine subsoil with continuous water recharge, and supplies high-quality water with no turbidity and constant flow.

APPLICATIONS

- Desalination plants.
- Freezing processes.
- Fishing farms.
- Touristic resorts.
- Chemical and petrochemical processes.
- Mining plants.
- Heavy oil recovery.



ADVANTAGES

EFFECTIVE

- Supply of high-quality water, minimising purification processes.
- Drains are not affected by sea erosion thanks to their underground location.
- Removal of sweater turbidity.
- Homogeneous temperature of water.
- Continuous sweater recharge.

ECO-FRIENDLY

- Does not produce seawater intrusions onshore.
- Does not affect surrounding flora and fauna
- No excavations on seabed.
- Does not affect freshwater aquifers.

QUICKLY

- Onshore and surface location for equipment with no earthworks required.
- Intake point is placed in a small area.
- Onshore and offshore works are minimised.
- Neither offshore blasting nor dredging operations.

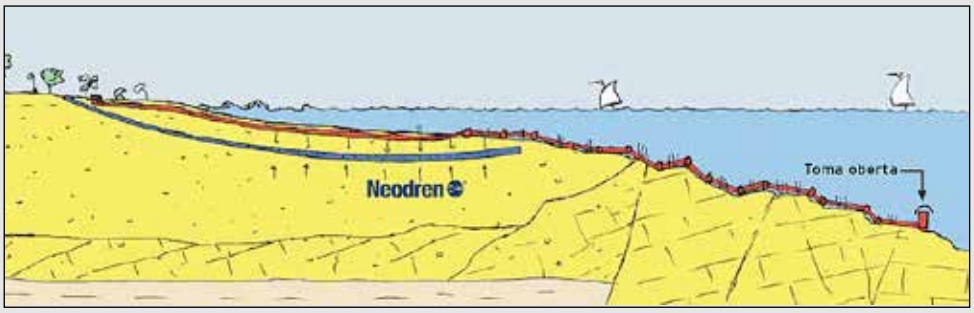
ADVANTAGES AGAINST VERTICAL WELLS AND OPEN INTAKES

Open intakes:

They consist of seawater collection through large intakes installed over the seabed up to -60m depth, where seawater characteristics are fine for treatment although it is exposed to external pollution.

Underwater biotopes are an obstacle when executing excavations and earthworks over the seabed.

Neodren® along with the horizontal directional drilling technique entail a solution for seawater intake construction and installation, especially in steep seabed.

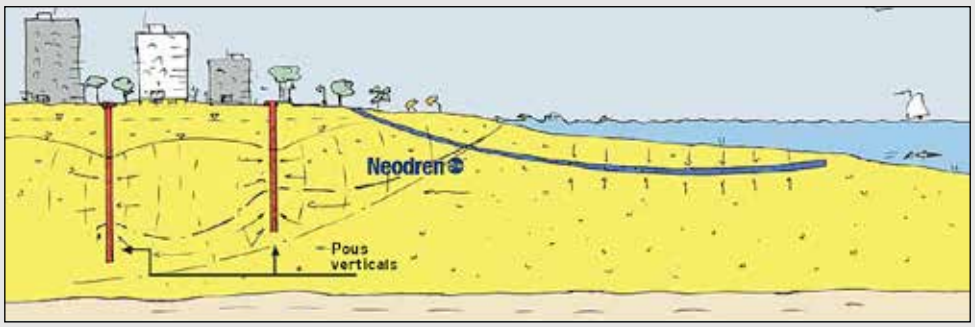


Vertical wells in coastal aquifers

Demographic and urban growths make coastal freshwater aquifers be under high pressure due to water extractions through vertical wells. Their depletion entails intrusion of seawater into them and therefore the freshwater collection system fails.

Water supply for desalination plants via vertical wells placed by the seashore affects the contact surface between continental freshwater and seawater.

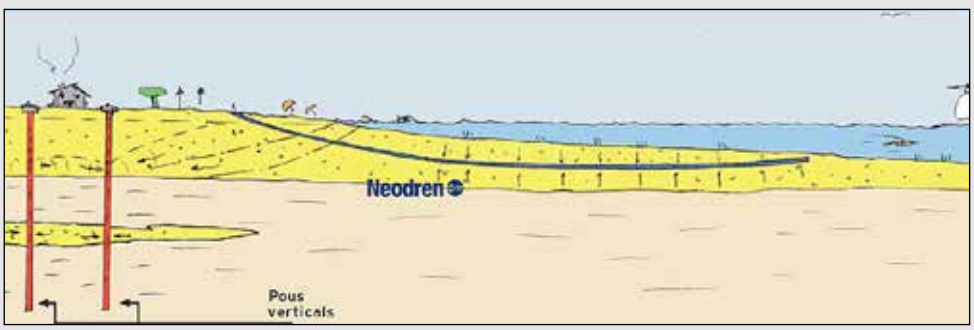
Neodren® avoids freshwater collection and affection, since filtering stretches are exclusively places under the seabed, far away from the fresh-seawater interphase.



Water collection in low-permeability coastal places

Seawater collection in low-permeability aquifers does not supply large water flows. This entails drilling more vertical wells.

Neodren®, as it is installed under the seabed and is recharged continuously, maximises flow-yield.



ENVIRONMENTAL IMPACT

- Small and common site for all drains.
- No influence over freshwater aquifers.
- No damages over surface.
- No annoyances for tourists.
- No alterations of coastlines.
- No offshore excavations.
- No influence over flora and fauna.

WORKING PROCESS

1- Feasibility study

A hydro-geological survey of the area is performed, entailing onshore and offshore geological cartography, bathymetry and borehole campaigns. A pilot horizontal drain is executed to confirm the working hypothesis and perform gauging and chemical tests. Once the drain feasibility is confirmed, number of drains is worked out, placing them either like a fan or in parallel, just to achieve the flow required.

