HDI ENTREPOSE

HORIZONTAL DIRECTIONAL DRILLING

Trenchless installation of pipelines under natural or artificial obstacles

OUR STRENGTHS

- Expertise in horizontal directional drilling
- Operations at a global level
- Innovation and R&D
- Adaptability as a core value
- Cutting-edge equipment and technology

HDI, renowned expertise

Thanks to decades of experience in thousands of projects around the world, HDI, a subsidiary of Entrepose Group, is a key player in the field of horizontal directional drilling.

KEY FIGURES

- Created in 1984
- More than 2,000 crossings
- More than 2,000 km installed
- More than 40 countries

Our reputation is built on our continuously evolving engineering and our ability to adapt to any kind of project. The skills of our teams and the reliability of our equipment allow us to redefine the limits for pipeline installation beneath natural or artificial obstacles whilst respecting the environment.

CERTIFIED SERVICES

At HDI, we offer our customers methods and procedures that meet the highest standards.

The company holds the following certifications:
- ISO 9001 (2008)
- ISO 14001 (2008)
- OHSAS 18001 (2007)

We are also a member of DCA-Europe (Drilling Contractors Association – Europe), FSTT (French Association for Trenchless Technologies) and IPLOCA (International Pipeline & Offshore Contractors Association).

CONTINUOUSLY EVOLVING TECHNIQUES

From its early age, HDI has never stopped innovating to meet increasingly complex technical challenges:

- The first landfall using directional drilling
  (ESSO – Bass Strait, Australia – 1987)
- The first directional drilling for High Voltage electrical lines
  (EDF – Garonne and Seine, France – 1989)
- The first horizontal directional drilling in rock
  (SNAM – Sicily, Italy and TPC – Niagara, USA – 1991)
- The first DN 1200 (48") pipeline installed by directional drilling
  (GASUNIE – Canal Noord Holland, Netherlands – 1991)
- The first horizontal directional drilling in permafrost
  (ARCO – Colville River, Alaska, USA – 1998 & 1999)
  for which HDI was nominated by the American Civil Engineering Association
- The first 100% upward directional drilling
  (GASOCIDENTE DO MATO GROSSO – Cachoeirinha, Brazil – 2000)
- Establishing a world record for the largest volume
  1760 m x DN 1200 (48") – installed by directional drilling
  (RELIANCE – Vashista Godavari River, India – 2007)

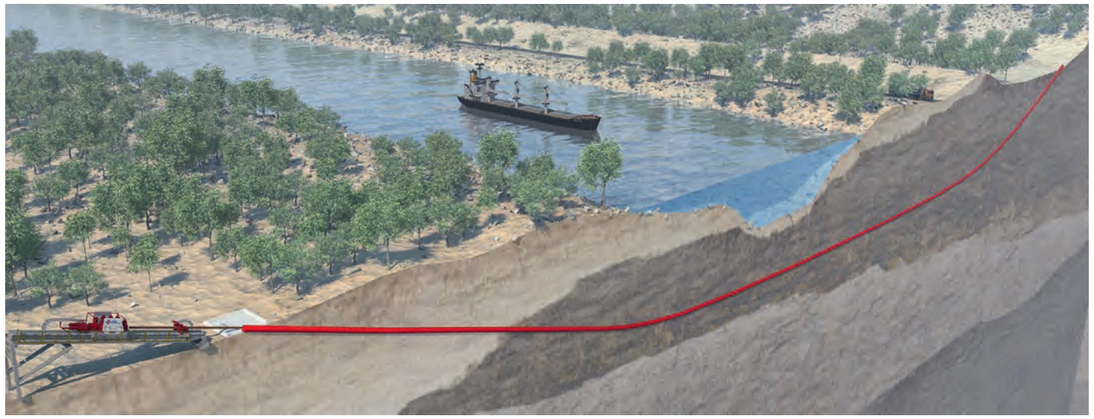
Applications

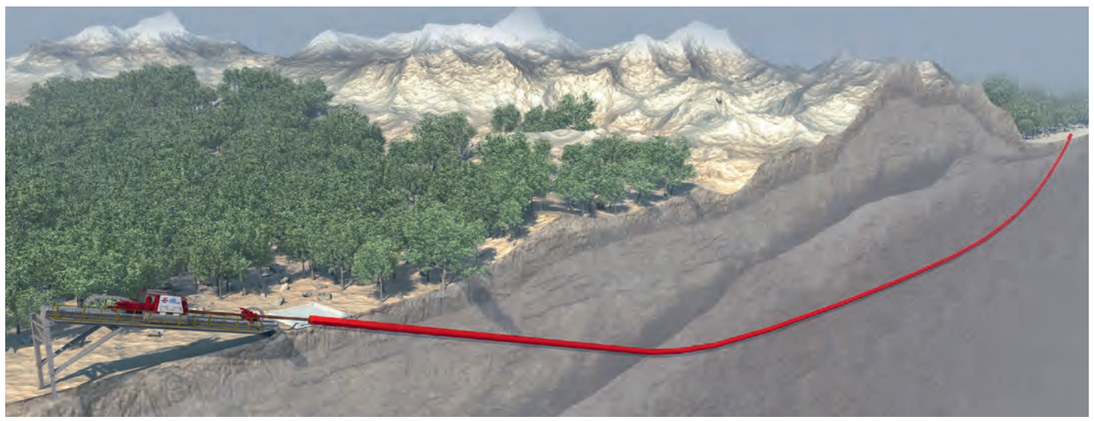
Horizontal directional drilling is the core business for HDI. It is a "trenchless" technique that allows pipelines to be laid safely, with limited environmental impact on fauna, flora and neighbours.

