

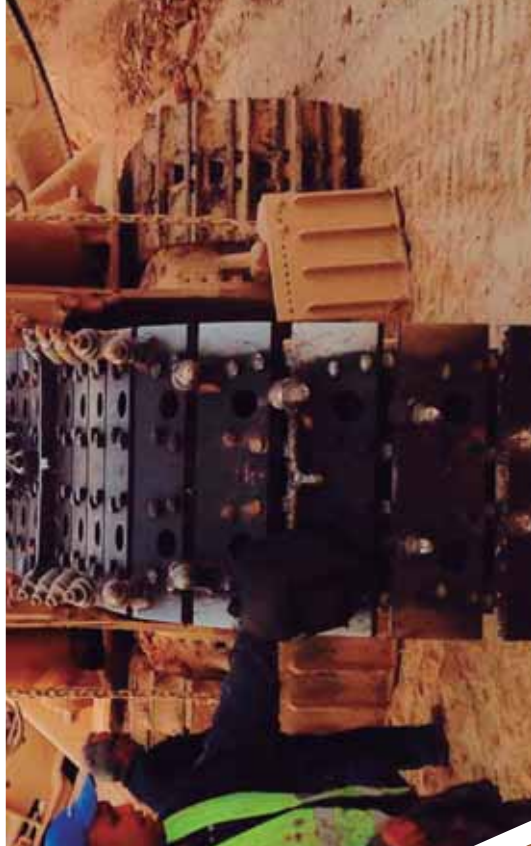
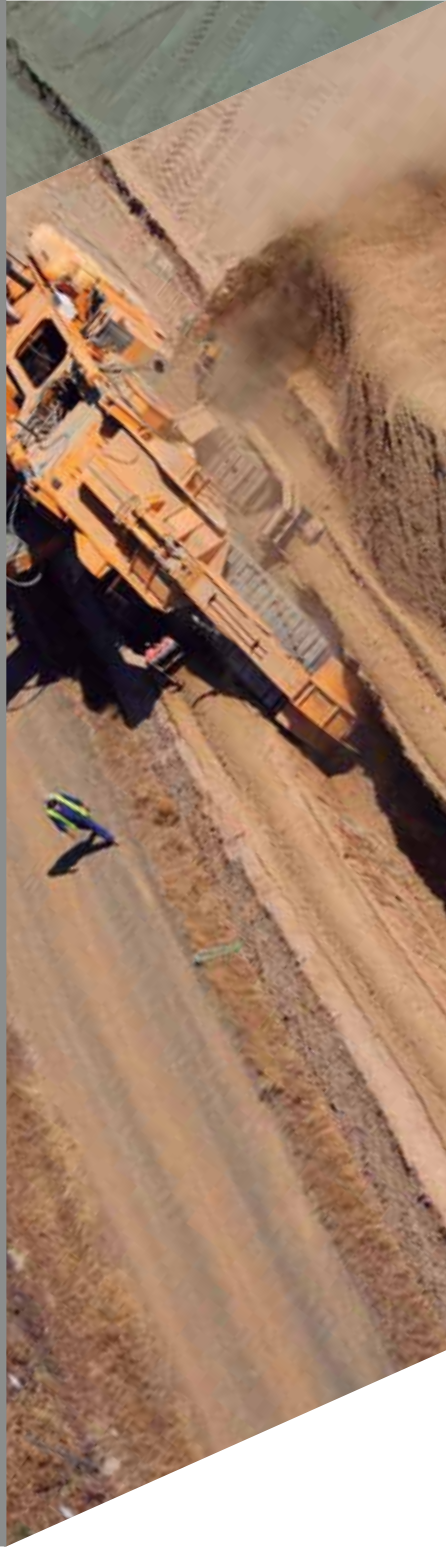
CANALIZATIONS WITH TRENCHERS



MANAGEMENT, CONTROL
AND EXECUTION OF
CIVIL WORKS

ELMASA

CONSTANT IMPROVEMENT



ELMASA IS PRESENT IN EUROPE, AMERICA AND AFRICA

A TEAM OF ENGINEERS AT THE SERVICE OF
THE MANAGEMENT AND EXECUTION OF PROJECTS

ELMASA started its activity in the world of private and civil works more than 20 years ago, collaborating as a subcontractor on projects for large construction companies recognized at a national and international level.

Our company's bid has been focused on works for the energy sector, gas pipelines, oil pipelines, aqueducts, electrical conduits, etc.

These are sectors that require a very demanding **commitment** on

geographical **mobility**, execution time and **quality** of work.

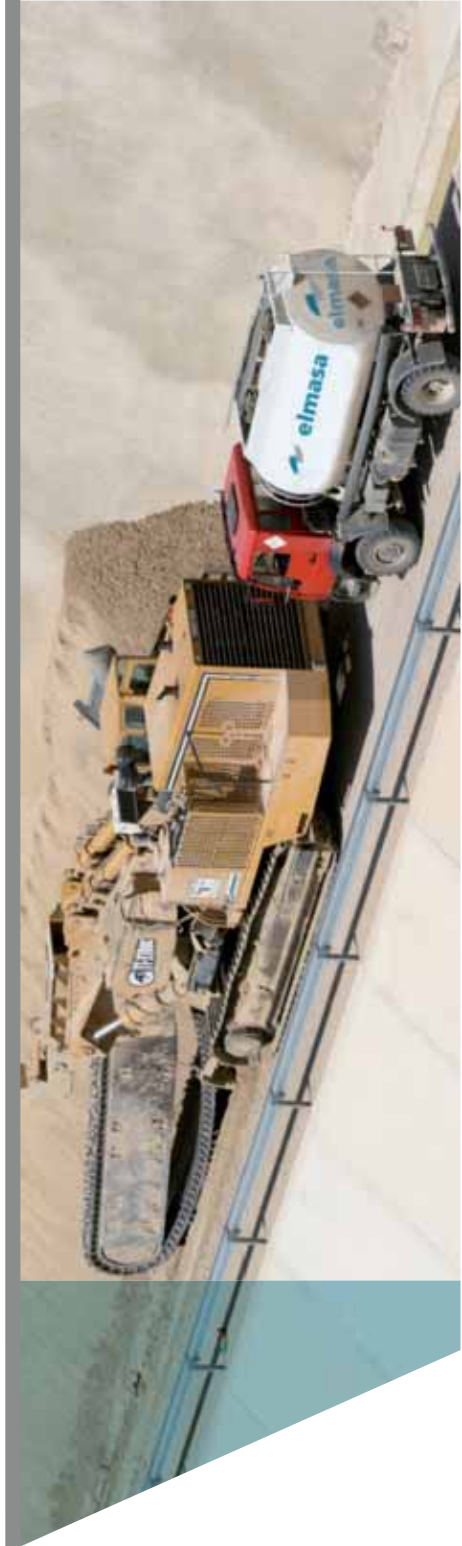
Therefore, our company has been formed structurally to meet these needs.

Both the commercial structure, designed to meet the needs of these sectors anywhere in the world, followed by the production department where we have qualified personnel, both technical and productive, qualified and with experience to run any of these projects.

