Analysis of Influence of Cylinder Shell Thickness on Distribution Character of Dynamic Characteristics of Free Vibrations

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O. Ya. Grigorenko, M. Yu. Borysenko, O. V. Boychuk & S. O. Sperkach

The free vibrations of circular cylindrical shells with various thickness-to-midsurface radius ratios and different combinations of clamped and hinged edges of the shell are studied using the finite element method. The dependence of the natural frequency vibrations on the increase in the shell thickness is analyzed. The symmetric and asymmetric modes of free vibrations, frequencies, and modes of the vibrations corresponding to bending, torsion, tension-compression, and shear deformations are considered. Significant attention is paid to validation of the reliability of the numerical results.

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Author information

Authors and Affiliations

S. P. Timoshenko Institute of Mechanics, National Academy of Sciences of Ukraine, 3 Nesterova St., Kyiv, 03057, Ukraine
O. Ya. Grigorenko & M. Yu. Borysenko

Mykolaiv National Agrarian University, 9 Georgy Gongadze St., Mykolaiv, 54020, Ukraine
O. V. Boychuk

Technical Center of National Academy of Sciences of Ukraine, 13 Pokrovska St., Kyiv, 04070, Ukraine
S. O. Sperkach

Corresponding author

Correspondence to O. Ya. Grigorenko.

Additional information

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