

## **FINITE ELEMENT ANALYSIS LAB REPORT**

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Section: B

Semester: VII

### **Introduction**

This report presents a complete analysis of a hexagonal model undergoing both Static Structural and Explicit Dynamic simulations in ANSYS Workbench 2020. The purpose is to understand the stresses, deformation patterns, and structural response under various loading conditions. Images extracted from the original simulation are included with detailed descriptions.

Figure 1



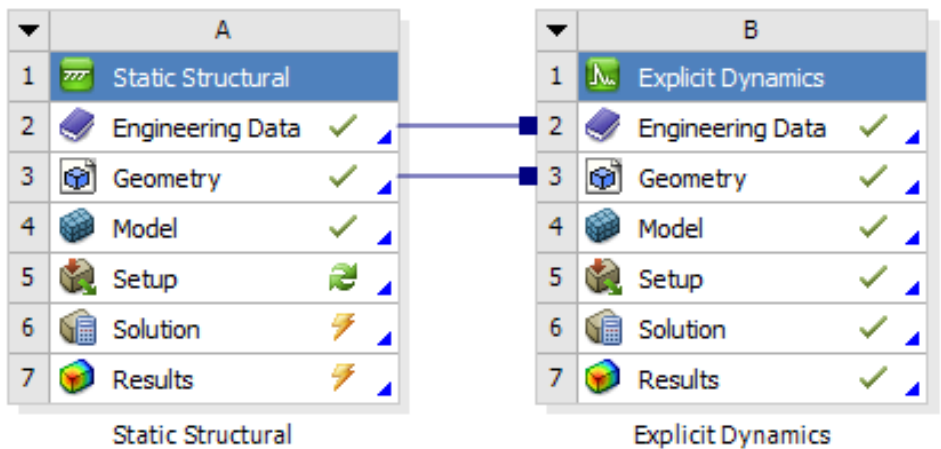
Description: This figure represents an output extracted from the original simulation report. It corresponds to the visual result number 1. The image illustrates simulation data, such as meshing, loading positions, convergence graphs, or stress contours depending on the stage of the analysis.

Figure 2

Structural	
▼ Isotropic Elasticity	
Derive from	Young's Modulus and Poisson's Ratio
Young's Modulus	95000 MPa
Poisson's Ratio	0.28
Bulk Modulus	71970 MPa
Shear Modulus	37109 MPa

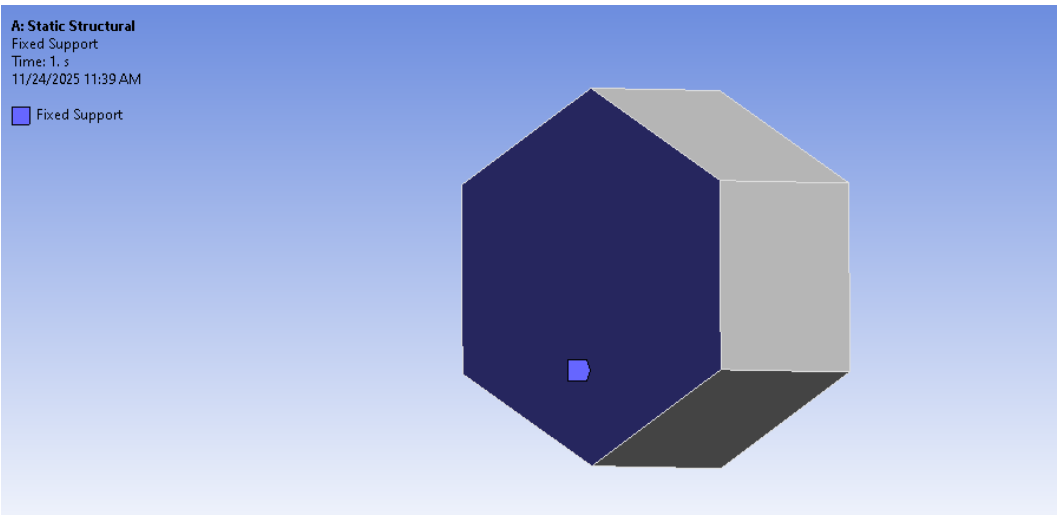
Description: This figure represents an output extracted from the original simulation report. It corresponds to the visual result number 2. The image illustrates simulation data, such as meshing, loading positions, convergence graphs, or stress contours depending on the stage of the analysis.

Figure 3



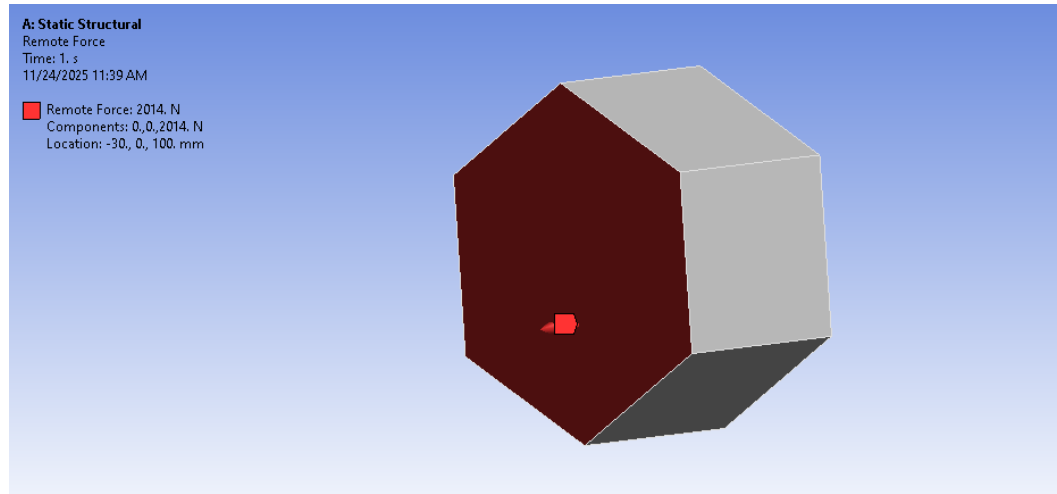
Description: This figure represents an output extracted from the original simulation report. It corresponds to the visual result number 3. The image illustrates simulation data, such as meshing, loading positions, convergence graphs, or stress contours depending on the stage of the analysis.

