

# DESIGN OF MULTILAYERED VAT PANELS BY MEANS OF HIGHER-ORDER PLATE ELEMENTS

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## Abstract:

In this work the static analysis and the free-vibration analysis of Variable Angle Tow (VAT) multilayered panels have been investigated. The increasing demand for tailoring of advanced and complex structures lead to the development of advanced composite technologies in order to design structures with variable stiffness properties. The VAT structures are based on composites designed with curvilinear fibres [1]. In the present work, the governing equations are obtained from the Principle of Virtual Displacements and higher-order models are considered to describe the unknown variables [2]. The present formulation is assessed with 3D solutions obtained with commercial software. Some results are given for different boundary conditions, different curvilinear paths, various lamination schemes.

## References

- [1] R. Hyer and M.W. Charette (1991) Use of curvilinear fiber format in composite structure design. *AIAA Journal* 29(6), 1011-1015.
- [2] A. Alaimo and C. Orlando and S. Valvano (2019) An alternative approach for modal analysis of stiffened thin-walled structures with advanced plate elements. *European Journal of Mechanics / A Solids* 77, 103820