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COMMITMENT TO DEVELOPMENT



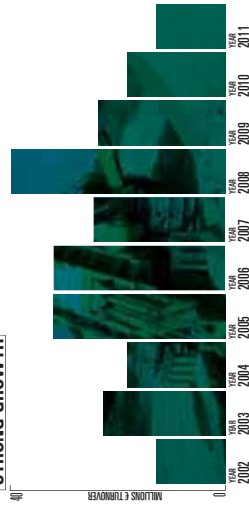
**ELMASA, A SOLID
AND LONG-TERM
BUSINESS PROJECT**



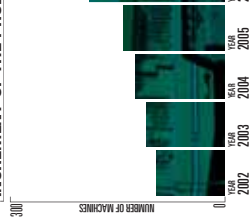
During the last few years, **ELMASA** has managed to double its turnover thanks to its strong capabilities and knowing how to take advantage of the opportunities offered by the market.

The management team, with a long-term business philosophy, has reinvested the funds generated on the **consolidation and development** of the business.

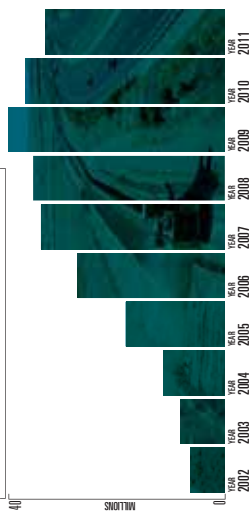
STRONG GROWTH



INCREMENT OF THE PRODUCTION CAPACITY



CONTINUED INVESTMENT - FIXED ASSET





VALUES THAT MAKE US STRONG



**QUALITY, EXPERIENCE
AND DEDICATION TO SERVICE**
**WORKING ON EACH PROJECT,
WITH THE BEST MACHINERY**

An integral service, specialized, of high quality, that is based on the belief of **business values** and its coherency to respect them.
To **ELMASA**, all these values are equally important:
- **A human team**, committed to the company and our customers.

Facilities and auxiliary equipment in service of the work
- **Learning ability** and constant development endorsed by over 20 years of experience on large projects.
- Own machinery in perfect condition and with technical requirements demanded by our customers.



IMMEDIATE RESPONSE IN ANY SITUATION



OPTIMIZATION OF ALL RESOURCES FROM THE WORK

ELMASA HAS ITS OWN TECHNICAL TEAM
AND EQUIPMENT AT ALL FACILITIES

At **ELMASA** facilities, we have our own technical team of professionals, highly qualified that are responsible for the maintenance of machinery, the service of the work, giving immediate response to any type of malfunction or eventuality

Additionally, **ELMASA** has central services responsible for the administrative management of the company and the optimization of the available and generated resources.

ELMASA has other bases distributed in northern Spain and abroad.



A TEAM WITH THE BEST PROFESSIONALS



HIGHLY SKILLED WORKERS AT THE SERVICE OF EACH PROJECT

The human team at **ELMASA** consists of committed professionals with different profiles, specific knowledge in every area of expertise, and with lots of experience in this sector.

A well balanced team of professionals compensated between civil and mining engineers among others, as well as land surveyors, working along first officers **extensively trained** occupying management positions, supervisors, and workers with all kinds of specializations (gunners, machinists, mechanics, welders, electricians...).



TRENCHERS

T1060

TT2500

TT2700

T1760

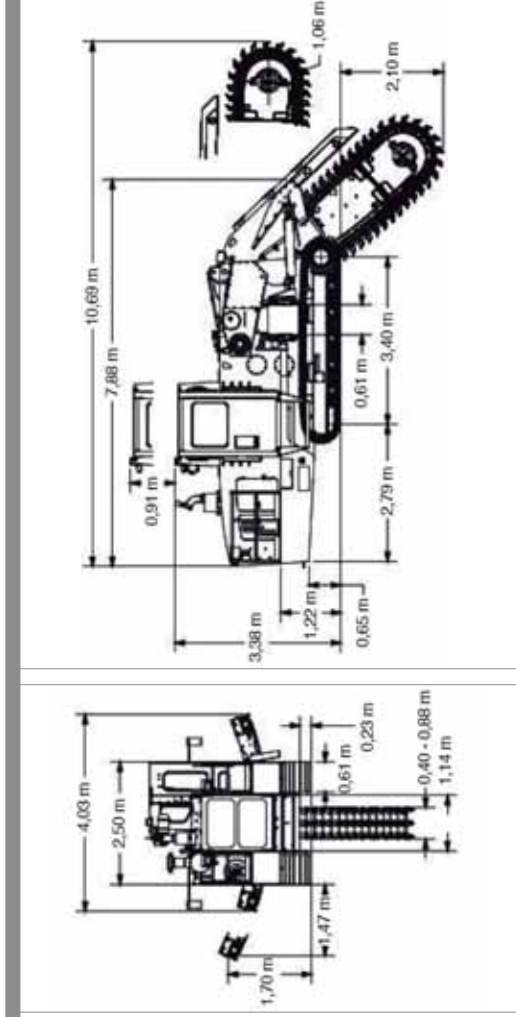
TRENCHER T1060



PERFECT FINISH



TRENCHER T1060 | MEASUREMENTS AND CHARACTERISTICS



- Back width**
 - 0,68 Metres
 - 0,88 Metres
 - Maximum depth**
 - 2,20 Metres
 - Machine weight**
 - 40 Tons
 - Capacity of the tank**
 - 908 Litres
 - Consumption**
 - 68 Litres/Hour
 - Power**
 - 350 HP
 - Engine type**
 - Diesel CAT C9
- Maintenance truck at the full disposal of the machine.

TRENCHER TT2500

DESCRIPTION

Power transmission to the starter chain:

- It is multiplied by a mechanical-hydraulic converter.
- The transmission of movement and the transmission of the starter are separate, so no power is lost.

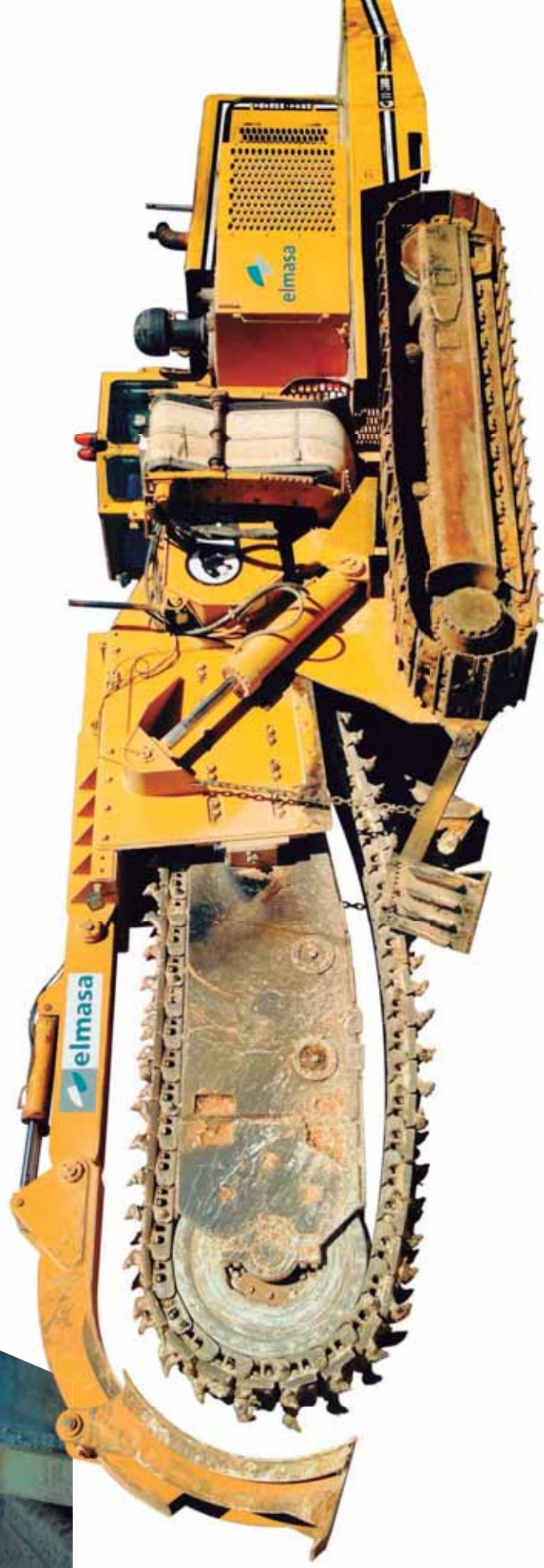
Sword boot:

- It is modulated, which allows us to not carry excess weight or length in the machine.
- It also allows us the sword work working at the proper angle of excavation, for its best excavability.

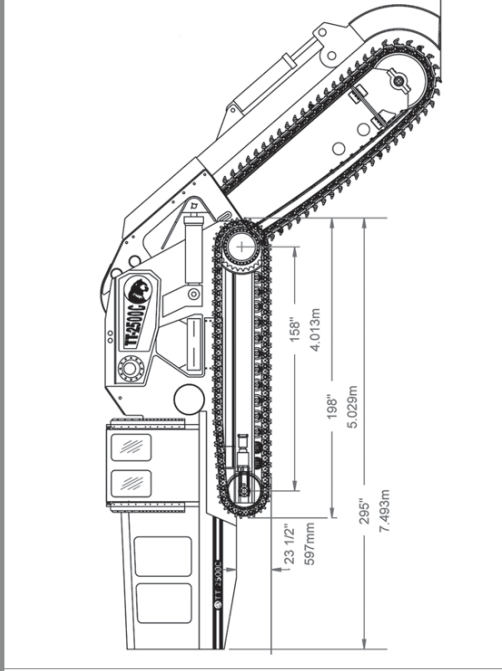
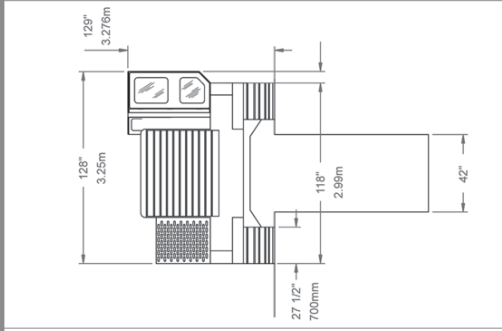
For the full effectiveness at work, our equipment is formed by the machine and a **maintenance truck**. This guarantees a complete and thorough maintenance. The maintenance truck is fully equipped: welding machines are both electrical and autogenous, flame cutting, pneumatic tools, generator set, compressors, etc.



IMPECCABLE WORK



TRENCHER TT2500 | MEASUREMENTS AND CHARACTERISTICS



Back width

- 0.77 Metres
- 0.88 Metres
- 1.12 Metres

Maximum depth

- 3.30 Metres

Machine weight

- 88 Tons

Capacity of the tank

- 1,000 Litres

Consumption

- 72 Litres/Hour

Power

- 714 HP

Engine type

- CAT 3406E

Maintenance truck at the full disposal of the machine.

TRENCHER TT2700

DESCRIPTION

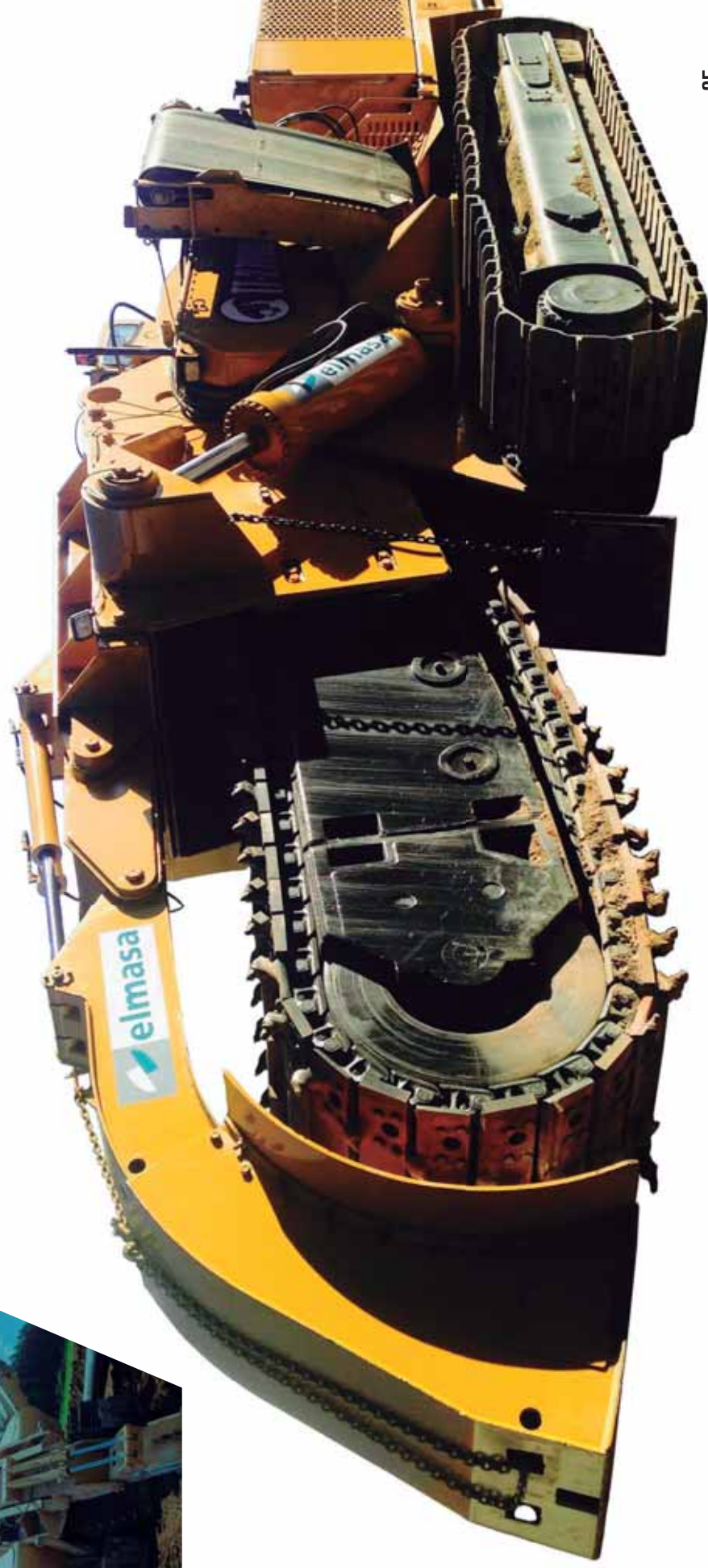
High tonnage:

- The chassis of the machine and its components have twice the thickness of steel.
- We keep the original dimensions of the machines.
- Vibrations are reduced and this helps to have fewer breakdowns.