2- Pilot drilling

Neodren® is drilled by means of a directional bit that can drill large layouts within the aquifer stratum from the coastline, not affecting intermediate areas. Electro-magnetic steering systems (MGS) are used to know the situation of the directional bit.

3- Reaming

Pilot hole diameter has to be broaden till reaching the filtering pipe diameter. In this case, reaming is performed pushing towards the sea in order not to affect productive aquifer stretches. Drilling mud can be reused several times, thus optimising the reaming process.

4- Installation of filtering pipe

A (full-of-holes or micro-porous) tubular drain is pulled into the tunnel along the productive stretch, depending on the soil characteristics. This drain is taken to high sea by vessel and connected to the train of rods. Once it has been connected, it is pulled into towards the coast.

5- Cleaning and sealing

Cleaning operations consist of suction of drilling fluids and usage of dispersing agents by means of a high-pressure (>50bar) device that is pushed into the drain. Afterwards, the remaining space between soil and pipe is sealed using sulphur-resistant cement, especially at initial and end points just to avoid water collection through this areas. Doing this, the filtering stretch remains isolated from freshwater intrusions as well as seawater intrusions coming from the drain end.

6- Gauging

Once Neodren® has been finished, gauging test is mandatory to determine the installation yield and collection flow. Water samples are also collected to be analysed.

VD VERTICAL DRILLING

MORE THAN 45 YEARS EXPERIENCED IN DEEP WATER-WELL DRILLING

Since 1968 Catalana de Perforacions SA has turned into a pioneering company in terms of vertical drilling, especially in water-well drilling. After purchasing a double-head rig and having more than 45 years of field experience, Catalana de Perforacions SA is now able to drill in multiple and different soils. This experience is backed by lots of projects executed for public and autonomous administrations as well as developers and individuals.

New trends and conditions in energy industry have increased consumption awareness and led to alternative energy sources such as geothermal. In this aspect, Catalana de Perforacions SA offers turnkey solutions, performing both studies and execution phases.

Out of all vertical drilling applications, Catalana's core business has always been water-well drilling, offering turnkey solutions.

APPLICATIONS

- Lowering of water table in civil engineering projects.
- Wells fo exploitation of geothermal resources.
- Wells for aquifer purification.
- Wells for water injection.
- Piezometers for environmental control.
- Mineral exploration boreholes.
- Wells for cathode protection.
- Drilling in small-sized places.

Other tasks related to vertical drilling:

- Maintenance, improvement and recovery of existing wells.
- Sealing of existing wells and/or special foundations.
- Hydrogeological studies.
- Coring and video-inspection.
- Getting permits required by public administrations.

Rotary percussive drilling

This system uses compressed air to power a down-hole percussive hammer but also to remove detritus and push them out of the borehole. Rotation is given by a drilling head at the same time.
Catalana's rig can reach -800m depth and OD600mm, being also able to work in small-sized places.
This system is appropriate to drill in consolidated soils such as granites, mudstones, gneiss… Reaching even a high drilling speed.

Double-head drilling

Appropriate for non-consolidated soils i.e. high difficulty, since it let drill and case at the same time.
The rig has two drilling heads: one that powers the rods and another one that powers the casing. When drilling in non-cohesive soils (sand, gravel), casing goes before the bit in order to keep borehole walls stable and surrounding strata away from bentonite and other fluids. On the other hand, in cohesive soils casing could not be necessary, drilling just using bit+rods.
This rig can reach up to OD 600mm and is appropriate for alluvial aquifers.

Reverse circulation drilling

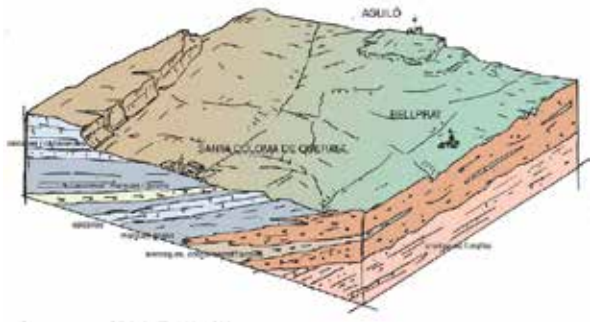
It consists of a rotary drilling system where fluid is injected through the space existing between the borehole walls and the rods, being detritus pushed away through the rods' inner face. Doing this the borehole walls remain stable.
Drilling fluid can be either water or bentonite, depending on soil characteristics.
This system is appropriate to drill in non-cohesive materials such as clays, clayey sand, gravels and so on.

1- Preliminary study

Before executing boreholes it is mandatory to perform a preliminary study.

Firstly, some data are collected at office just to compile information in terms of lithology, stratigraphy, topography, number of existing wells, water table level, potential chemical singularities (natural or human-inducted)… Later on it is performed a field study in which a geological cartography and an assessment of existing installations are carried out.

With all this information it can be elaborates lithological profiles as well as a draft construction proposal.



2- Site

It is necessary to have a site free of obstacles and perform an investigation to identify potential underground services that could affect work development.

In case of working at small-sized sites i.e. a garage, Catalana de Perforacions SA has an small rig that can reach up to -100m depth.

3- Exploration borehole/ Water well

Boreholes are executed following geologist's instructions according to previous hydrogeological research performed. Boreholes are initially drilled at OD 220mm. During execution geologist collect information on soil composition as well as water infiltrations and conductivity in order to elaborate a lithological column coupled with a construction procedure.

Client's needs and data collected during drilling operations are key to design reaming steps.

Water-well drilling in Dubai (UAE). Depth record achieved with -800m.

4- Casing

Depending on the results obtained during previous research, well characteristics will be determined such as sort of casing pipe, slots, gravel filters, sealing…

5- Cleaning and gauging

Once the pipe has been placed into the borehole, the well is cleaned and gauged. Both steps (sort and duration) are performed according to well characteristics.

6- Pumping test

To determine the optimal exploitation flow and/or aquifer's hydrogeological characteristics it is recommended to perform a pumping test, controlling water flow and level by a submersible pump and a sounding line.

