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THE USE OF COMPUTER SOFTWARE IN DESCRIPTIVE GEOMETRY DIDACTICS AT LUBLIN UNIVERSITY OF TECHNOLOGY

Key Words: *descriptive geometry, computer graphic, solid modelling*

This paper is an attempt to present the implementation of solid modelling and animation to graphics education of civil engineering students at Lublin University of Technology. The idea of using computer software for solving geometry and engineering graphics problems has originated from observations collected while giving lectures and classes of descriptive geometry and engineering graphics. These observations indicate difficulties with reading the constructions presented on board as traditional chalk drawings, especially during lectures, because of the largeness of the lecture room and big number of students.

The search for improvement in teaching methods has led to the incorporation of dynamic elements in lecture materials. A combination of traditional methods describing geometrical mappings shown by means of animated PowerPoint presentations and solid modelling by CAD software has been used to develop a new formula of lecture for descriptive geometry. In PowerPoint presentations currently discussed geometrical problems are shown as step-by-step animations. Besides verbal commentary of the lecturer, the presentations itself contain a few annotations that highlight specific procedures. Modelling in AutoCAD is shown by the lecturer in real-time. Short films presenting visualizations of solid models in the .wmv format are another medium used during lectures.

Figures 1, 2 and 3 illustrate examples of typical lecture materials.

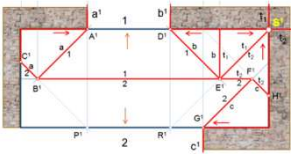

Fig. 1 Constructing the orthographic projection of the roof (plan view). Animated step-by-step construction presented in PowerPoint

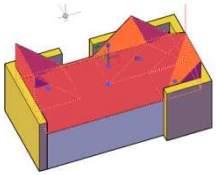

Fig. 2 Solid primitives used to build 3D roof model in AutoCAD

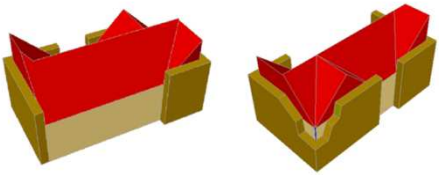

Fig. 3 Frames of a 3D animated visualization in the .wmv format

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