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IMPROVEMENT AND DESIGN OF BUILDING STRUCTURES IN SOFTWARE PACKAGES

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Since 2022 all construction objects funded from the republican budget will have to be built using BIM-technologies.

Building Information Modelling (BIM) is digital representation of physical and functional characteristics of a facility creating a shared knowledge resource for information about it forming a reliable basis for decisions during its life cycle from earliest conception to demolition.

The work on implementation of the software packages in construction has been carried out since 2012. The lack of visible results is due to the low level of Belarusian specialists in the field of BIM-technologies.

There are many major benefits for structural engineers while using BIM: increased time efficiency; possibility of design different structures with convenient tools; possibility of interaction with structural analysis software; possibility of improved collaboration with architects and MEP engineers to avoid a possible crossing of networks and structures; automatic obtaining of any kind of project documentation.

The top software packages available in the market are as follows: Autodesk Revit, Graphisoft Constructor, Bentley Architecture, Tekla Structures.

Autodesk Revit is the full-function decision uniting in itself possibilities of architectural designing, designing of engineering systems, building designs, and also modelling of building.

Revit allows create the physical model consisting of various materials, and also independent analytical model with possibility of its updating and the further export in structure analysis software. In this software all necessary calculations of structural element are carried out with use of finite element method (FEM). After that the model can be exported in AutoCAD Structural Detailing for detailed drawings, or to return back in Revit. By results of calculations it is possible to change automatically in model of section of constructive elements on those which correspond to the calculations which minimize the possible errors caused by «the human factor».

Implementation of software packages (in particular, BIM-technologies) in the construction industry in Belarus is solving a number of problems and will allow industrial and civil engineering industry move to a higher level of competitiveness.