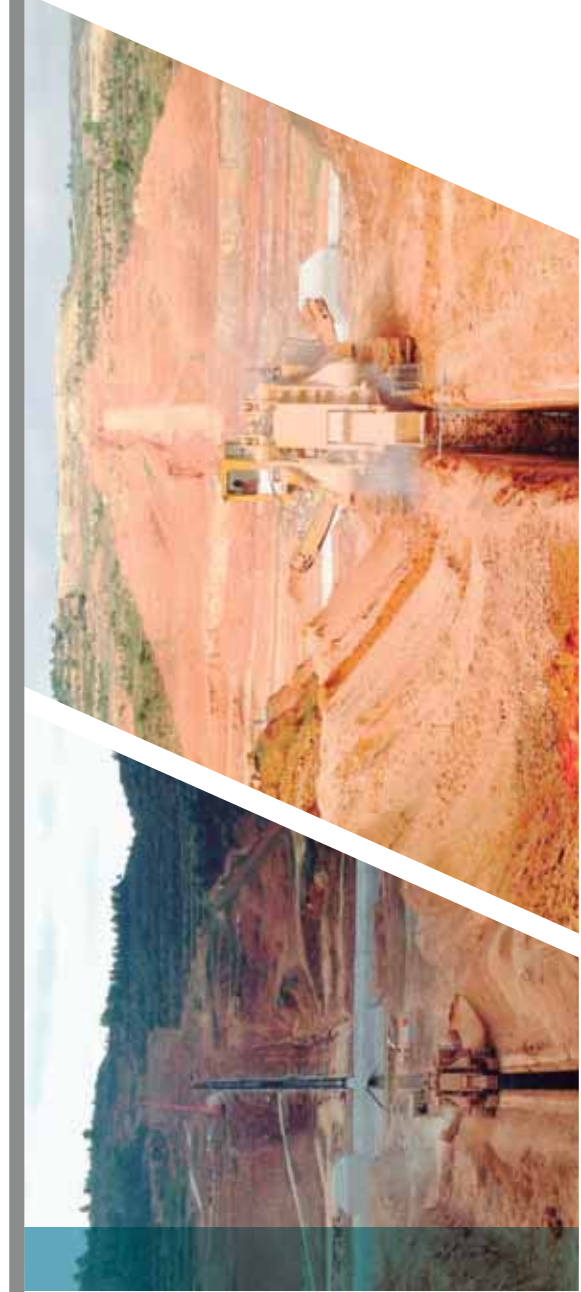
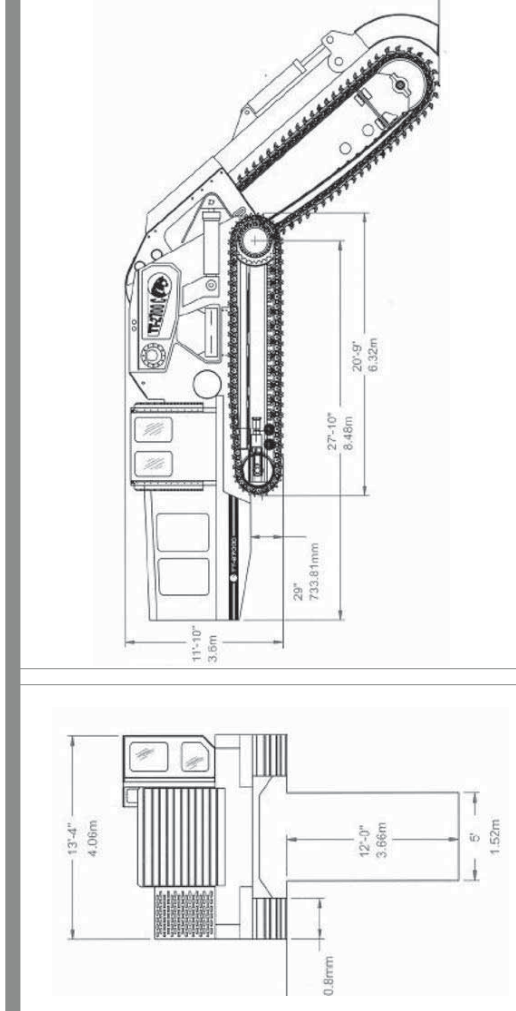
More powerful engines:

- Because they are reinforced, it also allows more powerful engines, between 300 and 850 CV.

POWER AND STABILITY



TRENCHER TT2700 | MEASUREMENTS AND CHARACTERISTICS



- Back width**
 - 0.88 Metres
 - 1.15 Metres
 - 1.32 Metres
 - 1.52 Metres
- Maximum depth**
 - 4.50 Metres
- Machine weight**
 - 143 Tons
- Capacity of the tank**
 - 1,135 Litres
- Consumption**
 - 97 Litres/Hour
- Power**
 - 750 HP
- Engine type**
 - CAT 3406E

Maintenance truck at the full disposal of the machine.

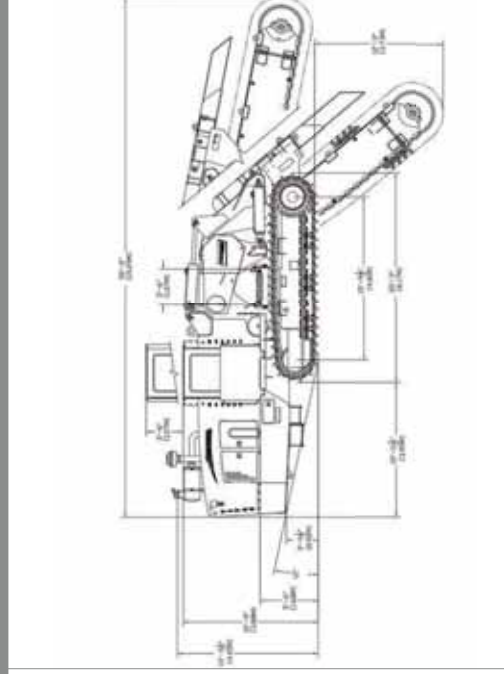
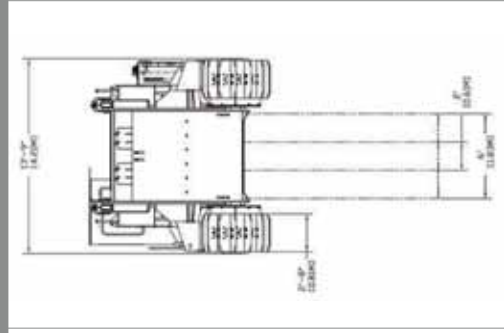
TRENCHER T1760



SYMMETRIC ACCURACY



TRENCHER T1760 | MEASUREMENTS AND CHARACTERISTICS



Back width
 - 1,30 Metres
 - 1,60 Metres
 - 1,80 Metres

Maximum depth
 - 3,50 Metres

Machine weight
 - 1,60 Tons

Capacity of the tank
 - 1,915 Litres

Consumption
 - 174 Litres/Hour

Power
 - 950 HP

Engine type
 - Diesel CAT C27

Maintenance truck at the full disposal of the machine.