"Mina Cabanasses", potash underground minesite located in the Catalan evaporitic orefield and exploited by ICL Iberia (Súria, Barcelona).

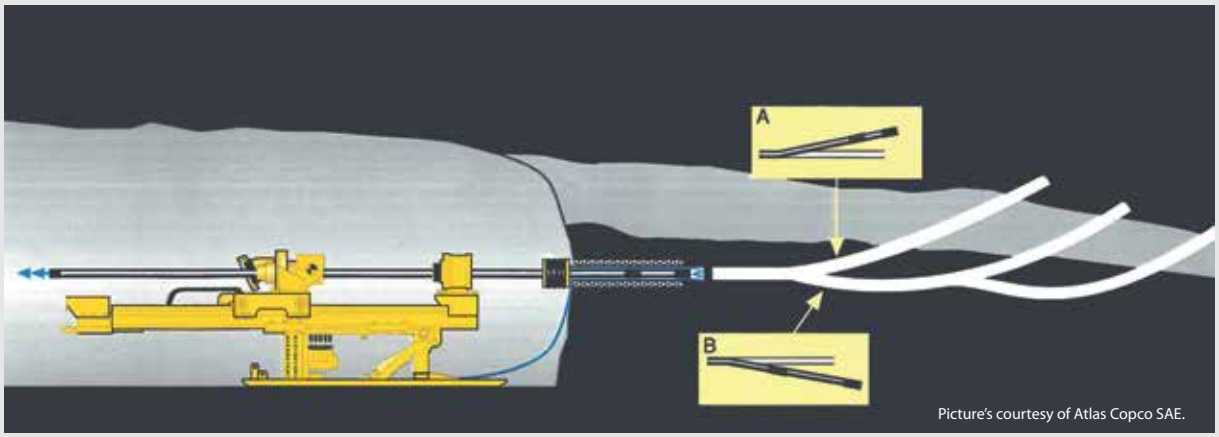


Illustration of the drilling system used.

MINERAL EXPLORATION

EXTENSIVE EXPERIENCE IN BOREHOLE DRILLING IN POTASH MINESITES

For mineral exploration Catalana de Perforacions SA has an underground wire-line coring rig coupled with auxiliary equipment and a team of professionals that could achieve corporate goals under the most challenging conditions.

In addition, to carry out geotechnical investigations Catalana de Perforacions SA has staff and equipment experienced in performing multiple tests such as the Standard Penetration Test (SPT), study of Atterberg limits and stress-strain analysis.

OUTSTANDING PROJECTS

Since 2012 Catalana de Perforacions SA has been executing an underground coring campaign at Mina Cabanasses, owned by Iberpotash SA (subsidiary of ICL Fertilizers).

This campaign is extremely relevant since it supposes the first step in the reserve definition process. This mine is placed in Súria (Barcelona, Spain), in the centre of the Catalan Evaporitic Orefield.

SISTEM AND ADVANTAGES

This drilling procedure consists of executing sub-horizontal boreholes while collecting samples continuously thanks to the injection of salt-saturated water into the borehole by reverse circulation. Each borehole counts with seven or eight diversions, reaching up to 1400m each diversion.

Over the first two years of operations Catalana de Perforacions has collected more than 50.000 metres of high-quality geological samples.

Utilities detection through Ground Penetrating Radar (GPR).

GROUND RESEARCH

SUBSOIL INVESTIGATION SERVICE

The ground research division was established to offer an integrated service oriented to plan, design and minimise risks related to geology, excavation and underground utilities.
The geophysics prospecting techniques suppose a fantastic tool for subsoil investigation, since they are non-invasive and let us identify potential underground utilities as well as make a full subsoil description.

TECHNOLOGY

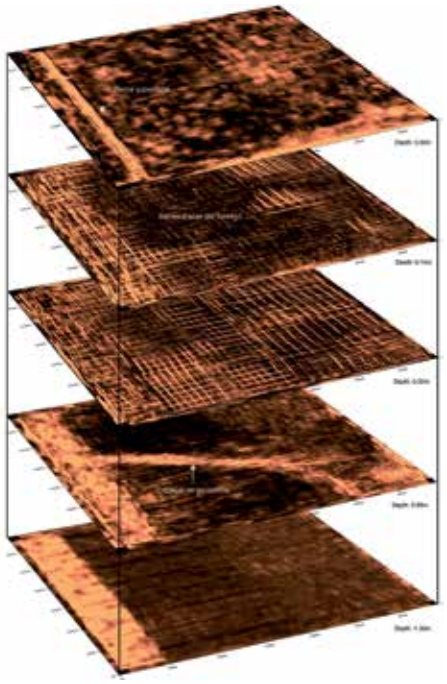
1- GEORADAR

In urban areas there is a very complex underground infrastructure (utilities, foundations…) than could be damaged in case of not having identified them before. Sometimes plans do not show them either, so project safety and feasibility depend on a good preparation upfront i.e. identifying potential obstacles.

The Ground Penetrating Radar (GPR) is a geophysics prospecting technique based on sending out electro-magnetic signals into the ground by means of an antenna. It is an indirect and non-invasive technique as it does not require excavations and interventions in the ground at all.

Changes in the subsoil produce signal reflections that can be detected by the device on surface based on time. This information can be collected and processed by specific programmes.

Its main advantages are promptness, high resolution and high quality up to -3m depth.



Applications

- Identification of artificial objects and utilities.
- Identification of natural phenomena in geological strata.
- Identification of changes in rocks as well as in facies.
- Geological stratigraphy (natural and human-induced).
- Hydrogeology: detection of shallow water table.
- Holes and fractures in Karst dynamic areas.
- Alterations in concrete and asphalts.
- Identification of polluted areas.
- Auscultation of tunnels.

Sort of projects:

Studies for piping by drilling

- Identification of underground utilities and infrastructues that could interrupt the drilling layout.
- Topographical location and position of services.
- Drilling design.
- Elaboration of drilling layout.

