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APPLICATION OF DIGITAL PROGRAM 3DM ANALYST MINE MAPPING SUITE IN ACCURATE MINE MODELLING

The development of automated methods of planning and organization of mining operation is connected with the creation of mathematical models of quarry. In our time modern methods of 3-D quarry surface modelling with accurate representation of bank contours and other elements of mining are widely introduced. With rapid development of technology, these methods improve and become simpler to implement.

Construction of three-dimensional models of quarry and individual objects has always been a topical issue. Modern computer and digital equipment gives us the ability to perform this kind of task, making no field measurements. It takes only ten minutes to build a three-dimensional image with new digital system 3DM Analyst Mine Mapping Suite.

The software performs the following tasks:

- geological and geotechnical analysis;
- resources modelling;
- calculation of the volume of stocks;
- measurement of the wear of the teeth of technical transport.

The advantages of this program:

- the ability to capture large areas of a quarry by photographing them;
- the ability to obtain data from up to 3 km away or from the air when there is no safe access to the area being mapped;
- the speed at which the data can be generated if to compare with other techniques;
- the level of accuracy and specification of the data generated if to compare with other techniques;
- the fact that acquiring the data does not interfere with mining activities;
- the ability to acquire data in different climactic conditions.

Using modern digital camera with a large focal length gives us the opportunity to make a detailed model (Digital Terrain Model) and three-dimensional image of the object. Given the distance between two any camera positions our software is able to generate correctly-scaled data even without any control points or surveyed camera positions; with at least three known locations — control points and/or camera positions — the data can also be registered in a real-world system, even when it is impossible to place control points in or near the area of interest.

3DM Analyst Mine Mapping Suite has established itself as a valuable program in the field of data mining. It is of particular interest to block and crushed stone quarries, because its specifications allow performing the work with required accuracy. Due to 3DM Analyst Mine Mapping Suite, the works on paper panel run faster and, thereby the productivity increases.

REFERENCES

1. Fulvio Tonon and Joseph T. Kottenstette. *LASER AND Photogrammetric Methods for Rock Face Characterization* - Golden, Colorado, 2006 – 120p.