

Bożena KOTARSKA-LEWANDOWSKA

Gdansk University of Technology

Faculty of Civil and Environmental Engineering

Department of Mechanics of Materials and Structures

G. Narutowicza Street No 11/12, 80-233 Gdansk, Poland

phone/fax: +48 58 347 18 91

e-mail: bokot@pg.gda.pl

CREATING 3D MODEL FROM POINT CLOUDS

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The current development of new technologies has an observable impact on the workflow of engineer-designer in producing technical documentation. Application of Building Information Modelling (BIM) used for comprehensive digitalisation of an object together with the laser scanning technology results in a shift of the multifaceted tasks of building industry into the digital environment. This process is in its initial phase, changes in building regulations and norms are still required, nonetheless the direction of the transformation is already established and adjustments in the academic environment follow.

In the construction sector the intensive development can be observed in the field of reverse engineering – meaning introduction of existing objects into the digital reality for further processing. The task is realised with the use of laser scanner which has the advantage of gathering large amount of high quality information in a short time. In construction laser scanners are used for the inventory and assessment of various objects, often historic monuments. Measurements give the ability to discover even minimal deformations, including deflections, horizontal and vertical deformation, changes in time and wetting. As the laser scanning technology is becoming broadly used for the inventory and diagnostic works, application of cloud point storage will become a necessity in the engineering practice.

The paper presents an example of a CAD 3D modelling exercise for students in the construction courses. The task will require to construct a CAD 3D model based on data obtained through laser scanner Leica P30. As a consequence of a limited amount of cloud storage for the presented programs, files will have to be appropriately reduced. The article presents the analysis of the possibilities of application of selected tools in creation of geometry for the given exercise in various programs.