

Point Cloud and BIM-based Quality Check of Building Structures

Alojz Kopacik, Jan Erdelyi and Richard Honti (Slovakia)

Key words: Engineering survey; Laser scanning; Photogrammetry; Quantity surveying; BIM; scanning; modelling; quality check; building structures

SUMMARY

Automation in the building industry has increased significantly over the last few years. The base of this effort creates both the broad application of BIM (Building Information Modelling) and the common usage of modern data acquisition and modelling technologies. In cases when the BIM model is disposable, this could be used as the as-planned model of the building (structure). For an effective in-situ check of the construction quality, semi-automated control of the building's produced elements (parts) is implemented in the construction process. The fast and effective data acquisition using different scanning methods and automated or semi-automated modelling built the base of these processes. The process of converting a point-clouds, which are products of the scanning process, into a BIM model is often called "scan-to-BIM." In cases when integrated into this process, the quality check is called "scan-vs-BIM". The method includes data acquisition by scanning and point cloud adjustment with registration, which enables the creation of two data sets and models in a common coordinate system. Next, the models are compared and evaluated. Finally, deviations between the models are calculated and presented. The paper describes the developed methodology and shows the results of its practical application during the construction of a polyfunctional building with an existing BIM model.

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FIG Working Week 2023
Protecting Our World, Conquering New Frontiers
Orlando, Florida, USA, 28 May–1 June 2023