Figure 4



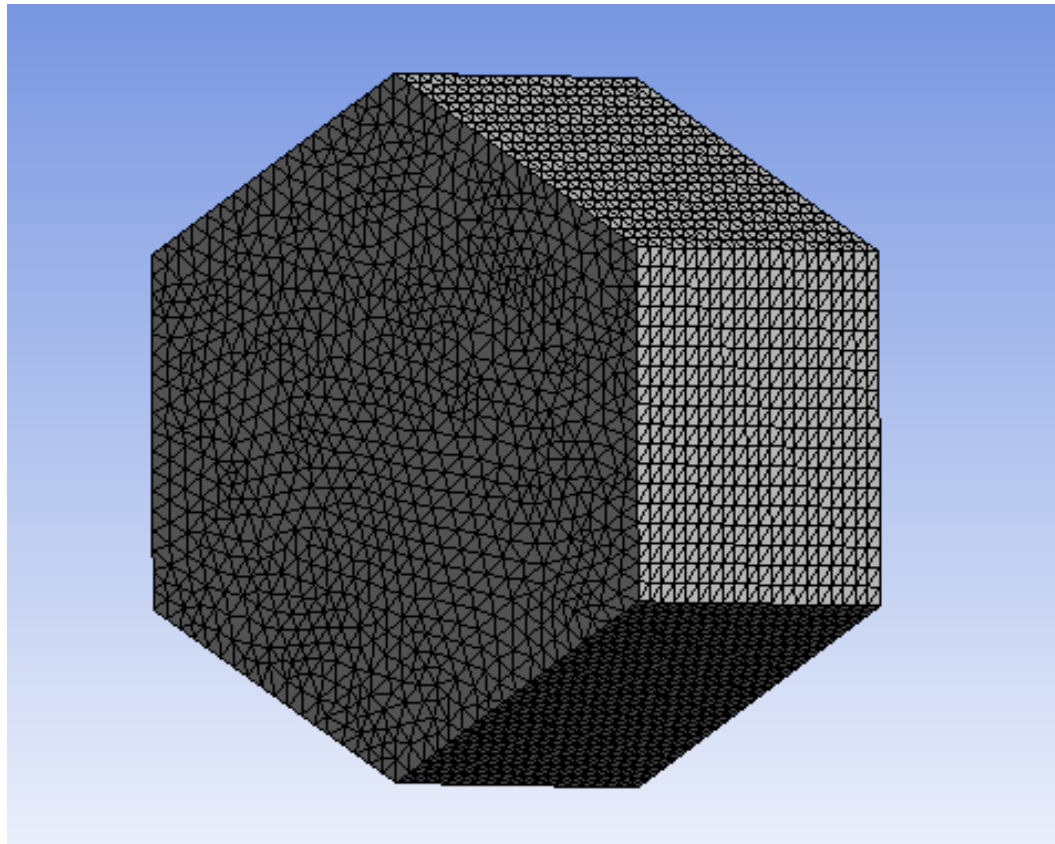
Description: This figure represents an output extracted from the original simulation report. It corresponds to the visual result number 4. The image illustrates simulation data, such as meshing, loading positions, convergence graphs, or stress contours depending on the stage of the analysis.

**Figure 5**



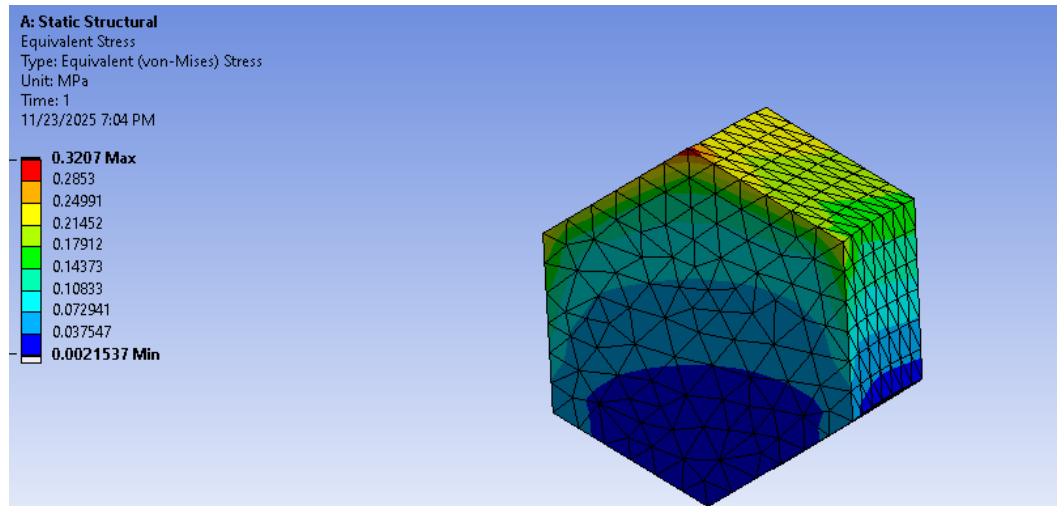
Description: This figure represents an output extracted from the original simulation report. It corresponds to the visual result number 5. The image illustrates simulation data, such as meshing, loading positions, convergence graphs, or stress contours depending on the stage of the analysis.