Studies for trenches:

- Location and signposting of services.
- Application for trenches both during planning and execution.
- Identification of services that appear in maps.

2- TOPOGRAPHY

All elements that could affect the drilling works (geographic limits, roads, rivers…) are identified upfront.

Before geophysics study topographic works are carried out.

3- BATHYMETRY

Same as topography, it consists of gathering data from seabed or river bed to generate 3D maps that could make the decision-making process easier.

The combination of the sounding line placed in a ship and the double GPS system (one in the ship and the other one on the beach) let technicians register XYZ coordinates by a computer. Later on all data are processed and mapped.

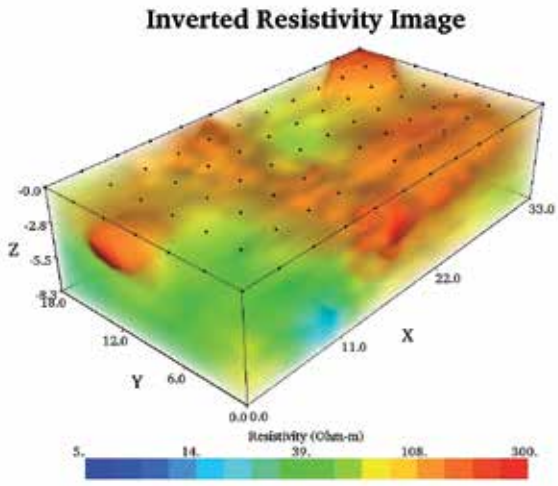
The final result is a record made up with UTM coordinates and bathymetric points.

4- ELECTRICAL TOMOGRAPHY

The electrical tomography technique (or resistivity pictures) can identify subsoil materials based on the distribution of their electrical characteristics.

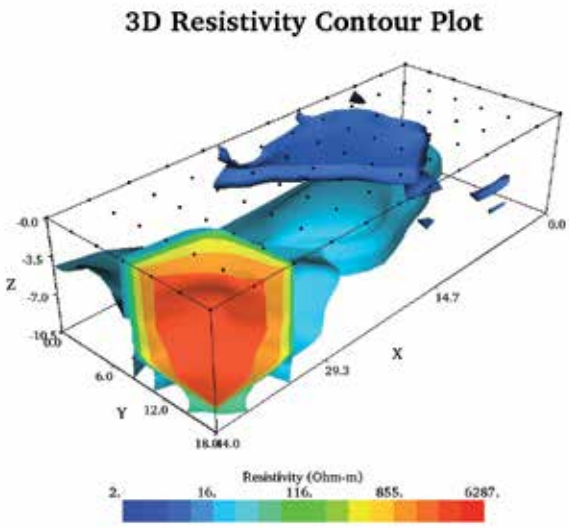
This method consists of injecting an electrical direct current into the ground by means of several electrodes. Characterisation of underground material can be obtained after measuring intensity and voltage. This method is an evolution of the vertical electrical sounding (VES) technique, where a series of resistivity measures can be gathered by combining multiple electrodes.

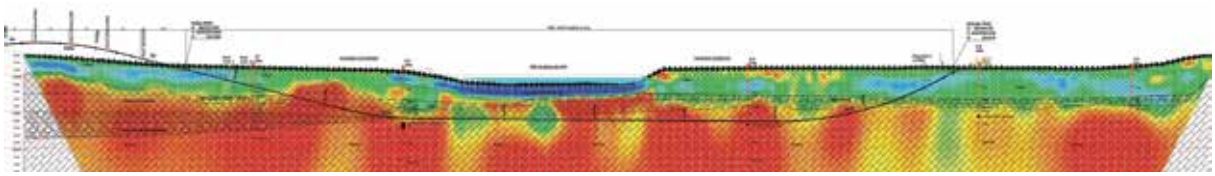
The final results are sections of apparent resistivity at different depths. This data are processed by mathematic algorithms that generate resistivity-depth graphics than can be read both vertically and horizontally.



Applications

- Geological studies, stratigraphic thickness research, rock basin studies…
- Geotechnical investigations.
- Investigations related to civil works.
- Detection of cavities and fractures.
- Hydrogeology. Underground water prospecting.
- Environmental studies. Investigation of polluted areas.
- Tomographic pictures hole-to-hole and hole-to-surface.
- Studies related to drilling and tunnelling works.
- Archeologic studies.
- Prospecting of sea areas.
- Mineral exploration.





5- EXPLORATION BOREHOLES

To achieve and in-depth knowledge of the subsoil, borehole campaigns for geological/geotechnical investigations are normally performed. The most demanded technique is wire-line coring sampling.

Samples are studied by geologists afterwards and even analysed in laboratories if required.

6- SOIL THERMAL RESISTIVITY

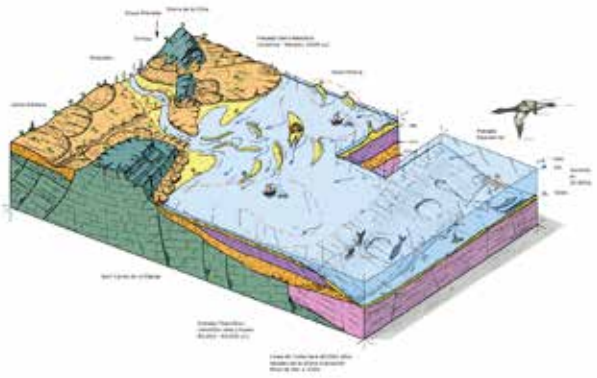
Measuring soil's thermal resistivity is crucial to know how heat exchanges through the subsoil work and how to design them.

Data collection can be performed either on site or in laboratories, being the latter the most recommended since it let elaborate dry-out curves that help technicians map the subsoil.

7- HYDROGEOLOGICAL STUDIES

Hydrogeological studies are based on the analysis of the hydric characteristics of the subsoil in order to know:

- Depth and variations of water table.
- Modelling of water table maps.
- Assessment of aquifers' recharge capacity.
- Definition of aquifer's hydric reserves.
- Studies for underground water exploitation.
- Studies for thermal/sanitation usages of water.



