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APPLICATION OF MODERN INFORMATION SYSTEMS FOR OPERATIVE CONTROL OF PRODUCTION QUALITY AT DIMENSION STONE QUARRY

When mining blocks of decorative stone, the engineering service of the quarry has to conduct operational management of the block products quality. The main problem of this process is the lack of complete information about the quality of raw materials located in a particular area of the quarry.

As a rule, the initial data for managing the quality of the massif is the visual inspection of the bank and description of the nearest exploration wells at the distance of 50 m, on the average.

It is obvious that the management efficiency of such output data will be low. Therefore, the urgency of developing a method for rapid analysis of a deposit quality is out of doubt.

The quality of the block raw material is determined by the defect, energy capacity of processing, decorative value and corrosion resistance of products. Therefore, it is reasonably to consider the expected quality of the polished tile as a basis for assessing the quality of block raw materials.

According to the current requirements for conducting a quality assessment, samples of ornamental stone, not less than 4 cm in size, are the most preferable to use. Handheld angular grinders with a cutting disc of a maximum permissible diameter of 230 mm are suggested to use for selection of samples.

As a result, we can get samples of 80 mm in size. A sample of this size will allow evaluating the main qualitative characteristics of a block stone with a high degree of reliability.

The basis of the quality assessment is the determination of the area of ore minerals, the orientation of minerals and defects, as well as the colour coordinates of samples. In order to evaluate all above mentioned indicators, a polished texture is required. Thus, selected samples of gabroid rocks will be processed by grinding and polishing machines (handheld or stationary of cantilever type for processing cassettes formed from samples). Marking samples with paint and determining the coordinates both of sampling point (using the T30 theodolite) and measuring tape or level rail RN-3 is offered to evaluate spatial variation of qualitative characteristics.

Distance between selected samples depends on the uniformity of the massif, the presence of certain defects and the scale of drawing. Taking into account the expected accuracy of the obtained coordinates of points and the accuracy of their mapping, the distance between e sampling points can be in the range of 5 m to 25 m.

Further processing of received samples was to scan them by Epson EP1500 scanner. Received image based on the overlay of certain masks is processed by MdiStones program; relative areas of uniform black colour zone were determined in RGB colour system using the mask overlay.

A uniform black colour is selected as a criterion for assessing the degree of ornamentality, as far as the degree of blackness of gabbro determines both the market value of stone and the basic aesthetic indicators of products.

Ornamental elements geometrization can be performed using GIS systems and based on the data of relative areas and coordinates of samples.

REFERENCES

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