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Low Speed Aerodynamic Performance Experimental Study of NACA 23012 Half-Span Wing

[Journal of Aerospace Technology and Management](#) • Article • [Open Access](#) • 2026 •

DOI: 10.1590/jatm.v18.1442

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Abstract

A six-component force balance was used to obtain the aerodynamic performance of a NACA 23012 half-span wing model at low freestream speeds of 20 m·s⁻¹ to 50 m·s⁻¹. The half-span wing model is equipped with a leading-edge slat and a trailing-edge flap. The impact on aerodynamic performance by the slat and flap configurations of the half-span wing model is studied. Abundant high Reynolds number aerodynamic performance studies have been carried out on various well-known airfoil profiles, but low-speed aerodynamic performance studies are limited. This work will be used as a benchmark study to support researchers working on NACA 23012 airfoils or wings at low speeds. © 2026, Departamento de Ciencia e Tecnologia Aeroespacial. All rights reserved.

Author keywords

Aerodynamic performance; Flap; High lift configuration; NACA 23012; Slat

Indexed keywords

Engineering controlled terms

Structural dynamics; Wings

Engineering uncontrolled terms

Aero-dynamic performance; Force balances; High lift configuration; High lifts; Low speed; NACA 23012; Performance study; Slat; Span wings; Wing models

Engineering main heading

Aerodynamic configurations; Reynolds number

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