8- CCTV INSPECTIONS

Inspection through video systems is a highly useful tool to keep water-well in good conditions. Thanks to its 360º-panoramic view it can check the whole well layout and facilitate maintenance tasks planning in order to avoid potential incidences.

When drilling in rocky formations, it valuable information on the geologic characteristics.

Field engineers and technicians managing site operations while supervising anti-risks measures.

PROFESSIONAL SERVICES

CONSULTANCY

Catalana de Perforacions SA has a technology-oriented team of consultants highly specialised in developing solutions for environmental engineering as well as exploitation of hydraulic and natural resources.
Out of these services, Catalana de Perforacions SA has extensive experience in the following aspects:

- Elaboration of drafts, projects and occupational health and safety plans.
- Elaboration of technical/economic feasibility studies.
- Elaboration of environmental impact studies.
- Elaboration and modelling of geological, hydrogeological and geotechnical reports.
- Resource evaluation and reserve definition.
- Design and planning of borehole campaigns.
- Technical support during design and execution of HDD projects.
- Site management:
  — Project manajement.
  — Occcupational healt and safety coordination.
- Turnkey projects.
- Paperwork and permits demanded by public administrations.

TRAINING

COLLABORATIVE AGREEMENT WITH UPC IN TERMS OF HDD

UNIVERSITAT POLITÈCNICA DE CATALUNYA
BARCELONATECH
Escola Politècnica Superior d'Enginyeria de Manresa

Catalana de Perforacions SA offers a pioneering post-graduate programme in Spain named "Specialism in horizontal directional drilling" that entails 60 hours training along with the Universitat Politècnica de Calatunya (UPC), in particular with the Manresa School of Mines (Escola Politècnica Superior d'Enginyeria de Manresa, EPSEM). This programme targets mining engineers, civil engineers, geologists… as well as any professional interested in the underground works sector.

This programme provides full insights about this technology such as:

- Design and management of projects that entail horizontal directional drilling tasks.
- Vision of this industry and how to reach labour opportunities within it.

The mining and natural resources department is the only one in Eastern Spain that offers this specialism and is made up with engineers and technicians specialised in performing subsoil investigations. In this competitive context, Catalana de Perforacions SA has decided to trains professionals by combining theoretical lessons with a practical background i.e. putting them in touch with technologies and equipment normally used in this sort of works.

The collaboration arisen from the university and Catalana de Perforacions SA has become a referent in Spain thanks to its specific an innovative study plan.

SPECIALISED IN-COMPANY COURSES

Almost 50 years of experience in underground works back our market leadership.

Over the last decades the horizontal directional drilling technique has become more and more relevant in civil works, being now key in road crossings and other projects where no external affections could take place.

Multiple companies across Spain have trusted in Catalana de Perforacions SA to train their engineers through our in-company courses in order to solve the lack of knowledge and give an effective response when facing extremely challenging projects.

MANPOWER

In order to meet the global demand in terms of dynamism and flexibility, Catalana de Perforacions SA offers a quick and efficient service: manpower mobilisation to execute HDD projects worldwide.

The best asset Catalana de Perforacions SA has is its staff and then the learning curve and experience gained over nearly five decades. As a result, Catalana de Perforacions SA serves its manpower to all those clients that have the right equipment to perform high-difficulty HDD project but no staff experience enough to run them.

In this aspect, Catalana de Perforacions SA has a vast array of steering technicians, surveyors, site managers, mechanics, mud loggers and electricians; who have extensive experience in planning and executing HDD projects and can work with rigs whose pulling capacities range from 12Tn up to 350Tn.

In addition, this technical experience is complemented by an extensive multilingual background, since Catalana's staff is skilled and fluent in Spanish, English, Catalan, French, Arabic, Romanian, Russian and Ukrainian.

EQUIPMENT RENTAL

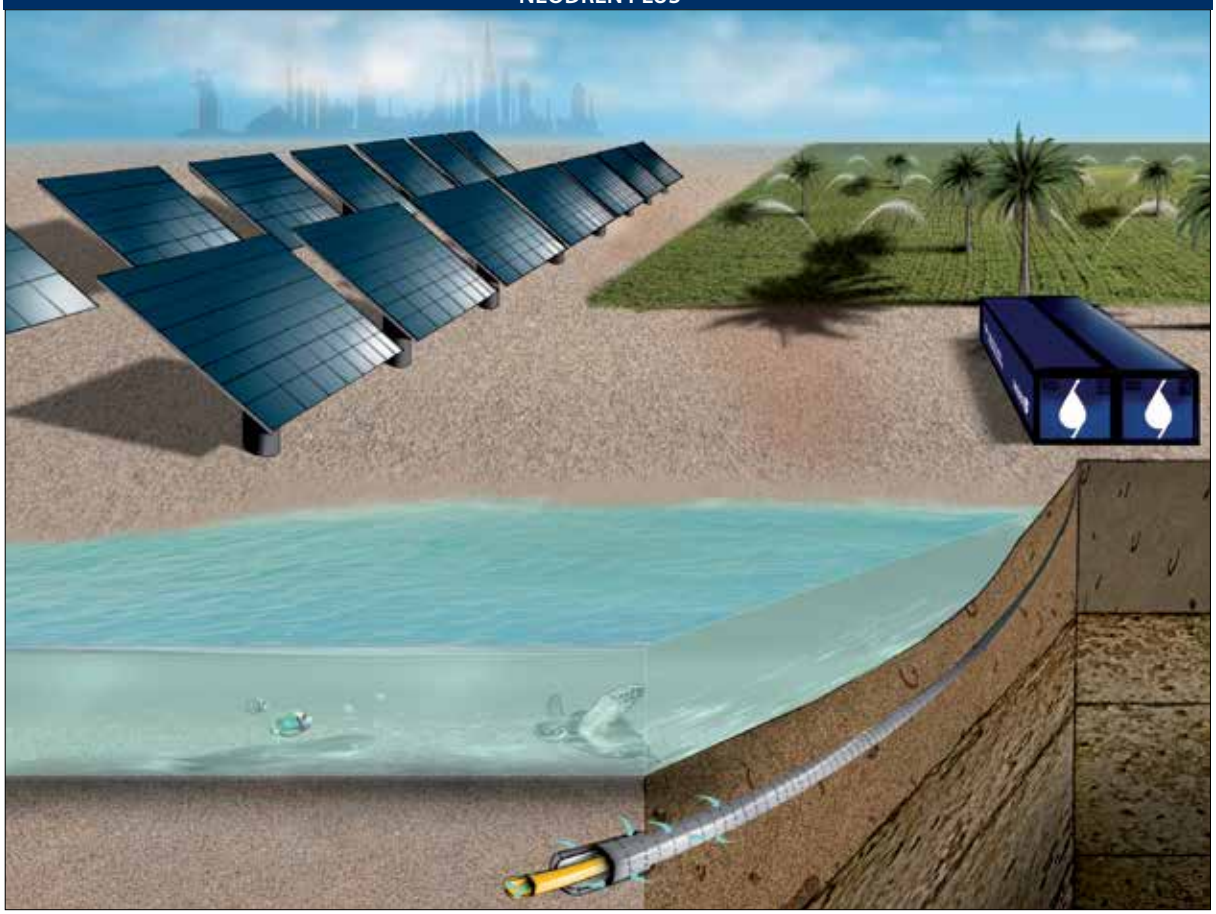
Catalana de Perforacions SA has large fleet of machines and auxiliary equipment, including: HDD rigs (12Tn, 15Tn, 30Tn, 50Tn, 100Tn and 200Tn), steering devices, recycling units, high-pressure pumps and water-well rigs.

