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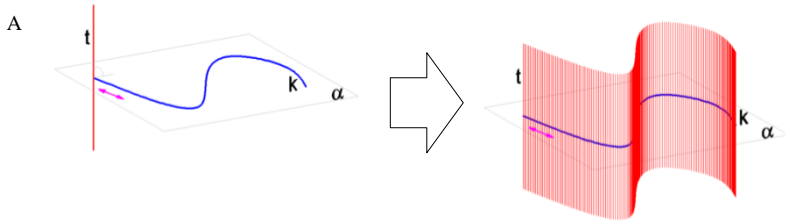
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THE GEOMETRY OF CONVERTIBLE ROOFS

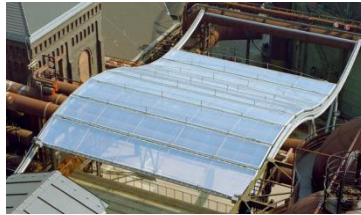
Keywords: *convertible roof.*

Teaching descriptive geometry to students of engineering faculties includes topics related to roof designing. It encompasses the determination of hipped roofs by establishing edges between individual stretches and assessing their real-life sizes. Classified herein as rotary or non-rotary surfaces present yet another interesting topic within the field of descriptive geometry. Although roofs and surfaces are discussed separately in terms of theory, in engineering practice these two topics are closely linked together. It results from the fact that roofs are not only of polygonal shape, a form that is most common in real-life solutions, but also of diverse geometry. Moreover, a roof does not necessarily have to be a solid construction as some of its parts can move, thereby changing the roof's shape and function.

This paper discusses issues related to convertible roofs, mainly those whose movement comes as a result of an adopted shape. It relates to surfaces, which according to geometrical definition are created due to a movement – rotation or advance. This includes rotary surfaces (drawn by a curve rotating round an axis) and ruled surfaces (drawn by a straight line moving along a directrix as shown in Figure).



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Źródło: http://www.sbp.de/cn/build/show/1108-Moveable_Roof_for_the_Landschaftspark_Duisburg-Nord

Fig. Ruled surface - cylindrical

A. Geometric construction - drawn by a straight line t moving along a directrix k

B. Example implementation – convertible roof theatre in Landschaftspark Duisburg-Nord, Germany.
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