THE TECHNIQUE FOR CREATING DIGITAL THREE-DIMENSIONAL MODELS OF OIL AND GAS MANUFACTURING FACILITY OBJECT INFRASTRUCTURE USING TERRESTRIAL LASER SCANNING

Maxim A. Altyntsev
Siberian State University of Geosystems and Technologies, 10, Plakhotnogo St., Novosibirsk, 630108, Russia, Ph. D, Associate Professor, Department of Engineering Geodesy and Mine Surveying, phone: (952)915-29-80, e-mail: mnbcv@mail.ru
Pavel A. Karpik
Novosibirsk State University, 1, Pirogova St., Novosibirsk, 630090, Russia, Graduate, phone: (983)319-08-09, e-mail: karpikpavel@yandex.ru

Oil and gas manufacturing facility territories are complicated enterprises with diverse infrastructure. Design, construction and operation of engineering plants require periodic geodetic surveying in these territories, as a result of which information on the spatial position of all objects is accumulated. Due to the high area density, 3D models are the most suitable products created with geodetic surveying. Terrestrial laser scanning is used to create high-precision 3D models of built-up territories. A technique of field laser scanning stage and its data processing is selected depending on area of a survey, site development and requirements for accuracy and detail of 3D model. The technique of field laser scanning stage for oil and gas manufacturing facility territories and the technique of 3D modelling according to the obtained data is discussed. Analysis of laser scanning data processing software and 3D modeling methods is performed.

Key words: terrestrial laser scanning, oil and gas manufacturing facility, 3D modelling methods, digital 3D model, digital twin.

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