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TYPES AND METHODS OF DRILLING WELLS IN THE MINING INDUSTRY. CHOOSING A DRILLING MACHINE IN QUARRIES

(IN THE EXAMPLE OF YOUTH MINE)

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Abstract:

In the process of development of various deposits and exploration of rocks, the correct choice of the type of blasting well drilling is one of the important factors that ensure the efficiency of mining operations.

Keywords

Drilling, well, column, auger, rotor, rocks.

Introduction

Since the mining industry is one of the most important sectors of the economy, the right choice of equipment, technology, methods and methods at each stage of mining operations is an urgent issue. In the process of development of various deposits and exploration of rocks, the correct choice of the type of blasting well drilling is one of the important factors that ensure the efficiency of mining operations. A drill press is a construction equipment used to drill a cylindrical hole in the ground. Drilling rigs vary greatly in size: they can weigh several tons or, conversely, be light enough for one person to move the machine by hand. Drilling rigs can create wells, take samples from mineral deposits, and test the physical properties of rocks, soil, and groundwater. They can also be used for underground structures: (tunnels, wells or sewers). Types of well drilling. Drilling methods are divided into mechanical and non-mechanical types. Since non-mechanical methods are little studied in science, they are practically not used. Mechanical drilling methods are used for drilling wells used for various purposes. Drilling is carried out with the help of special drills, which ensures the creation of a well of the required size.

Mechanical drilling methods, in turn, are divided into several types:

- Circulation.
- Percussive
- Vibration (vibration).

Each of the drilling methods has its own characteristics, but each of them allows to achieve the desired result depending on the field of application. Rotary drilling is the most efficient method because it allows you to extract the rock in the well without stopping the process. Also, the rotary drilling method is relatively cheap, so most of the drilling work is done using this type of drilling method. Since rotary drilling is the main method of drilling wells, it should be considered in more detail. Rotary drilling method is divided into three types:

- Columnar.
- Auger.
- Rotor.

The rotary drilling method can be used to drill rocks of different strengths, so rotary drilling is divided into three subtypes, each with its own purpose and characteristics. The general process of rotary well drilling is not very different, but each method is acceptable only if certain criteria are met. Column drilling is mainly used in sandy or clayey rocks of low strength. The rock being drilled is taken in the form of a core. Drilling is carried out using a special auger, and the well can be deepened using a special bit installed in the pipe. The torque is transmitted by means of pipes firmly fixed to the ground. If drilling occurs in dense rocks, additional fluid is injected during drilling operations. Hard rocks include:

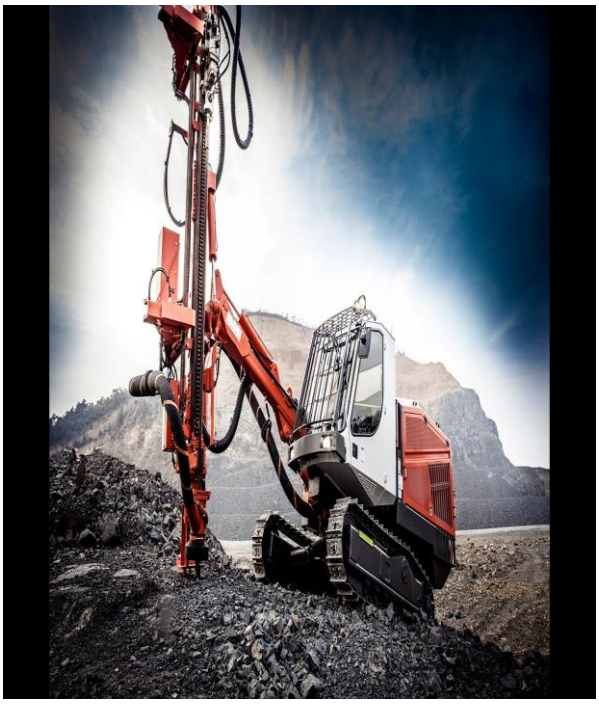
- Suglinoks.
- Rocky rocks.
- Heavy clays

