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USING GPS TECHNOLOGIES WHEN PERFORMING SURVEYING OPERATIONS

The development of automation of certain processes in mining took place stage by stage and from the very beginning, there were systems for controlling specific mechanisms that control the technological process.

The development of digital computing allowed to implement the algorithms of any complexity without changing the error in controlling. For some time, this was impossible by the limited scope and speed of information processing by digital computing itself. However, recently, the capabilities of this technique have increased dramatically, at the moment, there are many opportunities to use them in real time, for providing all the necessary requirements in the control system as on speed, information processing as on their reliability.

The main problem solved with the help of satellite geodetic equipment at mining enterprises is the creation and reconstruction of support and survey geodetic networks. The need for this type of work can be caused by at least two reasons. The first reason is to put into operation new industrial facilities, such as quarries, waste dumps, placers, cinder tanks, and others. The second reason is the need to reconstruct existing support networks, when some of their points were lost as a result of the economic activity of a mining enterprise, and the coordinates of the preserved points as a result of the man-made impact of mining operations on the upper part of the earth's crust have undergone significant changes.

In both cases, it is very important to choose the points of the state geodetic network to which the support survey network will be linked.

Special software for satellite technologies includes three-dimensional modeling of the quarry surface and a comprehensive system that allows logically to transfer planned projects from desk conditions to field ones.

There are the following types of work performed by the survey service to provide drilling and blasting operations:

- survey of the drilling site;
- on the basis of the approved project for drilling wells, the characteristic anchor points are placed, the baffle row is set;
- at the end of drilling, the selected wells are measured (the depth of the wells, the size of the water column, the grid of the wells).

When using GPS, the time to take a survey of the finished drilling site and design this survey for drawing up a project for drilling is reduced to several hours. The drilling passport is delivered to the drilling rig as soon as possible.

When using GPS, it is possible to take a picture of each well on the block and record the depth of the wells in the receiver for a short time. When uploading data, you

save time on the block design. On average, the block takes about 25 minutes to complete.

The use of GPS technologies in open-pit mining has the following advantages:

- allows you to improve performance compared to total station survey;
- only one person can work with the kit set of this equipment;
- there is no need to center, level, or orient this receiver;
- when surveying, there is no need to ensure mutual visibility between adjacent reference points;
- the ability to quickly and accurately transmit coordinates over long distances;
- easy organization and high level of automation of work (press one button and the point is recorded)
- the ability to perform work at any time of the day and in almost any weather conditions.

Despite the obvious lag of domestic mining development technologies from the world level, at present there are all the prerequisites to eliminate this gap and implement the use of advanced technologies at enterprises.

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