

D. Shkvarun, Master student
V. Levytskyi, PhD in Engr., As. Prof., research advisor
S. Sukhovetska, Senior lecturer, language advisor
Zhytomyr State Technological University

AUTOMATIZATION OF THE ACCOUNT OF FINISHED PRODUCT STORES AND DUMPS BY DIGITAL PHOTOGRAMMETRY AND MODELING

Efficiency of work and accurate measurements are the most important indicators in accounting of finished product stores and dumps in modern conditions. Widespread use of terrestrial photogrammetry in conjunction with modern automatic software can reduce time commitment and increase the accuracy, in comparison with traditional accounting of finished product stores and dumps. The main task of automatization is to increase the efficiency of terrestrial photogrammetry as a measurement method by performing an analysis of existing digital surveying techniques and practical skills of work with automatic programs such as Pix4D, Geovast3D, 3Dsurvey, AgiSoft Photoscan. It also important to check in practice the techniques of digital terrestrial surveying for dumps and stores from small distances.

The issue is to conduct theoretical research in the field of applied photogrammetry, which allows developing theoretical basis for technological research of surveying techniques and improving already existing networks of phototriangulation. In conjunction with current software for image processing, it can increase the efficiency of work automatization.

In terrestrial photogrammetric surveying, the accuracy of spatial coordinates determination significantly depends on the large range of changes in the distance between the points and the basis of surveying. For photographing, stations with a good overview of the object are usually selected to have the least number of "dead" zones (when objects of the near-plan are blocking the distant objects) during surveying. In the process, the optical axis of the camera may take different positions relative to the horizon and the base line. The development of the computing power of central and graphics processors over the past decades allows the photogrammetric software to transform a set of an object (dump) photographs into a three-dimensional model and independently calculate the given parameters (characteristics) without personnel interference. It also helps obtaining accurate results over a short period of time depending on the objects of surveying.

The technique of qualitative photogrammetric surveying of finished product stores and dumps at gravel pits is developed on the basis of the analysis of already existing photogrammetric techniques which considerably simplify the work with photographs. The possibility of introducing the digital methods of surveying at other sites is examined. The expansion of photogrammetry will lead to widespread use of science in construction, architecture, surveying, the construction of 3D models of hard-to-reach objects and obtaining the high-precision results.