PRA-S line: new generation rock auger

The new rotary drilling tool developed by SIP&T represents an innovation in the field of large vertical piling. It is a new generation auger, completely re-designed and manufactured in order to offer higher drilling performance in very hard rock strata

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SIP&T at GEOFLUID
External Area
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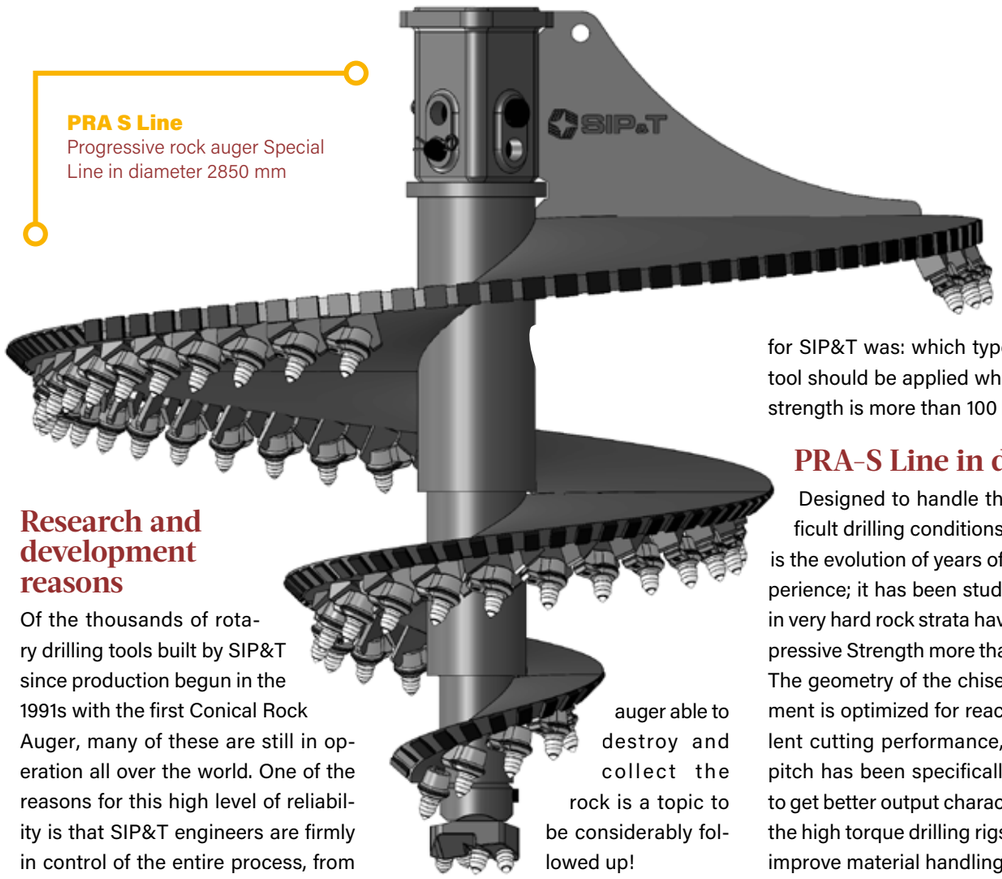
Since 1991 the purpose of SIP&T has always been to manufacture a wide range of rotary tools with highest level of reliability and performance in the field of vertical foundations. The search for high performance, combined with the search forever better reliability, has always been the real and recognizable philosophy of SIP&T in construction sites around the world. Numerous efforts have been made, over the years, by SIP&T engineers and workers to offer to customers the best power tool suitable to the excavation.
This concept combined with the competent advice received from customers and drill operators, together with the continuous activity and research of technicians in all type of work on construction sites and in soils around the world, has recently led to the creation of the new range **SHD**, which means simply SUPER HEAVY DUTY. However, SIP&T believes that drilling is a complex and difficult process where the theoretical knowledge must be reflected in the practice and execution. In order to obtain the best of the new hydraulic innovations installed on the machine and transfer properly to the ground, the company has created a new and complete range of drilling tools and accessories. The SHD Line tools has been introduced as product line with the goal of even better satisfying various requirements of customers. In details, the line is manufactured accordingly to the different rigs torque and rock hardness.
Such line of drilling tools has some basic principles, which are dealt with utmost priority, such as quality, high performance, greatest reliability, highest safety levels, lowest maintenance, long lifetime, customized design. Short delivery time can be met even for special tools or components. Highly flexible production line, experienced technicians pleased to assist clients on site and extensive stocks are prerequisites for this. Client satisfaction is key criteria for all tools and components made by SIP&T.

