

Safe casing drilling? Here is the solution



The automatic Twister, created by a company from Salerno, is an interesting coupling system of lining casings that can be used on all drill rigs and is able to increase safety and productivity in the execution of lining piles, eliminating the danger and waste of time due to the manual phase of coupling the casings

The safety issue, which is an obsession for the association of the European Foundations Enterprises, has focused its attention on the consequences for the industry of foundations resulting from the implementation of European Directive 2001/45/EC regarding mini-

mum standards for the safety of workers working at high altitudes.

A "careful" Safety Plan seemed necessary and, therefore, the priority of a number of appropriate solutions to prevent and reduce the risks of falls from heights by workers during the assembly of drills and manoeuvring inherent to them to put them into operation.

The condition...

When tubular drilling (casings) operations are carried out, it is often neces-

sary that some operations are executed at high altitudes by workers on the site. Before starting to drill, the casings that support the walls of the hole should be inserted into the ground; for this reason, the various elements are connected together securely through threaded sealing bolts in order to form a column which, in turn, must be bolted to the rotation head by means of a driver (twister). Once the pile has been installed, the column casing must be extracted from the ground and then must be disassembled element by element. In general, to connect the column casings to the driver, the sealing bolts are set manually and, for this purpose, the worker is forced to use devices such as a ladder, a rubber

loader - used as a "working platform" - or safety harness. Why are such widespread solutions not safe? The ladder can slip or slide on the muddy ground (during drilling, one cannot expect to have a clean and tidy surface); the worker could slip from the rung of the ladder (dirty boots); from an unstable position on a ladder, the worker must carry out his work with great physical effort; the driver of the rubber loader could make a wrong move endangering the life of the worker; safety harnesses could fail and therefore cause

With the automatic Twister, SIP&T stands by the road of concreteness, which has given desired results over time. A technological innovation targeted where clients highlight difficulties, resulting in a real and evident evolution of the product.

The great desire to preserve and enhance its competitiveness, combined with the intention to protect the right to exclusivity, has led the specialist from Salerno to patent "his invention".

With the assistance of Eng. Francesco



Screwing and fastening the column casing to the driver using a ladder



The use of a rubber loader as a "working platform" and safety harness are examples of inadequate means of access



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... and the solution

For a number of years, manufacturers of drills, and their users, have tried to develop alternatives and adequate solutions to make work much safer and more productive from an economical point of view.

Cantisani, International Sales Director at SIP&T, we will illustrate the original design and creation by the company from Campania in the field of ducted piles and related management systems of lining casings by explaining the technological principles and practical benefits derived from it.

Automatic Twister - Mechanical

The pipe casings are made of high quality steels and their use is intended for piling in grounds that require excavation protection to avoid the drilling pile from collapsing. Two male/female coupling halves, which are applied to the ends of the individual elements of the pipe column, facilitate their junction.



Fig. 1

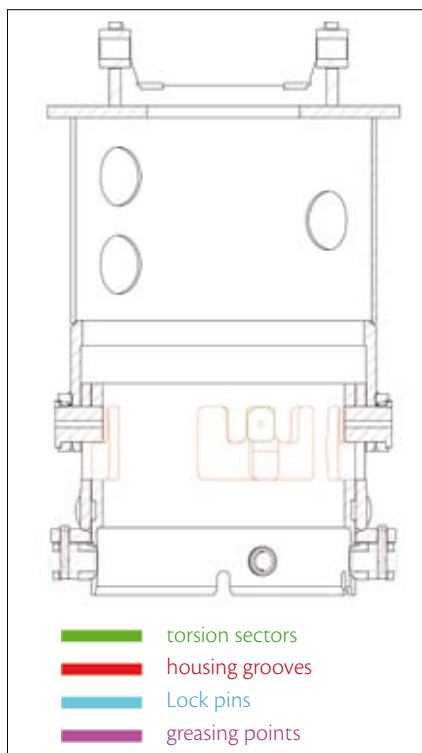
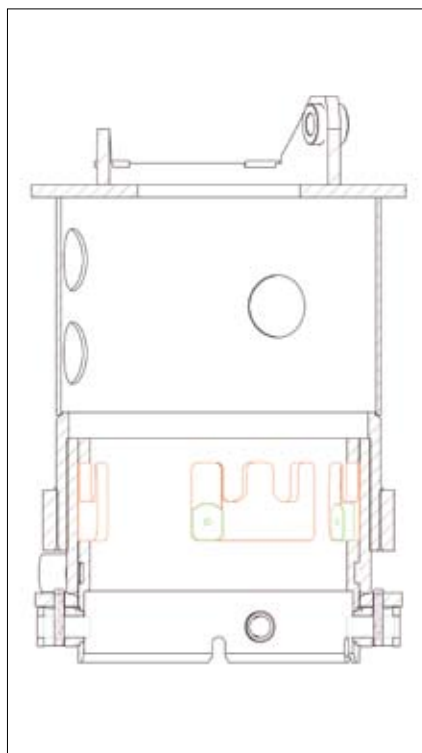


