

Computational Aerodynamics and Aeroacoustics of a Nose Landing Gear

Authors : Kamal Haider

Abstract : Numerical simulations over landing gear of simplified and partially-dressed configurations with closed cavity have been performed to compute aerodynamically and aeroacoustics parameters using commercial engineering software. The objective of numerical computations is two folds. Firstly, to validate experimental data of newly built nose landing gear and secondly perform high-fidelity calculations using CFD/FW-H hybrid approach, as future engineering challenges need more advanced aircraft configurations such as performance noise and efficiency. Both geometries are used for multi-block structured, and unstructured/hybrid meshed to develop some understanding of physics in terms of aerodynamics and aeroacoustics. Detached Eddy Simulation (DES) approach is employed to compute surface pressure. Also far-field noise calculations have been generated by Ffowcs-William and Hawking solver. Both results of aerodynamics and aeroacoustics are compared with experimental data.

Keywords : landing gear, computational aeroacoustics, computational aerodynamics, detached eddy simulation

Conference Title : ICAS 2017 : International Conference on Aeronautical Sciences

Conference Location : Melbourne, Australia

Conference Dates : February 02-03, 2017