**Figure 6**



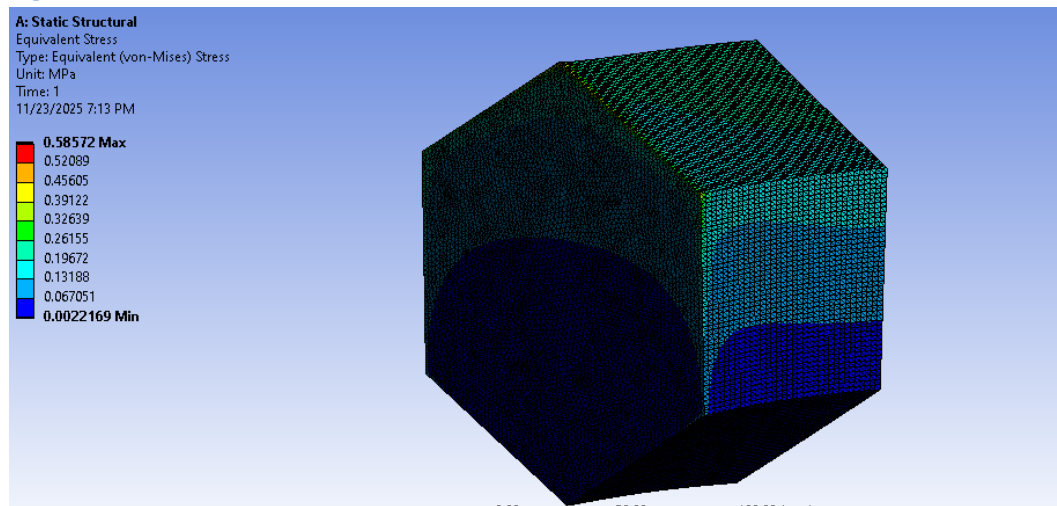
Description: This figure represents an output extracted from the original simulation report. It corresponds to the visual result number 6. The image illustrates simulation data, such as meshing, loading positions, convergence graphs, or stress contours depending on the stage of the analysis.

**Figure 7**



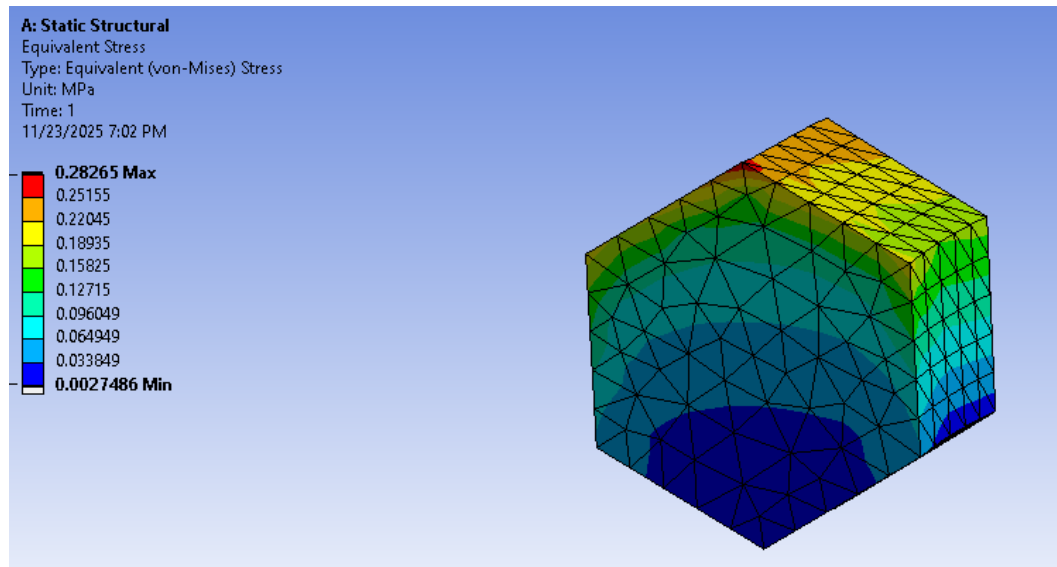
Description: This figure represents an output extracted from the original simulation report. It corresponds to the visual result number 7. The image illustrates simulation data, such as meshing, loading positions, convergence graphs, or stress contours depending on the stage of the analysis.

**Figure 8**



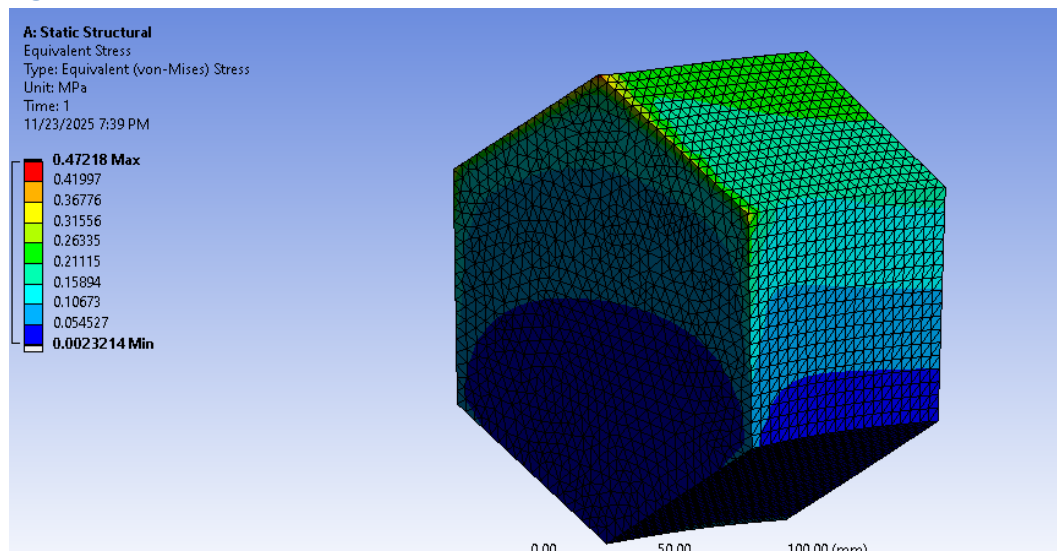
Description: This figure represents an output extracted from the original simulation report. It corresponds to the visual result number 8. The image illustrates simulation data, such as meshing, loading positions, convergence graphs, or stress contours depending on the stage of the analysis.