ONSHORE OBSTACLES

Onshore obstacles are typically waterways (rivers, streams, canals, etc.), roads, motorways or railways. Many other applications are possible, such as crossing golf courses, residential areas, rock outcrops, airport runways, dump sites, quarries under operation, environmentally sensitive areas, etc.

Horizontal directional drilling – River





Horizontal directional drilling – Mountain

LANDFALLS

Landfalls using horizontal directional drilling are more and more frequent due to the advantages they offer compared to traditional techniques:

- No environmental impact on coastlines (protected beaches and sensitive areas) or on residents (protected fauna and holidaymakers);
- Safe crossing of surf zones;
- Drilling at a sufficient depth to ensure protection of the pipeline against erosion.

Horizontal directional drilling – Landfalls

As early as 1987, HDI won the "Project of the Year" award from the Civil Contractors Federation in Australia for the construction of the landfall in the Bass Strait for Esso Australia Ltd.

Combination of various "Trenchless" Techniques:

For specific projects, HDI develops methods that combine horizontal directional drilling with microtunnelling or direct pipe techniques.

As an example, HDI executed in 2009 a turnkey project across the Havre Harbor Canal for Total using both retractable microtunnelling and horizontal directional drilling techniques. This achievement earned HDI the "Tytan Award 2010" for the best European trenchless project.

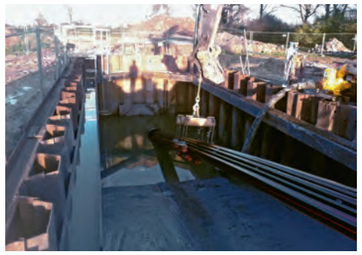
HORIZONTAL DIRECTIONAL DRILLING OFFERS MANY ADVANTAGES:

- Construction permits are granted quickly
- Unrivalled protection for pipelines
- Surface traffic is not disrupted
- No harm to the environment
- Cost and schedule optimization
- Safety
- Ease of maintenance

Project executed on behalf of TIGF (Transport & Infrastructures Gaz France)

Sectors of Operation

HDI operates as a main contractor, in partnership with local civil or pipeline contractors, or as a subcontractor on construction and/or EPC contracts.



SECTORS OF OPERATION

Oil & Gas

HDI has worked on many landmark projects:

- The BTC (DN 1150) and SPC (DN 1050) pipelines in Georgia,
- The Interconnector (DN 900) pipeline on the border between Turkey and Greece,
- The HBJ (DN 900) and East-West (DN 1200) pipelines in India,
- The GZ1 (DN 1000) pipeline in Algeria,
- The Bolivia-Brazil (DN 800) pipeline,
- The NMPP (DN 400) pipeline in South Africa,
- The PNG-LNG (DN 800) pipeline in Papua New Guinea,

As well as many other connections in the European grid:

- in Germany (DN1100),
- in the Netherlands (DN 1200 and DN 900),
- in the UK (DN 1050 and DN 900),
- in Belgium (DN 1100 and DN 1000),
- in Italy (DN 1050),
- in France (DN 900),
- and in Portugal (DN 700).

Electricity and Fiber Optics

HDI is the first company in the world to install HV electrical lines using horizontal directional drilling, as early as 1989, with a 1050 m crossing for a 225 kV cable under the Garonne River for EDF. Since then, HDI has installed more than 150 km of cables, in many countries around the world.

Maintenance of these cables, protected from inclement weather conditions and temperature variations, is greatly facilitated.

