

Numerical Analysis of a Mechanism for the Morphology in the Extrados of an Airfoil

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Abstract : The study of the morphology (shape change) in wings leads to the optimization of aerodynamic characteristics in an aircraft, so for the development and implementation of a change in the structure and shape of an airfoil, in this case the extrados, helps to increase the aerodynamic performance of an aircraft at different operating velocities, according to the required mission profile. A previous work on morphology is continued where the 'initial' profile is the NACA 4415 and as a new profile 'objective' the FUSION. The objective of this work is the dimensioning of the elements of the mechanism used to achieve the required changes. We consulted the different materials used in the aeronautics industry, as well as new materials in this area that could contribute to the good performance of the mechanism without negatively affecting the aerodynamics. These results allow evaluating the performance of a wing with variable extrados with respect to the defined morphology.

Keywords : numerical analysis, mechanisms, morphing airfoil, morphing wings

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