Figure 9



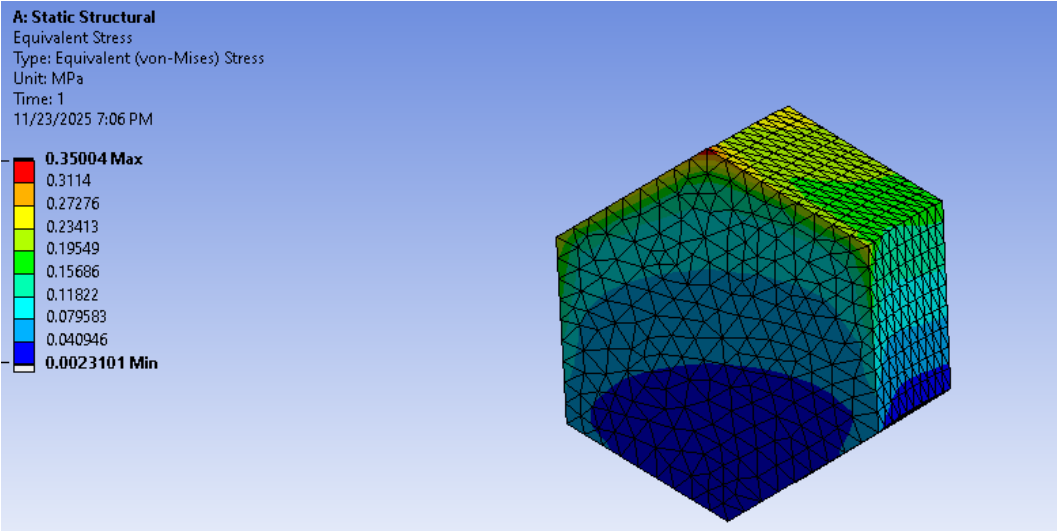
Description: This figure represents an output extracted from the original simulation report. It corresponds to the visual result number 9. The image illustrates simulation data, such as meshing, loading positions, convergence graphs, or stress contours depending on the stage of the analysis.

Figure 10



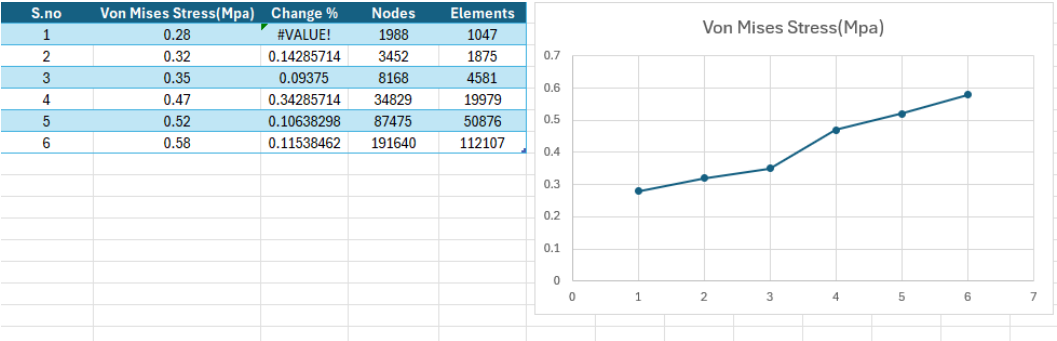
Description: This figure represents an output extracted from the original simulation report. It corresponds to the visual result number 10. The image illustrates simulation data, such as meshing, loading positions, convergence graphs, or stress contours depending on the stage of the analysis.

Figure 11



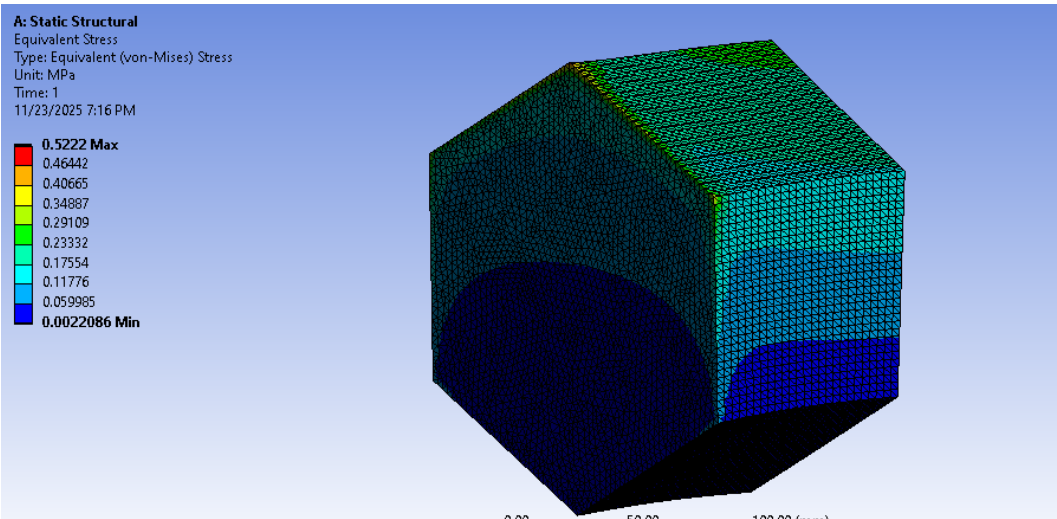
Description: This figure represents an output extracted from the original simulation report. It corresponds to the visual result number 11. The image illustrates simulation data, such as meshing, loading positions, convergence graphs, or stress contours depending on the stage of the analysis.

Figure 12



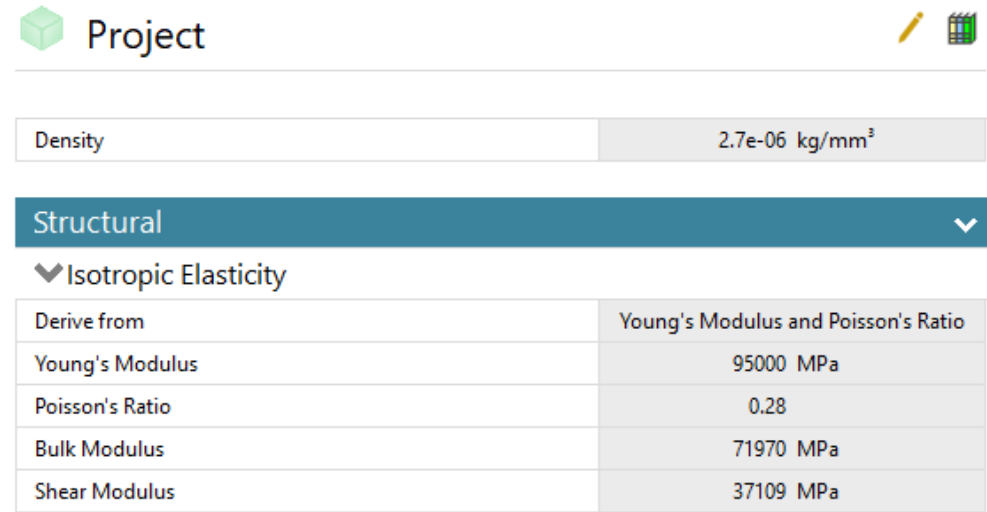
Description: This figure represents an output extracted from the original simulation report. It corresponds to the visual result number 12. The image illustrates simulation data, such as meshing, loading positions, convergence graphs, or stress contours depending on the stage of the analysis.

