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The use of parametric modeling as the geological description of the surrounding rocks in the workings.

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Abstract. The use of parametric modeling, similar to BIM (Building Information Model) technology, widely used now in the building construction industry, and very interesting to use this approach in documenting and modeling underground space.

Unlike construction sites, not reinforced tunnels and underground workings have a very large specific associated with the properties of the surrounding rocks, which are described by specific technical and physical parameters, taking into account their resistance over a long period while using them for the purpose of extracting a useful fossil.

Geotechnical modules built into Autodesk products are designed to solve specific problems in the construction of concrete tunnels and other facilities related to the bowels. A geological model in that module is a collection of AutoCAD® Civil 3D® triangulation models (planar surfaces) that display the top and bottom of geological layers, indicating the thickness of the geological layer and tracing the boundaries of the surfaces. Solid-state models are formed only at the locations of geological wells, illustrating their composition using conditional 3D AutoCAD® bodies constructed in accordance with good patterns.

Authors of this presentation propose the primitive families for the description of the geological and structural composition of rocks around the not reinforced tunnels are being developed for the Autodesk Civil 3D and Revit program.

At the same time the use of the FreeCAD program, which supports the exchange of parametric data in the IFC (Industrial Foundation Classes) format, can be also very promising, which means that the primitives developed in this program can be used in the Autodesk software too.

Parametric models of rock in the workings can play the role of the information model while calculating the stress, deformations, heat distribution and other physical fields for different technical applications. As an Open Source software with sufficiently developed tools for modeling and parametric description of models based on information modeling, with a certain adaptation, FreeCAD program can be used for this tasks, it can also be used as the basis for creating a unified information system for underground laboratories at different scale of accuracy needed for any calculations.