DESCRIPTIONS

SPACE NEEDED TO WORK

DESCRIPTION OF THE EXCAVATION

USE OF MATERIALS

QUADRANT OF PRODUCTIONS

TRENCHER | SPACE NEEDED TO WORK

T1060

T12500

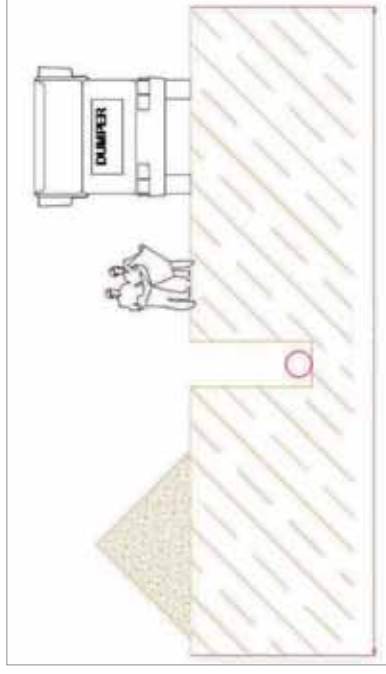
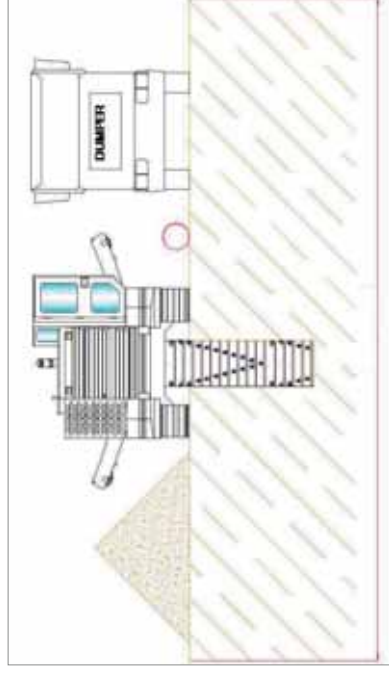
T12700

T1760



Workspace according to trencher

- Trencher 1060: 10 metres
- Trencher 2500: 12 metres
- Trencher 2700: 14 metres
- Trencher 1760: 16 metres



It has to be taken into consideration that at the corners and curves more space will be needed, depending on the degree of curvature.

Production structure:

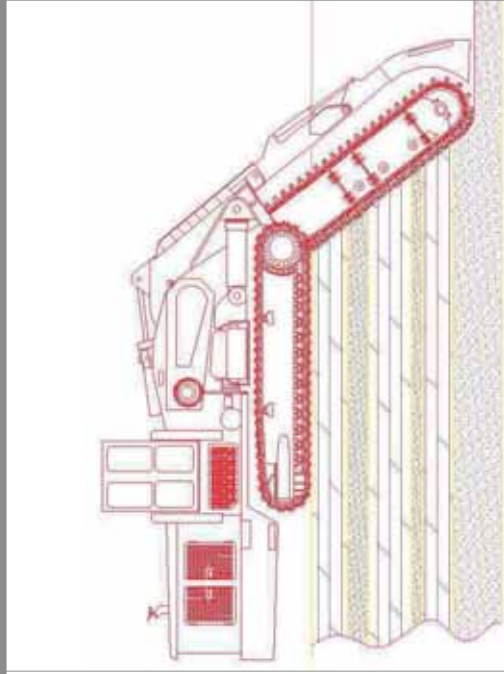
The team is essential to execute a project with **speed and quality**. Therefore, ELMASA staff, both site operators and technicians are qualified professionals specially chosen for the range of works to be carried out.

All staff pass a specific training before joining a group of work.



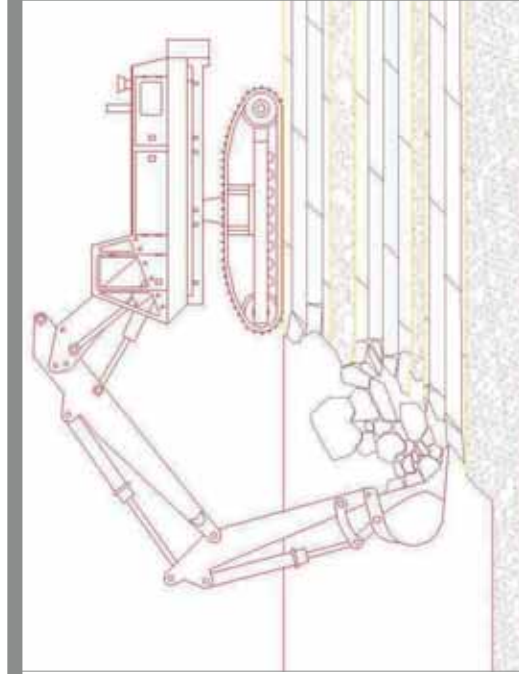
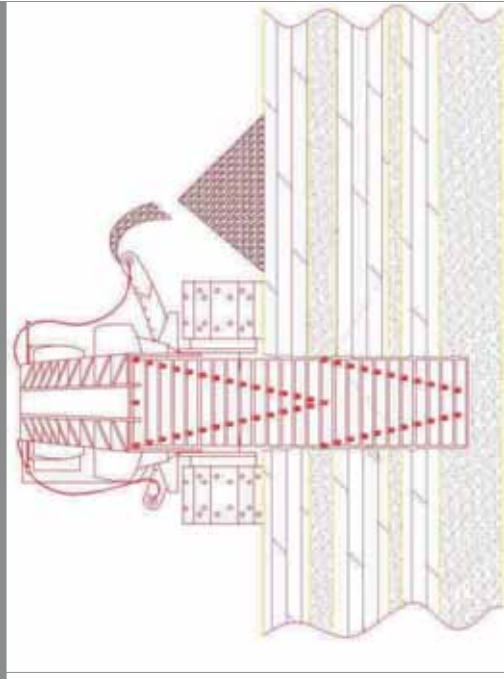
TRENCHER | DESCRIPTION OF THE EXCAVATION 01/02

- T1060
- T12500
- T12700
- T1760



The drawings show the way in which the trencher acts on the field, it is based on striking the rock with tungsten tips (called spades), and this provides us with a **minimal degradation of the land**.

The trench ends with a perfect finish, at the sides and bottom.



When digging with conventional mechanical mediums, the type of material that is obtained, fluff so much and consequently, it doesn't take advantage of the backfilling, unless it is crushed.

Furthermore, it is also needed a landfill to get rid of excess thick materials.