Figure 13



Description: This figure represents an output extracted from the original simulation report. It corresponds to the visual result number 13. The image illustrates simulation data, such as meshing, loading positions, convergence graphs, or stress contours depending on the stage of the analysis.

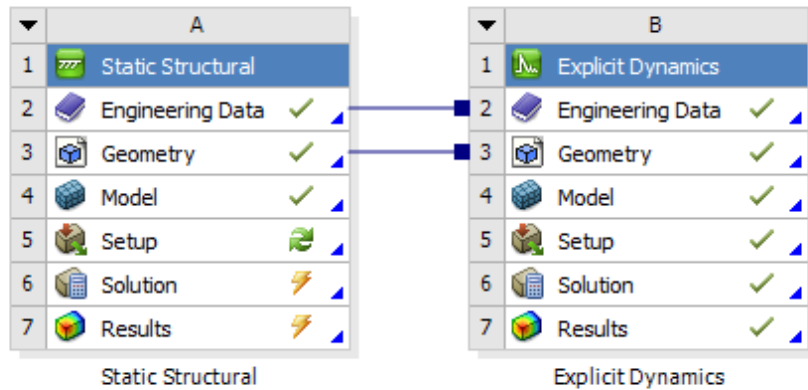
Figure 14



Description: This figure represents an output extracted from the original simulation report. It corresponds to the visual result number 14. The image illustrates simulation data, such as meshing, loading positions, convergence graphs, or stress contours depending on the stage of the analysis.

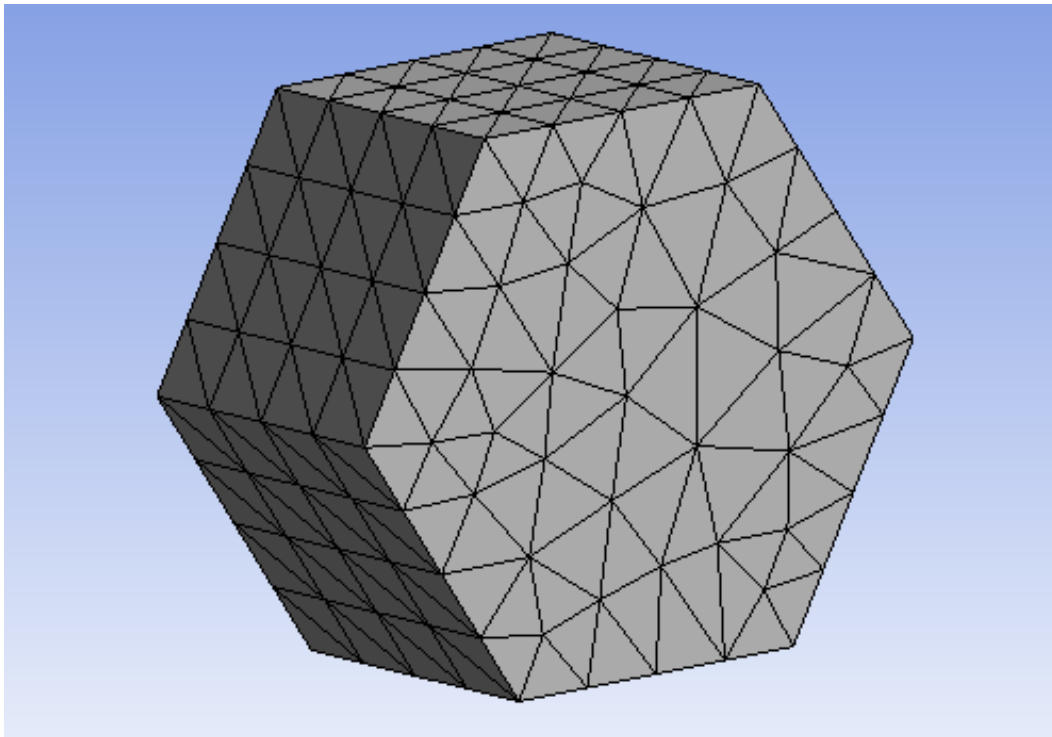


Figure 15



Description: This figure represents an output extracted from the original simulation report. It corresponds to the visual result number 15. The image illustrates simulation data, such as meshing, loading positions, convergence graphs, or stress contours depending on the stage of the analysis.

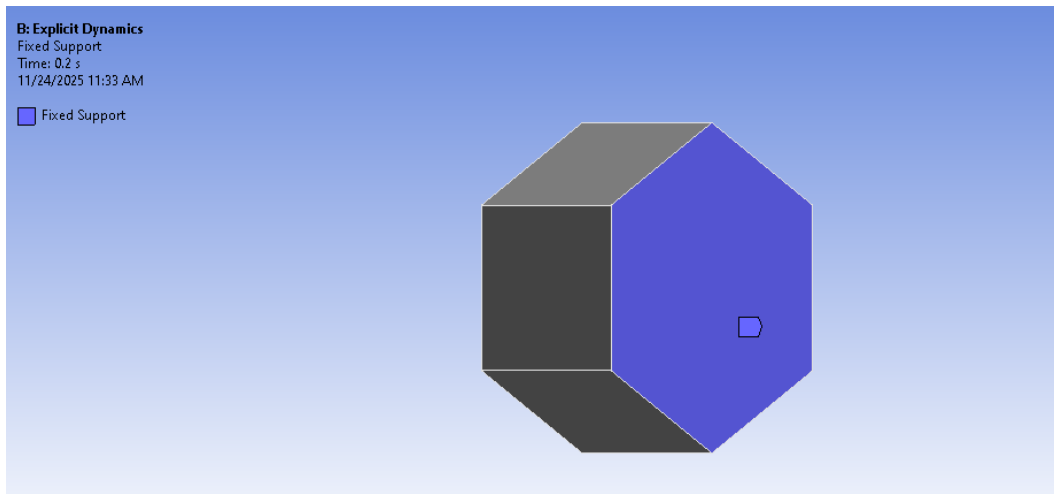
Figure 16



Description: This figure represents an output extracted from the original simulation report. It corresponds to the visual result number 16. The image illustrates simulation data, such as

