

THE EXPERIENCE IN USING LASER SCANNING AND BUILDING INFORMATION MODELING FOR ENGINEERING DATA MANAGEMENT DURING THE LIFE CYCLE OF AN INDUSTRIAL OBJECT

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An industrial object accumulates a great deal of information about its assets throughout its whole development period. This information is provided in the different drawings, passports, regulations, and other technical documentation. One of the common problems of most industrial objects is the disorganized storage of technical documentation on assets and its limited access to different industrial services. This greatly complicates the retrieval of information about the assets to ensure the steady operation of the industrial object. As a consequence, one of the ongoing important tasks becomes the creation of a unified source of up-to-date information about the object's assets and the facilitation of the access to that data for all the participants of the project, construction, and operation process. Exactly these issues are tackled in the article alongside with the solutions based on using BIM and terrestrial laser scanning. This article also describes the types of BIM and detailed differences between them, the methods to form a BIM, as well as how the methods change at different stages of the life cycle. As well, the typology of tasks for which BIM solutions are applicable. TLS technology is described as a source of initial data for the formation of BIM. This article describes the results of the combined use of BIM and TLS at the stages of design, construction, and operation of an industrial object based on the implemented project. The article provides the result of clash detection in design documentation. The result of clash detection between designed and existing structures is also given. The article also provides the deviations at the construction stage of industrial objects, which were discovered. The acquired results demonstrated the effectiveness of using terrestrial laser scanning and BIM in engineering solutions.

Keywords: geodetic measurements, life cycle of an industrial object, terrestrial laser scanning, BIM, as-design BIM, as-built BIM, BIM for facility management, deviations, clash detection

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