Here we see the trencher working from the front, where we can see accurately, the section that can be obtained

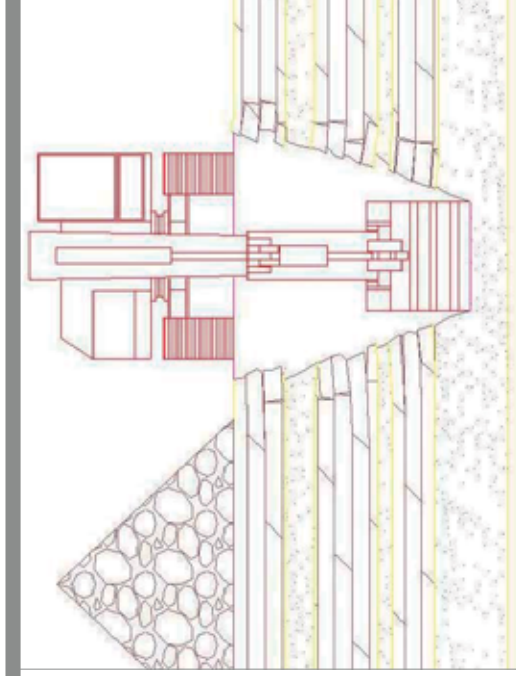
With this, the **great savings** obtained by not overburdening the excavation and the **stability** of the walls is not damaged by the

way in which the trencher digs, which is not by starter but by rubbing or milling.

Besides, because our trenchers are high tonnage, they are prepared to have a **great breadth and depth of trench**.

TRENCHERS | DESCRIPTION OF THE EXCAVATION 02/02

T1060
T12500
T12700
T1760



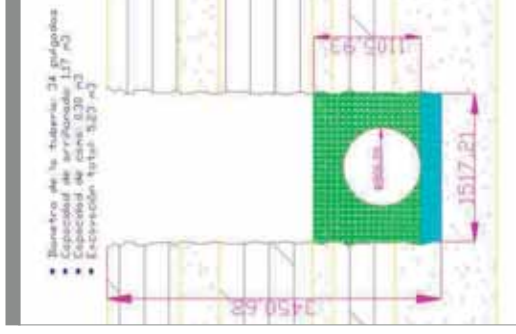
In this diagram, it can be seen that with the same width as the trench before, the great **overburden excavation** that is produced, simply by the excavation system that uses conventional machinery, which is the boot one.

In addition, it can also be seen the instability of the walls of the trench, which has a direct impact on safety.



USE OF MATERIALS | TRENCHERS

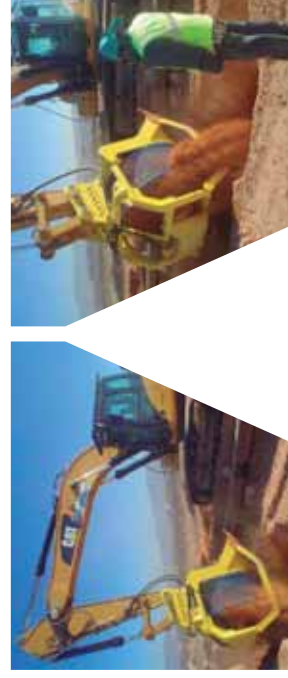
TT2700
TT2500
TT1060
TT1760



From a trench made with conventional machinery to another made with a trencher, cubic meters vary considerably

In the ditch made with conventional machinery, it can be seen how it is necessary to have a larger volume of filler material in the first trench than in the one made with trencher.

This fact increases the overall cost. Moreover, the material produced by the excavation with trencher, can be **reused** for the bed and up to the kidney of the pipe, a factor that still makes it more feasible to excavate with trencher.



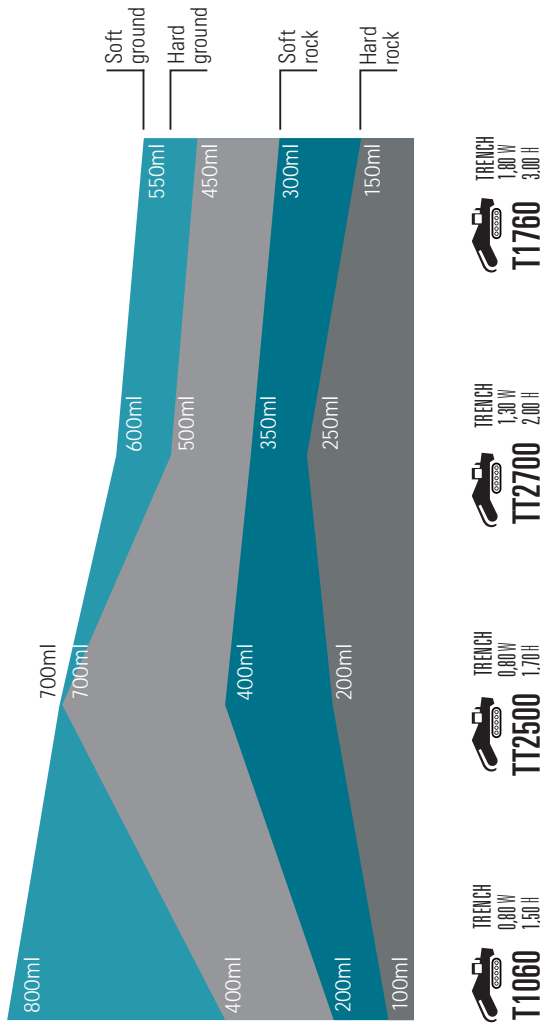
The **use of materials** -as it can be seen in these photographs- is possible thanks to the materials extracted from the excavation with trenchers.

The performance obtained with rotating sieves is high and depending on the pipe, the **materials can be very valid**

TRENCHERS | QUADRANT OF PRODUCTIONS

T1060
TT2500
TT2700
T1760

Generic box of productions by type of land



* These meters are calculated within a period of 10h per day.

This box of productions, reflects the **productive capacity of our machines**. Although, we must understand that each work has its typology of land and productions may vary. For this reason, before proceeding to give a price to our customers, we usually visit the site.

We adapt to the needs of the work, based on playing with the schedule and the amount of equipment on site, since we have several units.

Another feature that helps us to run international works is the mentality of our operators and technicians, that **they are prepared and used to work abroad**, so we have no diversification of staff, teams are created and consolidated to achieve the best work.

WORKS



1



2



3

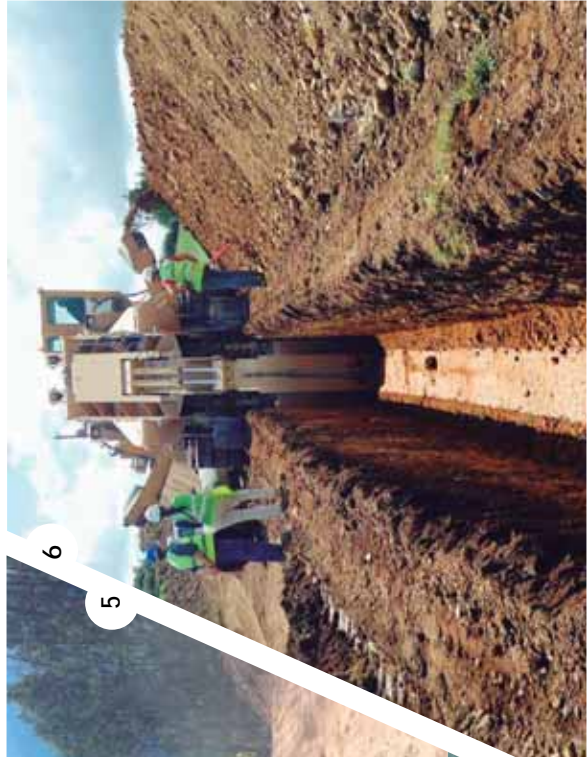
- ① Drainages made for the Navarra channel at 6.80 metres of depth. Navarra.
- FCC**
- ② Gas pipeline Yela-Almazán. Guadalajara – Soria.
- ELECNOR**
- ③ Gas pipeline Almazán-Villar of Arnedo. Soria-La Rioja.
- SPECAPAG/GROUP FIVE**
- ④ Multiduct NMPP Johannesburg – Durban. South Africa.
- COLLOSA**
- ⑤ Gas pipeline País Vasco-Treio. Zierbana-Treio.
- GRUPO OV**
- ⑥ Gas pipeline Musel-Llanera. Asturias.