All these machines can be rented by our clients whenever and wherever they need them, even serving start-up and maintenance services during execution.

Please, have a look at our brochure to get an in-depth vision of our equipment as well as information on prices and availabilities.

EPC Projects

NEODREN PLUS ®



SMALL-DEMAND SEAWATER INTAKES

Technology fully developed by Catalana de Perforacions SA and based on collecting seawater by means of an underground horizontal drain drilled from the coastline. This drain is placed within a permeable stratum with continuous water recharge and supplies a constant high-quality flow with no turbidity to a small and portable desalination plant that can be placed and produce freshwater everywhere.

This is actually a very sustainable technology, since it does not affect flora and fauna. Besides, it supposes an integrated solution that can work autonomously when there are site and environmental restrictions.

Applications

- Isolated populations
- Small fishing farms
- Agricultural exploiations
- Hotels and resorts
- Golf fields

Advantages

- **Eco-friendly:** It has no environmental impact, since the drain is installed in the subsoil, not affecting the landscape or the sea fauna.
- **Portable:** It can be built within a short timeframe everywhere close to the seashore. Equipment can be mobilized quickly.
- **Scalable:** The freshwater production capacity can be increased gradually till meeting customers' needs, in case of progressive demand.
- **Autonomous:** The desalination plant can be powered either by photovoltaics or connecting it to the grid. Even hybrid systems are possible to guarantee it keeps always running.
- **Quality:** The freshwater produced meets the standards for human consumption and land irrigation.
- **Attainable:** The initial investment is small and can be returned quickly. Besides it has low operating costs.

NEOPOU ®

COLLECTION AND DESALINATION OF WATER FROM SALTY AQUIFERS

Technology developed by Catalana de Perforacions SA to give a solution for freshwater scarcity.

Through this technology salty water can be collected from aquifers by vertical wells. Each well is equipped with a pump that transfers water into a desalination plant that produces freshwater by reserve osmosis. This freshwater can be used both for human consumption and irrigation.

Applications

- Isolated populations.
- Small fishing farms.
- Agricultural exploiations.
- Hotels and resorts.
- Golf fields.

Advantages

- **Eco-friendly:** It has no environmental impact, since the well and the plant exert no influence over flora and fauna.
- **Portable:** It can be built within a short timeframe everywhere. Equipment can be mobilized quickly.
- **Scalable:** The freshwater production capacity can be increased gradually till meeting customers' needs, in case of progressive demand.
- **Autonomous:** The desalination plant can be powered either by photovoltaics or connecting it to the grid. Even hybrid systems are possible to guarantee it keeps always running.
- **Quality:** The freshwater produced meets the standards for human consumption and land irrigation.
- **Attainable:** The initial investment is small and can be returned quickly. Besides it has low operating costs.

INTEGRATED WATER MANAGEMENT

Geological study elaboration, underground water collection, making it drinkable and distribute it to end users.

Catalana de Perforacions SA offers an integrated services to meet their needs in terms of drinking water, irrigation, industrial processes… Turnkey projects gather all steps in a single offer.

Firstly engineers and geologists determine the optimal location of the well. Then they elaborate the construction project, drill the well following it and install the pumping and purification equipment. Furthermore, all installations are real-time monitored to make their running more practical but also distribution networks are controlled and supervised.

INTEGRATED MANAGEMENT OF GEOTHERMAL RESOURCES

Catalana de Perforacions SA also serves integrated solutions for exploitation of geothermal resources.
Catalana de Perforacions SA offers not only the preliminary study but also the execution of the project, ranging from well excavation to installation of heat exchangers, as well as start-up and maintenance services.

Catalana de Perforacions SA headquarters in Santpedor (Barcelona, Spain).

CATALANA DE PERFORACIONS, SA

FOUNDED UN 1968 AND INITIALLY SPECIALISED IN WATER-WELL DRILLING

Since then, the company has been researching and developing the most innovative techniques within its industry, specialising in high-difficulty works and turning into a global leader in terms of sustainable exploitation of hydric and natural resources.

Nowadays Catalana de Perforacions SA provides expertise on environmental engineering solutions across diverse client industries such as oil&gas, mining, agriculture, chemical and construction.