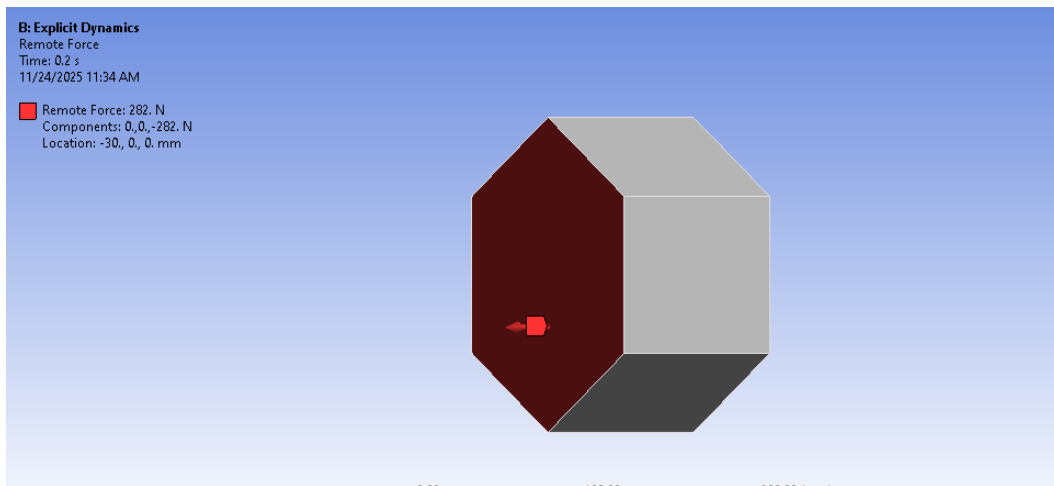
meshing, loading positions, convergence graphs, or stress contours depending on the stage of the analysis.

**Figure 17**



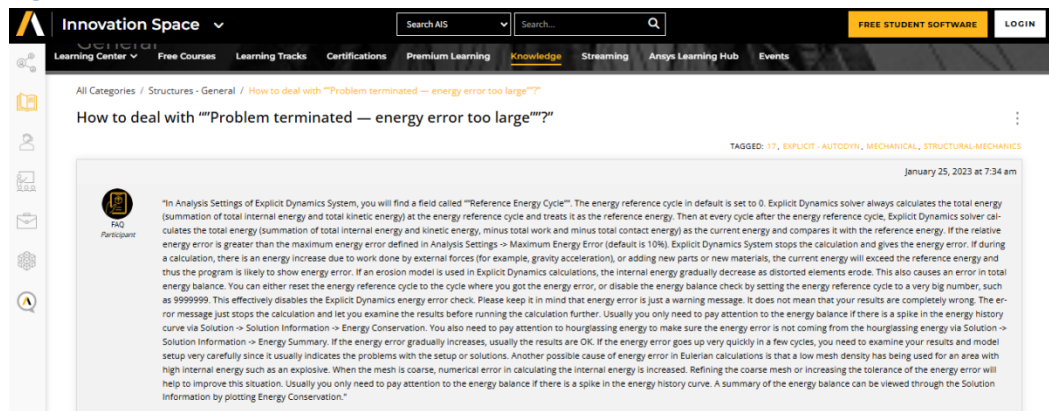
Description: This figure represents an output extracted from the original simulation report. It corresponds to the visual result number 17. The image illustrates simulation data, such as meshing, loading positions, convergence graphs, or stress contours depending on the stage of the analysis.

**Figure 18**



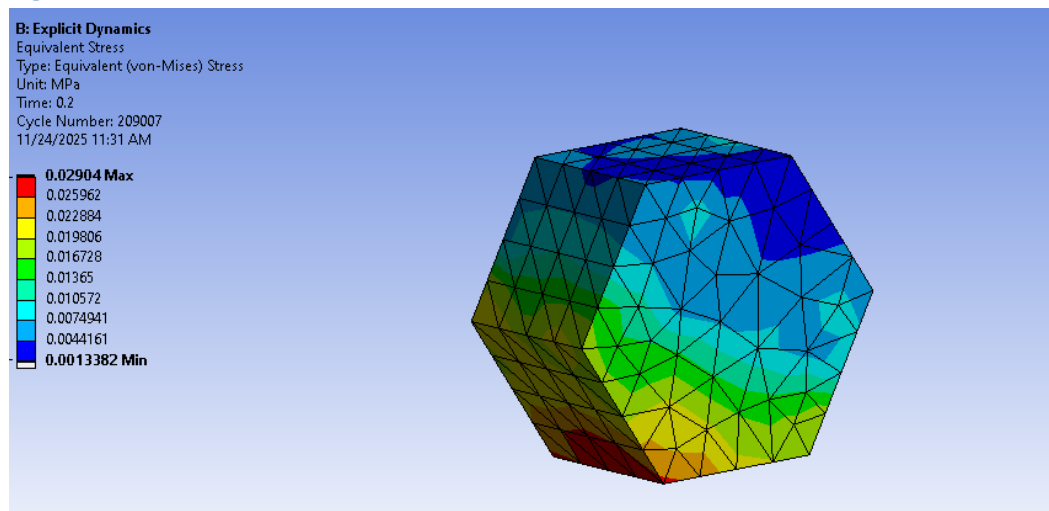
Description: This figure represents an output extracted from the original simulation report. It corresponds to the visual result number 18. The image illustrates simulation data, such as meshing, loading positions, convergence graphs, or stress contours depending on the stage of the analysis.