The flights pitch has been specifically designed to get better output characteristics for the high torque drilling rigs in order to improve material handling



PRA S Line
Progressive rock auger Special Line in diameter 2850 mm

Research and development reasons

Of the thousands of rotary drilling tools built by SIP&T since production begun in the 1991s with the first Conical Rock Auger, many of these are still in operation all over the world. One of the reasons for this high level of reliability is that SIP&T engineers are firmly in control of the entire process, from design and development to production and comprehensive testing prior to delivery. Perfect matching of drilling rigs, drilling tools and soil conditions is a crucial factor for the success of SIP&T rotary drilling tools. This is why all drilling tools are designed and manufactured within the SIP&T production plans. From choice of materials to compliance with manufacturing quality and permitted tolerances, all individual processes are continuously monitored and documented by the in-house certified Quality Assurance Department. Many of the ideas, requirements and wishes of the customers are frequently incorporated into the continuous improvement processes. The rotary drilling tools technology represents a world apart; the possibility to transfer the rotary torque through a kelly bar, maybe at 100m depth, to an auger able to destroy and collect the rock is a topic to be considerably followed up!

The right interpretation of Material Technology Science, the application of many simple mechanical principles and the introduction of Special Technologies for the soil treatment represent the only way to face and solve the ground drilling matters, from soft but cohesive soils (i.e. plastic clay) to very hard and abrasive ones (i.e. granite with compressive rock strength higher than 200 MPa). Rotary drilling tools have been chosen in base of rock strength to be drilled. It should be noted that not only the compressive rock strength (UCS), but also the degree of fractures and number of joints in the rock mass as well as the material's resistance to tensile, frictional, shear and abrasive forces are also factors that influence both rock drillability and tool durability. One of the most important question for SIP&T was: which type of drilling tool should be applied when the rock strength is more than 100 MPa?

PRA-S Line in details

Designed to handle the most difficult drilling conditions, this auger is the evolution of years of drilling experience; it has been studied to work in very hard rock strata having a Compressive Strength more than 100 MPa. The geometry of the chisels arrangement is optimized for reaching excellent cutting performance, the flights pitch has been specifically designed to get better output characteristics for the high torque drilling rigs in order to improve material handling.
Auger main features are:

► High and fast drilling capacity
Optimized cutting geometry yields fast drilling rates, due to its flight which increases in diameters progressively and its special chisels and holders, this auger displays excellent ripping characteristics.

► Low and easy maintenance
Replaceable strips in Hardox HB 600 are highly wear resistant while the special setting angle allows the Betek round shank chisels to sharpen themselves as they turn.

► High operational reliability
Quality and design that come with 25 years of experience in the design and production of rotary drilling tools.
In conclusion, rock drilling for piling applications using conventional drill tools is usually limited to rock strengths of 100MPa compressive strength (UCS) or less. The PRA-S Line presents an alternative hard rock drilling method which is suitable to penetrate rock when conventional drill tools become either ineffective or reach refusal. Over the last year, many piling contractors are excavating linear meters of extremely high strength rock in excess of 200MPa compressive strength (UCS) using innovatively designed and built PRA-S Line. This special auger is achieving up to ten times faster production rates than conventional drill tools and up to four times faster production rates than air roller core barrels in similar rock formations and are therefore attractive options for hard rock drilling requirements for bored piles.◄

The geometry of the chisels arrangement is optimized for reaching excellent cutting performance. This auger displays excellent ripping characteristics thanks to special chisels and holders made by Betek

Replaceable strips in Hardox HB 600 are highly wear resistant, central stem diameter and its thickness together with spiral thickness and chisels number/ position are decided trough a FEM analysis

INFO

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