Over the last years Catalana de Perforacions has kicked off an internationalisation plan to expand its activities across Middle East, Eastern Europe, Central Africa and the United States.

MISSION

Using synergies resulting from the union of our companies to develop solutions for efficient usage of energy as well as better exploitation of natural resources.

VISION

Becoming a global referent in development and implementation of environmental engineering solutions to promote community growth through sustainable economy.

VALUES

- **COMMITMENT.** We use our resources and capabilities exclusively to fulfil our customers' needs. Our primary goal is to overcome initial prospects.
- **CLOSENESS.** We love dealing with our clients personally i.e. listening and understanding their needs as well as taking into account their suggestions and feedback.
- **SUSTAINABILITY.** We strongly believe in the economy for the common good principle and work hard to make this world a better place to live in harmony with environment.
- **INTERNATIONAL.** There are no borders for us, just the people who live in this planet coupled with the projects which contribute to improve their standard of living.
- **ENTREPRENEURSHIP.** We love to undertake new projects and feel no fear when facing new challenges.

Company’s specialism has diversified into six lines of business:

- *HORIZONTAL DIRECTIONAL DRILLING (HDD)*
- *APPROACH*
- *NEODREN®*
- *VERTICAL DRILLING (VD)*
- *MINERAL EXPLORATION*
- *GROUND RESEARCH*
- *PROFESSIONAL SERVICES*
- *EPC PROJECTS*

GRUP

aquaCENTER

Based in Santpedor (Barcelona, Spain) and having more than a hundred of professionals, the Aquacenter companies show a global orientation and market their products and services among public administrations, private companies and individuals.

catalanade PERFORACIONS

The Aquacenter Group was founded in 1996 as a result of gathering six companies:

catalanade PERFORACIONS

Catalana de Perforacions SA was founded in 1968 and initially specialised in water-well drilling. In 1997 brought up the horizontal directional drilling technique to the Spanish market. Since then it has diversified its activities, now offering a vast array of solutions in terms of water and environmental engineering.
http://www.catalanadeperforacions.com

domini ambiental

Founded in 2002 with a clear environmental orientation, Domini Ambiental SL ranks high both in water and energy sectors, key elements for future energy management.
Distribution of exclusive international brands as well as strong technical capabilities are the basis Domini Ambiental SL relies on.
http://www.dominiambiental.com

elèctricaPINTÓ

clorEP

Elèctrica Pintó SL was founded in 1974 and specialised in electro-hydraulic pumps assembly. Since then it as developed several and diverse projects related to water and energy sectors. Always standing for innovation and efficiency in all its activities, Elèctrica Pintó SL provides services based on continuous development and strong commitment before, during and after executing the works demanded. Besides, offers maintenance programmes for installations coupled with a quick response against unexpected events.
http://www.electricapinto.com

webdom

Renewables under control

Webdom Labs SL was founded in 2011 to develop and manufacture monitoring systems (hardware and software) for solar farms control, thermal production and water/electricity/gas consumptions.
Its products can monitor and control energy consumption, then encouraging energy-saving measures.
http://www.webdom.es

COMELSA

Comelsa is a company founded in 1985 and specialised in electro-mechanics, serving a broad technical portfolio that covers products such as engine manufacturing and engine/generator/transformer winding. Besides, counts on a vast team of technicians experienced in freezing and industrial cooling installations coupled with repair and maintenance services.

CAMP SOLAR®

GESTIÓ SOLAR SOSTENIBLE
Founded in 2005 to design, build, exploit and maintain solar farms. Offers a vast array of complementary services leading to making solar farms supply continuous and efficient energy production.

MACHINERY

Catalana de Perforacions SA has large fleet of machines and auxiliary equipment, including: HDD rigs (12Tn, 15Tn, 30Tn, 50Tn, 100Tn and 200Tn), steering devices, recycling units, high-pressure pumps and water-well rigs.

12 TN - EGTECHNOLOGY DD2312.8 DR
12 TN - EGTECHNOLOGY DD2312.11 DR

Torque	Pushing capacity	Pulling capacity
480 m·Kg	7,5 Tn	12 Tn

15 TN - TRACTO-TECHNIK GRUNDODRILL

Torque	Pushing capacity	Pulling capacity
700 m·Kg	16,7 Tn	16,7 Tn

30 TN - EGTECHNOLOGY HD2030.1 DR

Torque	Pushing capacity	Pulling capacity
1.450 m·Kg	14,5 Tn	30 Tn

50 TN - PRIME DRILLING PD 50/33

Torque	Pushing capacity	Pulling capacity
3.300 m·Kg	25 Tn	50 Tn

100 TN - PRIME DRILLING PD 100/50

Torque	Pushing capacity	Pulling capacity
5.000 m·Kg	50 Tn	100 Tn

200 TN - AMERICAN AUGERS DD440 TE

Torque	Pushing capacity	Pulling capacity
8.135 m·Kg	200 Tn	200 Tn

53 TN - FOREMOST DR24 HD

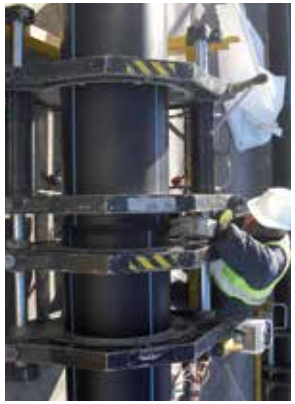
Torque	Pushing capacity	Pulling capacity
28.756 m·Kg	19 Tn	53 Tn

11 TN - ATLAS COPCO B80

Torque	Pushing capacity	Pulling capacity
800 m·Kg	5 Tn	11 Tn

CEMENT MIXERS

WELDING



ROLLERS

NUD MIXERS

RAMMING AND PIPE PUSHING MACHINE

2 TN HOLLMAN UNITRACK

COMPRESSORS

BURR REMOVERS

PISTON PUMPS

RECYCLING UNITS

DRILLING TOOLS

17 TN INGERSOLL RAND T4

CERTIFICATIONS AND LICENSES

ISO 9001:2008

- Certificate registration no. 0.04.10299
- Certificate given by: TÜV Rheinland Ibérica Inspection, Certification & Testing, S.A.