4



5

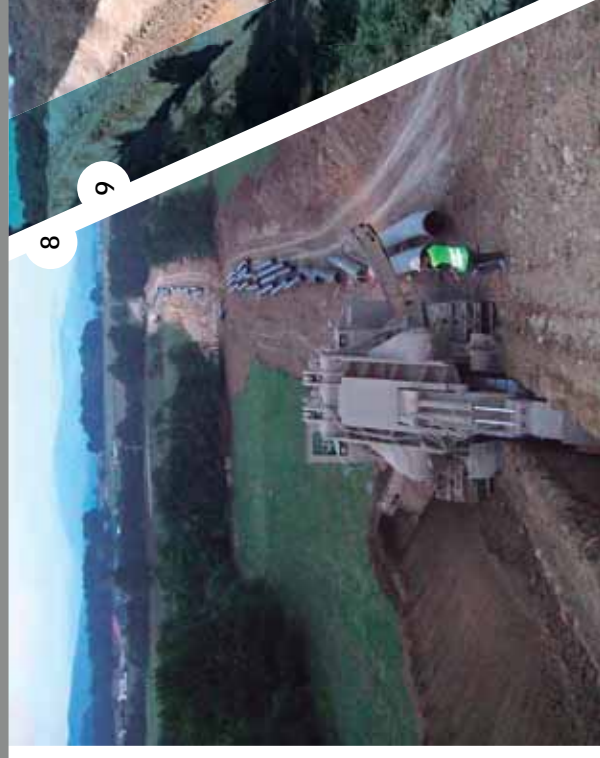


6



7

- ① **SACYR**
Gas pipeline Almería-Chinchilla.
Almería-Albacete.
- ② **COLLOSA**
Gas pipeline Haro-Lemoa.
Vitoria-Bilbao.
- ③ **BEFESA-SANDO**
Supply of Cáceres.
Cáceres.
- ④ **ALTEC**
Trenches for AVE services.
Cáceres.
- ⑤ **FCC**
Oil pipeline Cartagena-
Puerto Llano section I.
Murcia.
- ⑥ **ELECNOR**
Oil pipeline Cartagena-
Puerto Llano section II.
Murcia.



8

9



10



11

12





13

- ⑬ **SACYR**
Supply of Villalbilla.
Madrid.
- ⑭ **FERROVIAL**
Oil pipeline from Zaragoza to
Torrejón de Ardoz.
Zaragoza - Arcos del Jalón.
- ⑮ **EMILIO BOLADO**
Acueduct Reinososa- Santander.
Cantabria.
- ⑯ **ACCIONA**
Acueduct Bolarinos- Almagro.
Ciudad Real.
- ⑰ **ACCIONA/MJGRUAS**
Watering Garrigues Sur. Juncosa.
Lleida.
- ⑱ **FCC**
Basic transport gas pipeline
Marina Lucense road section of
Ribadeo-Viveiro.
Lugo.