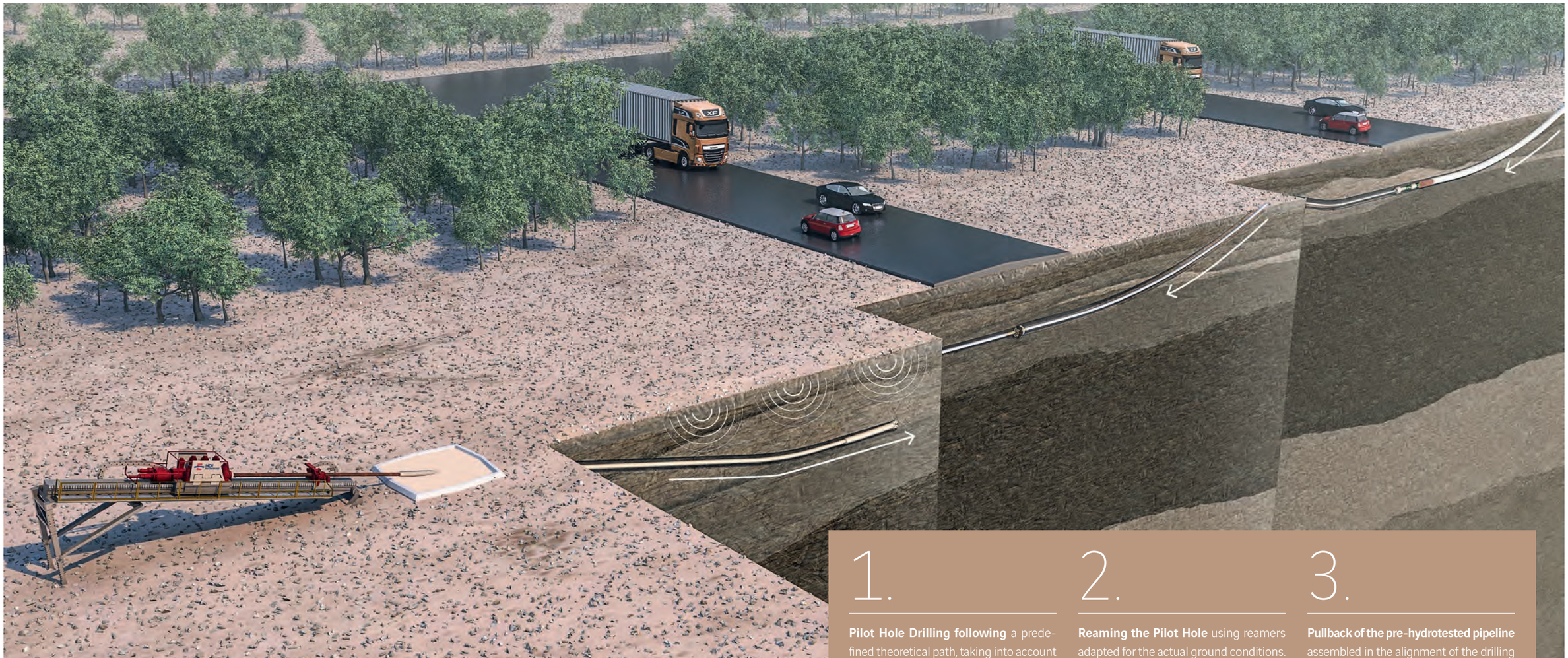
Water, Sanitation and Minerals

HDI installs pipelines for the transportation of drinking water and waste water as well as water intake lines for desalination plants and discharge lines for sewage, following treatment.

The company also installs insulated conduits, without damaging the insulation, to carry hot water and pressurized steam, for industrial use or urban heating.

Horizontal Directional Drilling

This is a technique derived from vertical oil and gas drilling where three major steps are involved:



1.

Pilot Hole Drilling following a predefined theoretical path, taking into account the ground conditions along the drilling route, requirements in terms of crossing depth and cover below the obstacle as well as acceptable design radii. During this phase, the use of an electromagnetic or gyroscopic probe located behind the drilling bit allows accurate steering.

2.

Reaming the Pilot Hole using reamers adapted for the actual ground conditions. Depending on the pipeline diameter, one or more reaming passes might be required in order to reach the acceptable hole diameter allowing a safe installation of the pipeline without coating damage.

3.

Pullback of the pre-hydrotested pipeline assembled in the alignment of the drilling axis. Whenever possible, the pipeline is prefabricated in one single section prior to the pullback. **Today, the HDD technique allows installation of pipelines with a length in excess of 3000m and diameters up to DN 1400 (56”), when the ground conditions allow doing so.**

Our equipment

HDI's equipment employs the latest technology to address all our customers' needs.

HDI uses Rack & Pinions drilling machines. They are based on a model created by the company in 1984, which has now become the industry standard.

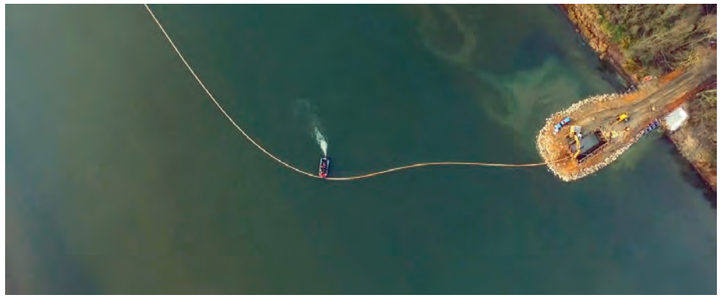
MODERN, ADAPTABLE AND COMPLEMENTARY EQUIPMENT

HDI's drilling rigs offer a pulling capacity ranging between 35 and 400 tons. They allow for the installation of small size pipelines over short distances as well as large diameter pipelines (up to DN 1400) over very long distances.

Rigs are trailer or crawler mounted and consist of a central beam rack with a carriage moved by pinions powered by hydraulic motors. Hydraulic rotary motors located on the carriage provide the necessary rotary force.

Each drilling rig has its own control cabin, steering kit, high pressure pump and other ancillary equipment forming a complete and autonomous drilling spread.

The HD 650 and HD 350 models are designed and manufactured in-house.



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