www.tuvdotcom.com

IBSTT
IBERIAN SOCIETY FOR TRENCHLESS TECHNOLOGY

www.ibstt.org

DCA
DRILLING CONTRACTORS ASSOCIATION

www.dca-europe.de

MAS-GNB
INTERNATIONAL ASSOCIATION OF HORIZONTAL DIRECCIONAL DRILLING SPECIALIST

www.masgnb.ru

REPRO

- Certificate registration no. 303326

www.achilles.com/es/countries/471-spain/utlits/988-repro-spain-es

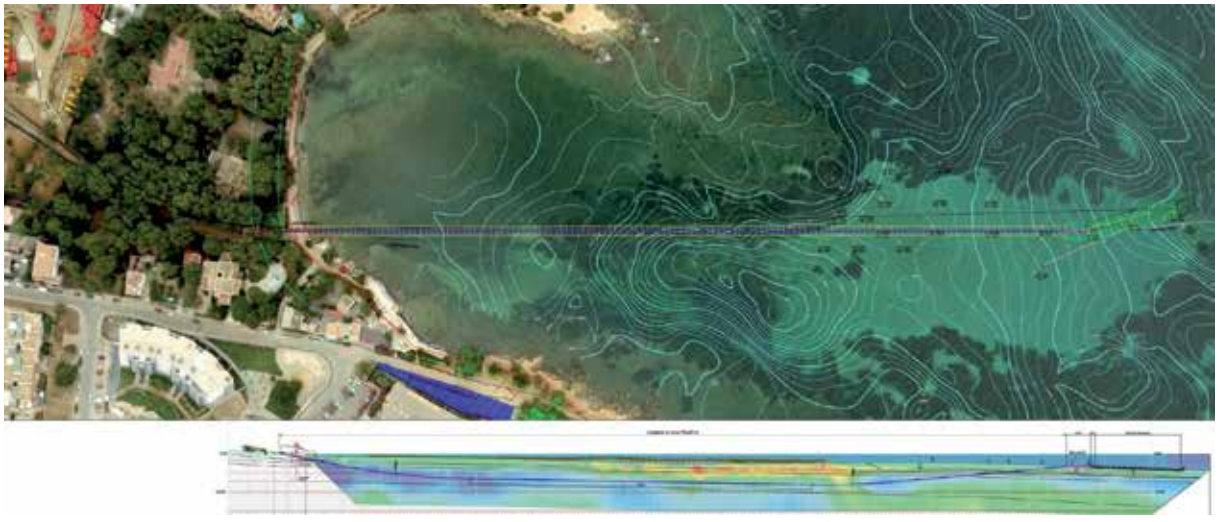
SOME OUTSTANDING PROJECTS

Outfall in El Franco (Asturias, Spain).

Approach works in Ibiza (Balearic Islands, Spain)

Crossing below river Llobregat (La Jonquera, Spain).

Freshwater network, river Alberche (Toledo, Spain).



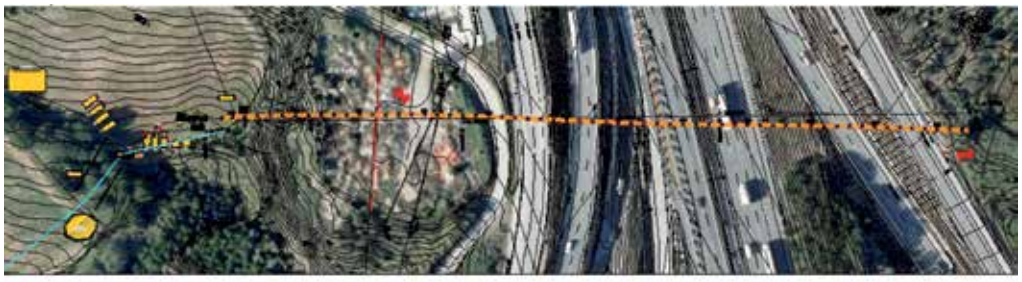
Outfall at "Santa Eulària des Riu" desalination plant (Ibiza, Spain).

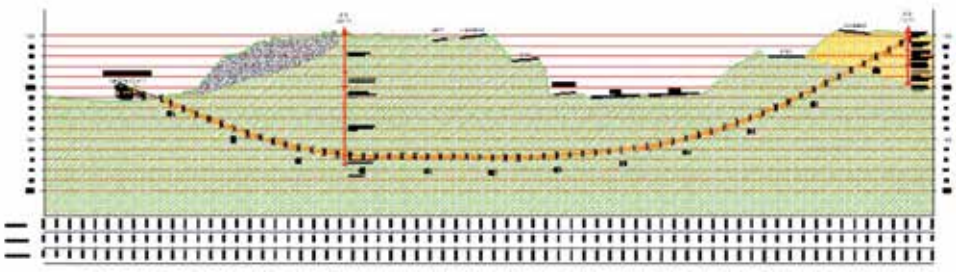
Oil pipeline installation at Madrid Int. Airport.

Installation of sewage pipelines at Sagrada Familia Temple.

Borehole for geothermal resource exploitation in Manresa (Barcelona, Spain).

Borehole for geothermal resource exploitation in Santa Coloma de Queralt (Barcelona, Spain).





Crossing below motorway in Cerdanyola del Vallès (Barcelona, Spain).

Boreholes for piezometer installation in El Cogulló mine dump (Sallent, Barcelona, Spain).

Exploration drilling campaign (wireline coring) at Mina Cabanasses (Súria, Barcelona, Spain).

Construction of an outfall in Baiona (Pontevedra, Spain).

Land-sea connection between Mallorca and Ibiza islands (Balearic Islands, Spain).

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