Figure 19



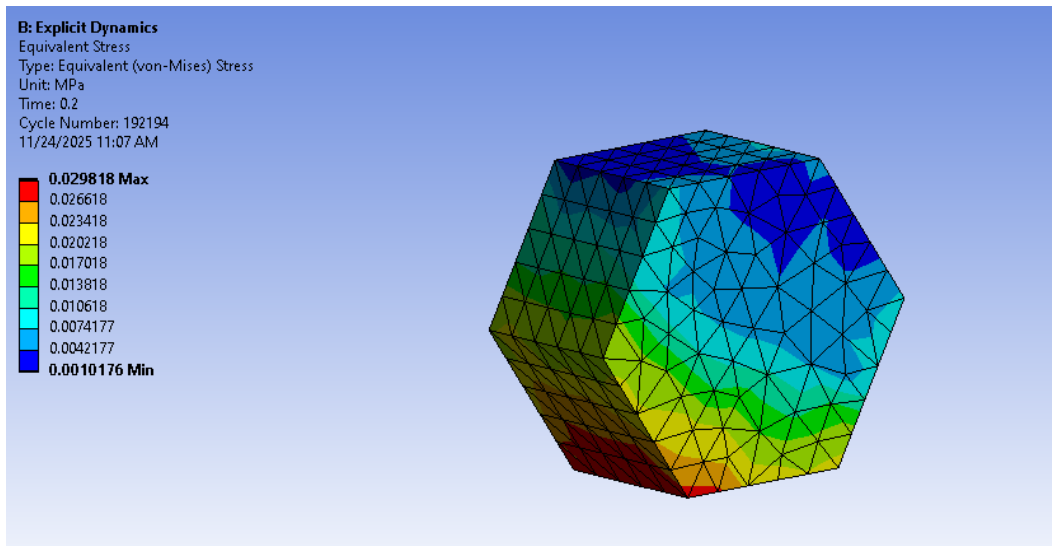
Description: This figure represents an output extracted from the original simulation report. It corresponds to the visual result number 19. The image illustrates simulation data, such as meshing, loading positions, convergence graphs, or stress contours depending on the stage of the analysis.

Figure 20



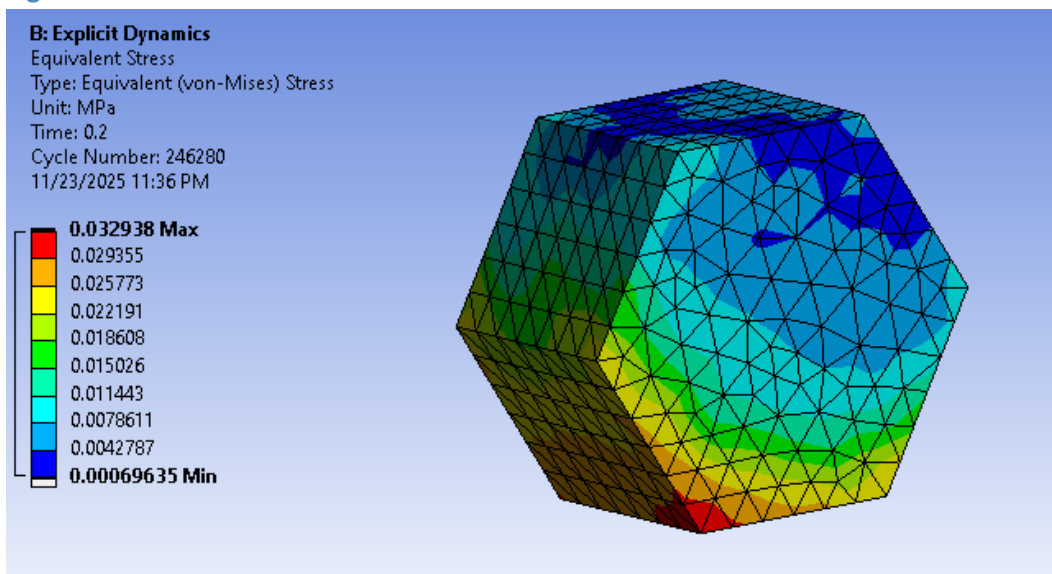
Description: This figure represents an output extracted from the original simulation report. It corresponds to the visual result number 20. The image illustrates simulation data, such as meshing, loading positions, convergence graphs, or stress contours depending on the stage of the analysis.

**Figure 21**



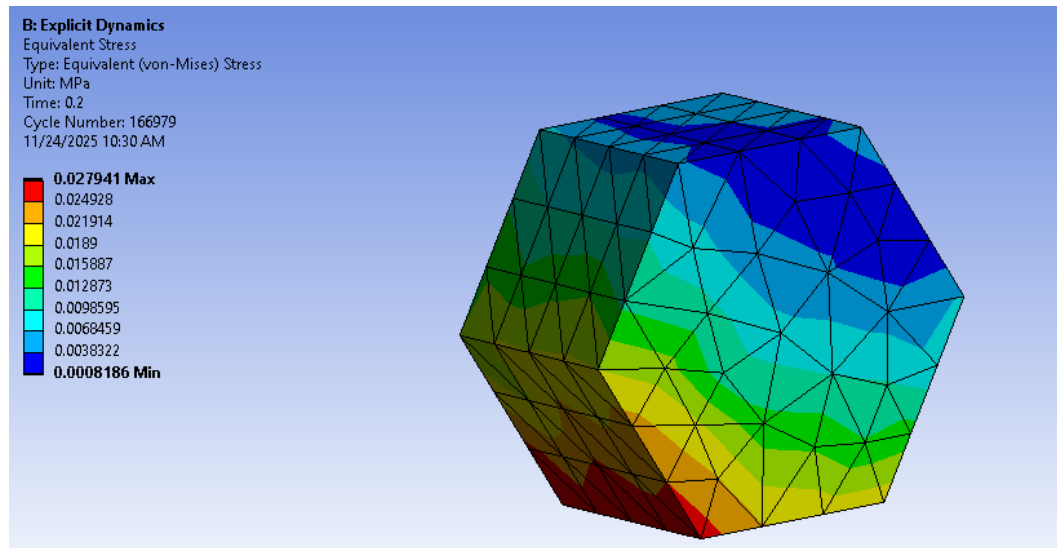
Description: This figure represents an output extracted from the original simulation report. It corresponds to the visual result number 21. The image illustrates simulation data, such as meshing, loading positions, convergence graphs, or stress contours depending on the stage of the analysis.

