



„CONTEMPORARY APPROACH TO
THE DEVELOPMENT OF SPATIAL
COMPREHENSION THROUGH
AUGMENTED REALITY CONTENT“

**Warsaw University
of Technology**

10. Cutting the cone with 5 planes

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<https://liggd.it/spacar/en/graphic-materials>

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SPACAR

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Intellectual Output: O1: Cutting Geometrical Solids with Planes.

Exercise number: 10

Title: Cutting the cone with 5 planes

Description:

The cone presented below has been cut with 5 planes – α , β , γ , δ , ϵ . Construct horizontal and profile projections (A3 size, scale 1:1), locate the position of planes yourself, give specific angles designed, use paper and pencil or /and computer software.

After drawings answer the questions below:

1. Are the planes γ and δ mutually perpendicular? Where do they intersect – within the cone, on its surface or outside of the solid?
2. If the planes α and γ mutually intersect, would it break the cone's outline?
3. What would happen if the planes α and ϵ mutually intersect?
4. What types of sections correspond to each plane: circle, ellipse, hyperbola, parabola?

Given digital files:

IO1-10-a.pdf: frontal projection of the cone and cutting planes

IO1-10-b.obj: 3D model of the given problem solved.

Result:

Frontal, horizontal and profile projections of the cone cut with 5 planes (A3 size, scale 1:1)
Answer to questions 1-4.

Prior knowledge:

Basic knowledge related to descriptive geometry, knowledge of geometrical surfaces.

Augmented reality content:

3D model of geometric solid cut with relevant cutting planes.



PROJECT CONSORTIUM PARTNERS:



P1. Vilnius Builders Training Centre [VSRC]



P2. Riga Technical University [RTU]



P3. Warsaw university of technology [WUT]



P4. Polytechnic university of Valencia [UPV]



P5. Siauliai vocational education and training centre [Siauliai PRC]



P6. SneakyBox [SBox]



P7. Jugendförderverein Parchim/Lübz e.V. [JFV PCH/LBZ e.V.]



P8. DECROLY, SL [DECROLY]