Fig. 2



In this context, we find the recent technical development of the twister (driver) by SIP&T, made with an entirely mechanical system of engagement/release to lining casings that can be used on all machines for large vertical drilling. The system is able to increase safety and productivity in the execution of lining

piles, thus eliminating danger and time wasted due to the manual phase of coupling. Thanks to it, today, drilling operators can connect the column casing to the driver without the use of human resources, therefore, directly from the operating cabin where they are seated. After long research and development,

the system described has now reached the stage of serial production and is successfully used on many sites.

Operation sequence

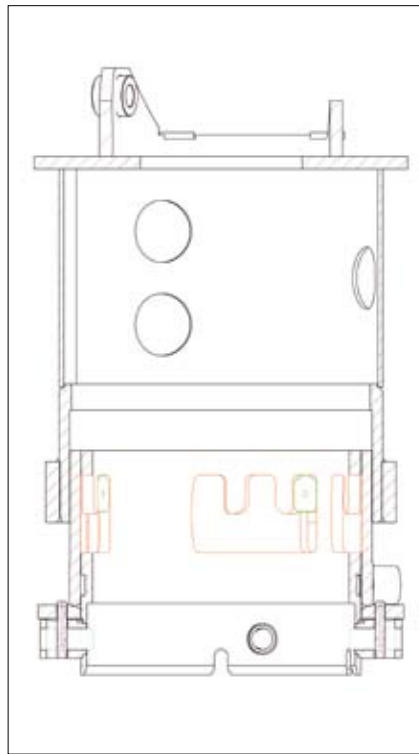
The twister (Fig. 1) is in "standby" position, which means it has no lining coupled. The torsion sector is in the central housing grooves and the check pins are released. The clamping process of pipes (Fig. 2) is as follows: the female coupling of the twister is centred and inserted into the male coupling of the lining to connect, whilst the torsion sector moves from standby to operating mode by connection, without distinction, to the extremity of one of the two external housing grooves. The check pins are inserted simultaneously ensuring the perfect connection between the two couplings. At this point, the rotary may transmit clockwise or anti-clockwise rotation and push downwards to slide the linings deep down. On completion of excavation operations and in order to extract the column casing from the pile (Fig. 3), all you have to do is stop rotation and lift the torsion sector, which will place itself on the upper part of one of the two external housing grooves; the column casing will thus be extracted with the aid of the hydraulic piston stroke or the pull down winch of the drill. Release of the twister from the pipe will occur once the torsion sector is placed in its original standby position, namely the central one with regard to the three housing grooves.

A look to the future

The connection system described has been developed and tested on site thanks to the collaboration of various drilling companies. As you can imagine, this journey has taken years and a great human and financial effort was necessary. SIP&T has had to deal with setbacks and forgot adequate solutions and approaches in the prototype stage that were inadequate in the implementation phase. However, it has finally succeeded to develop a safe and efficient system, which is, today, in daily use on



Fig. 3



many sites.

Application of such a system can make a significant contribution to improving safety in the field of special foundations and, above all, in creating piles.

This particular locking system increases productivity, the various elements of the column casing can be assembled and disassembled much faster when carried out mechanically. Moreover, very long casing elements may be used (connection of long casing elements is impossible with the use of a simple ladder, a rubber loader or a safety harness). Lastly, it is obvious that there are saving costs on personnel, which can be used elsewhere on the site.

This locking system, controlled and operated from a distance, is an example of technical innovation that contributes to improving the safety and productivity in the works of special foundations. ■