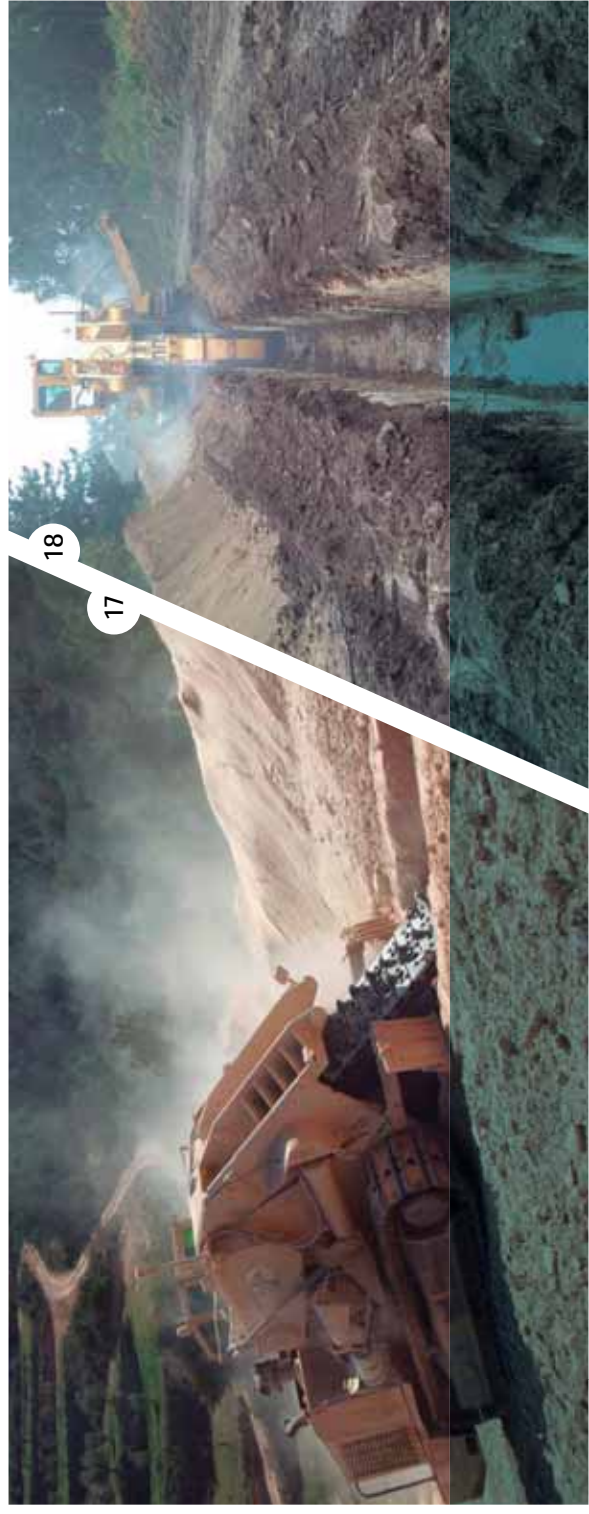
14



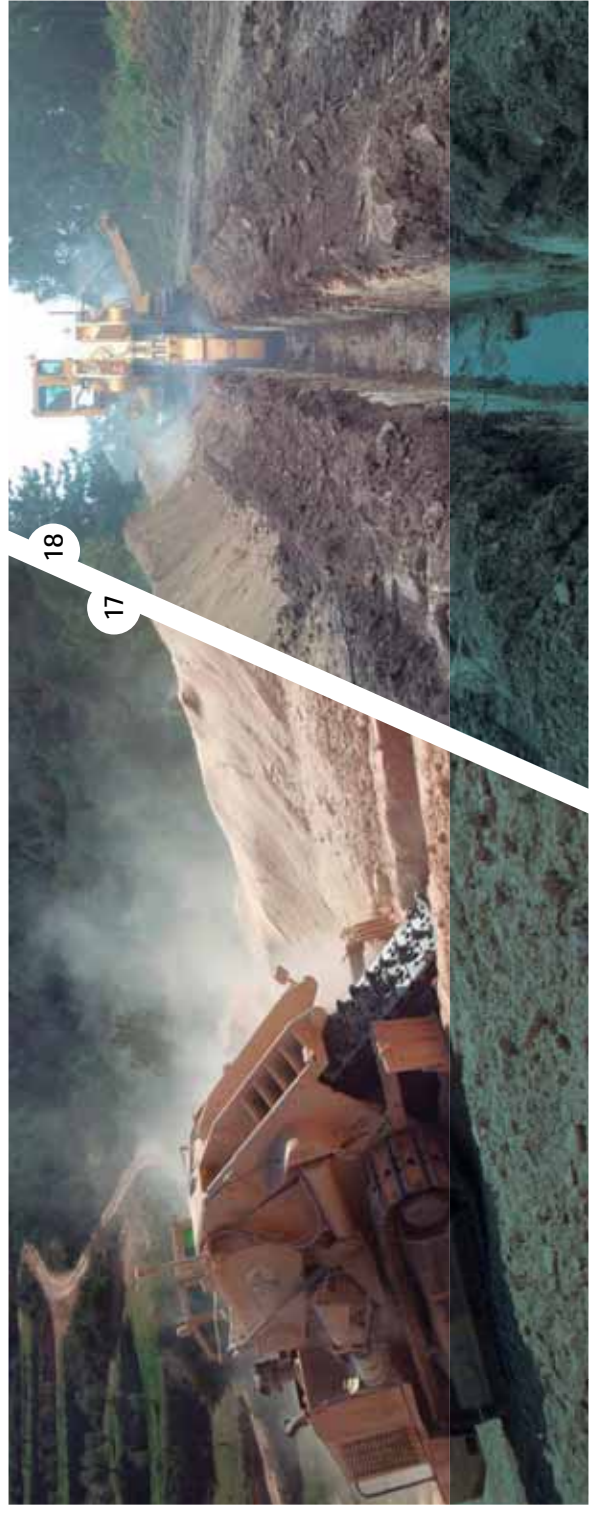
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16



17



18



19

- ⑲ Gas pipeline Yela-Villar of Arnedo section south. Guadalajara
- ELECNOR**
- ⑳ Gas pipeline Yela-Villar of Arnedo section north. Soria
- ACCIONA**
- ㉑ Gas pipeline HuercaI-Baza. Guadix. Granada
- FERROVIAL**
- ㉒ Gas pipeline Son Reus-Andratx. Mallorca
- DRAGADOS-BENITO ARNO**
- ㉓ Dam of Albagés. Lleida
- ELECNOR**
- ㉔ Oil pipeline Guadalajara - Soria. Guadalajara



20

21



24

23



22



COLLOSA

Gas pipeline Ajoirín-Toledo.
Toledo.

GISCA

Gas pipeline Alcázar de San Juan-Villarrobledo.
Albacete.

SICCIM

Gas pipeline Chinchilla-Calasparra.
Albacete-Murcia.

INEREX

Gas pipeline Zafra-Mérida.
Badajoz.

Gas pipeline Ruta de la Plata.
Cáceres.

FCC

Gas pipeline - bypass road of Gallur.
Zaragoza.

Oil pipeline Conquista-Almodovar.
Ciudad Real.

Aqueduct Deva-Nasa.
Canlabría.

OSHA

Oil pipeline Cartagena-Puertollano tramo IV.
Ciudad Real.

PAVASAL

Watering in Sallent.
Valencia.

BALZOLA

Watering in Lamiiego.
Alava.

New installations of deposits CDH.
Burgos.

COPCISA

Channel Segarra-Garrigues section Agramunt.
Lleida.

Channel Segarra-Garrigues section Alfés.
Lleida.

UTE LOS MORRONES

P.E. Los Morrones Baza.
Granada.

ELECNOR

P.E. Almatret.
Lleida.

P.E. San Antoni.
Lleida.

SACYR

Solar Park Don Alvaro.
Mérida.

Residential estate Puerto Venecia.
Zaragoza.

ACCIONA

Solar Park in Zuera.
Zaragoza.

CELYSA

Residential estate in Baroba.
Soria.

DRAGADOS-MECO

Supply of Almadén.
Ciudad Real.

APO

P.E. Almoren. Calatayud.
Zaragoza.



OPEN TO NEW CHALLENGES

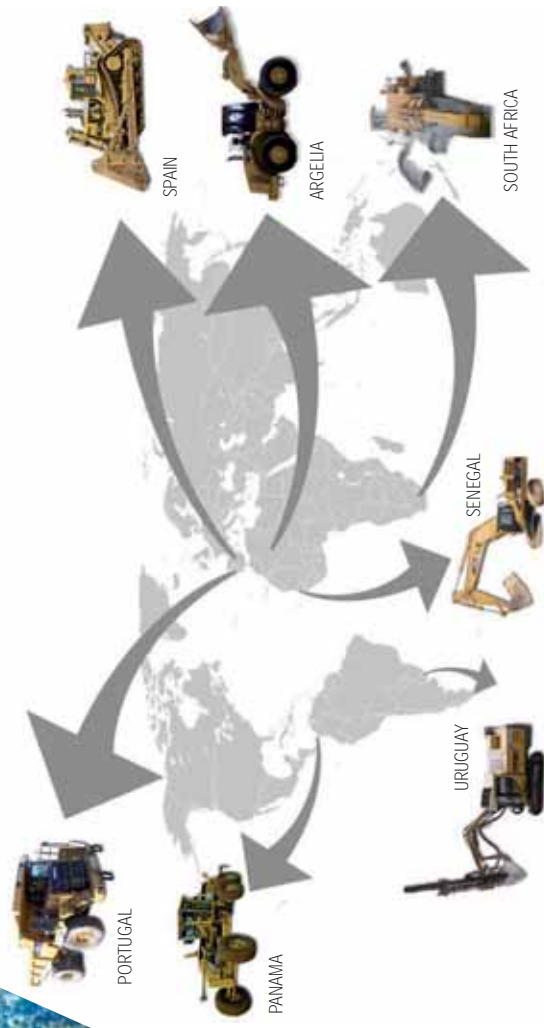


STRATEGY AND ACTIONS AIMED AT MATERIALIZING NEW OPPORTUNITIES

The capabilities and experience of **ELMASA** along with its consolidation strategy and growth has led the company to participate in major **international projects** of great significance.

Within its **expansion plan and growth**, the company is committed to a **strong development** of its international activities and is a loyal supplier of large Spanish and European multinationals.

NACIONAL AND INTERNATIONAL COVERAGE



Pursuant to the provisions of current legislation - Law 15/1999, Protection of Personal Data - we inform you that personal data provided is confidential and are part of the files owned by the company in order to streamline the management and contracted services, as well as providing information regarding our services, unless expressly stated otherwise. You can exercise your rights of access, rectification and opposition by writing to **ELMASA PUBLIC WORKS**, Chaplainería Industrial Estate, plot 25 - 28411 Miraflores (MADRID).



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