**Figure 22**



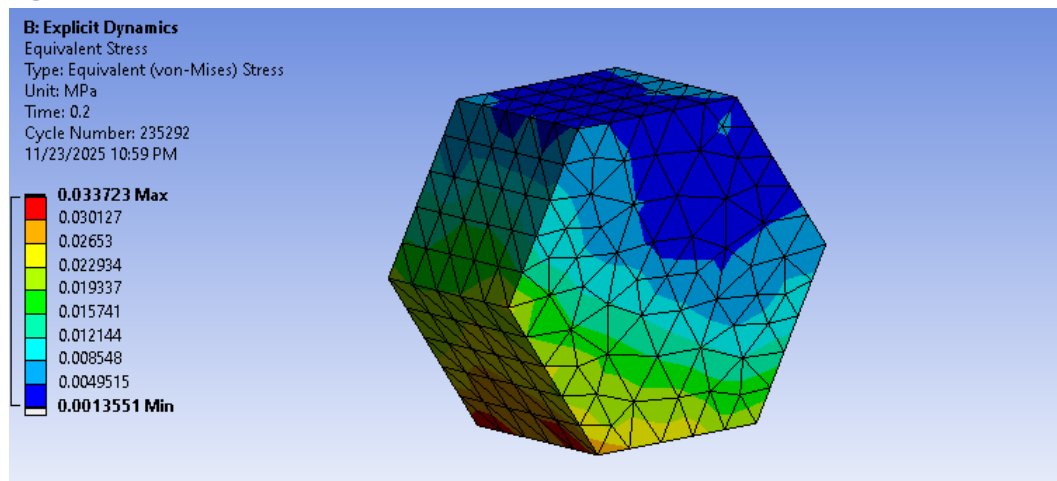
Description: This figure represents an output extracted from the original simulation report. It corresponds to the visual result number 22. The image illustrates simulation data, such as meshing, loading positions, convergence graphs, or stress contours depending on the stage of the analysis.

**Figure 23**



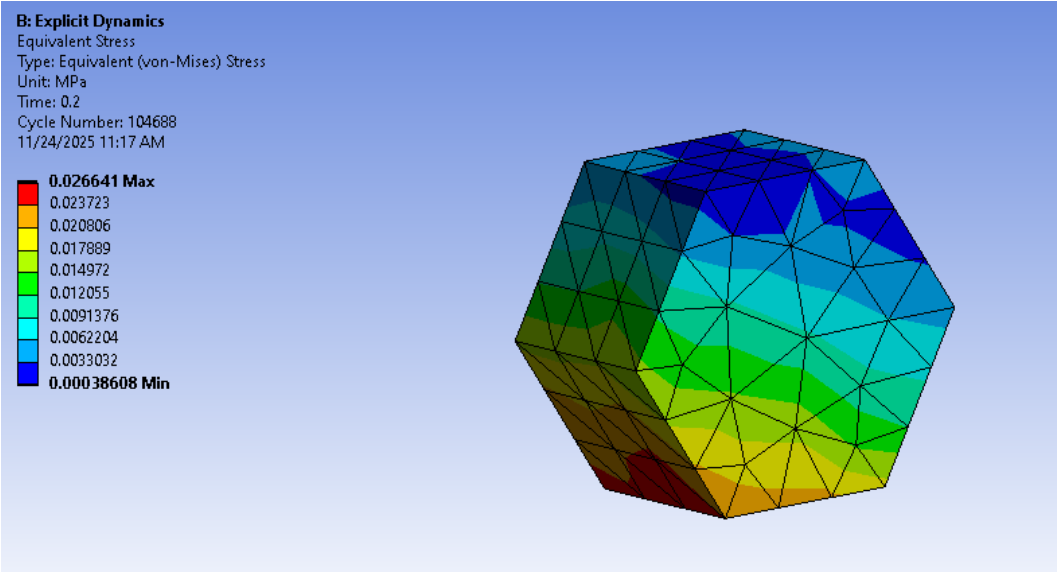
Description: This figure represents an output extracted from the original simulation report. It corresponds to the visual result number 23. The image illustrates simulation data, such as meshing, loading positions, convergence graphs, or stress contours depending on the stage of the analysis.

**Figure 24**



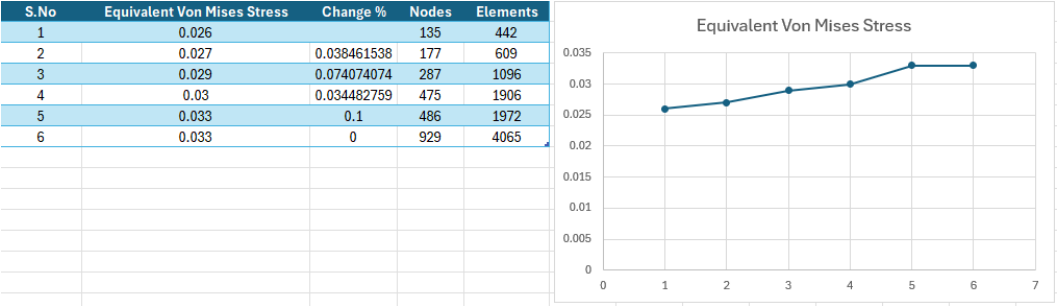
Description: This figure represents an output extracted from the original simulation report. It corresponds to the visual result number 24. The image illustrates simulation data, such as meshing, loading positions, convergence graphs, or stress contours depending on the stage of the analysis.

Figure 25



Description: This figure represents an output extracted from the original simulation report. It corresponds to the visual result number 25. The image illustrates simulation data, such as meshing, loading positions, convergence graphs, or stress contours depending on the stage of the analysis.

Figure 26



Description: This figure represents an output extracted from the original simulation report. It corresponds to the visual result number 26. The image illustrates simulation data, such as meshing, loading positions, convergence graphs, or stress contours depending on the stage of the analysis.