Sludges can also be removed from the pit by using a large amount of water. In some cases, instead of sending water, the inside of the pipe is blown with compressed air delivered by a special compressor. Column drilling it is possible to drill a well with a diameter of 8-20 centimeters and a depth of up to one kilometer. The main work is carried out using drilling rigs installed on KAMAZ or KrAZ vehicles. Auger drilling is used for drilling water wells in agriculture. Drilling is carried out with the help of augers, as a result of which the rock is extracted through the augers at the same time as the well is deepened. A screw is a rod with a solid spiral surface along its longitudinal axis.

This construction waste rocks

It doesn't allow you to get out of the cave completely, so this method is only effective when going through the upper layers. Most often, this method is used to create wells whose depth does not exceed 30 m in soft soils and 20 m in moderately dense soils. After the well is drilled

after the auger is removed from the well, the well hole is reinforced with a casing and the well itself is cleaned of stone debris. Dense and stony stratified mountain This construction waste rocks



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after the auger is removed from the well, the well hole is reinforced with a casing and the well itself is cleaned of stone debris. Dense and stony stratified mountain‘ It is not advisable to use an auger in the process of drilling rocks, so this method can be used in combination with other drilling methods.

Rotary drilling is used for drilling wells up to 150 m deep in rocky and semi-rocky rocks. Washing fluid is usually used for rotary drilling, so this method cannot be used in winter due to the freezing of technological components in the regions. Among the advantages of this method, the following should be noted:

- The possibility of drilling a well with a diameter of up to 2 m.
- High quality drilling of water wells.
- Fast drilling process with low resource costs.

Obstruction pipes are installed after cleaning the well from waste rock, which ensures good results. Rotary hammer drilling. In this case, the rock is released with a drill bit along the cross section of the well. The drilling tool consists of a doloto (crown), steel pipes or a bar. Steel pipes have two holes, that is, they consist of air and water channels for passing the rock mixture. And the bar is designed to send air through the internal channel (hole). Rotary drilling rigs can drill (dig) a well at a steep and small slope (up to 300). Their excavation diameter is 400 mm and depth is up to 40 m. In this case, as a result of the rotation of the three-part toothed sharoshkas (toothed gears) of the rock loosening drilling column against the rock under vertical force, its structure is destroyed. Crushed rock is removed from the well using pressurized air or water. At the same time, it acts as a cooling agent. Although there are not many methods of drilling wells, the choice of the best method ensures the economic efficiency of the work carried out. In the mining industry of Uzbekistan, there

are large quarries that are mined by the open method. In these quarries, the use of rotary hammer drills as a drilling machine is effective in every way. Because the rocks in these mines are rocky and semi-rocky, and their strength is equal to f= 10-18.

Type of drilling	Rock feature	Explanation
Rotary drilling	Soft rocks	Depth up to 5000 m, steep slope or horizontal the possibility of drilling
Plunge hammer drilling	Hard and fissured rocks (limestone, granite and others	The depth is up to 4000 m, the possibility of drilling
Auger drilling	Clay, loamy sand, gravel, etc	The depth is several dozen the possibility of drilling up to a meter
Carrots	All kinds of grunts	Rock analysis, possibility of oblique drilling
Percussion drilling	Hard rocks: sandstone, limestone, shale stones	The depth is up to 100 meters the possibility of drilling
Rotary hammer drilling	Hard rocks (f=6-18)	The drilling diameter is 400 mm and the depth is 40 m

CONCLUSION

In conclusion, it should be noted that before choosing drilling rigs for drilling operations, the purpose of the drill well, its dimensions, and the type of rock being drilled It is necessary to study the physical and mechanical properties of rocks in detail. Because each drilling machine is designed for use in certain conditions and based on the characteristics of rocks. Based on the physical and mechanical properties of the rocks in the "Kalmokir" and "Yoshlik" mines located in the Almalyk ore region, the use of drilling rigs of the SBsh 250 MNA model is considered an optimal solution.

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