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The effects of surface roughness and paint quality on flight condition

Pooya Kabiri

Leading Edge Aviation Services, USA

The interaction between a solid surface of an air vehicle and surrounding air is known as the main phenomenon affecting the aerodynamics. The surface roughness has a great effect on the aerodynamic performance by reducing the drag and delaying the separation at high Reynolds numbers which results in increasing the lift coefficient. The effects of different types of paint with different types of finish on the aerodynamics of commercial aircrafts have been investigated in this research. It was shown that reducing the surface roughness leads to drag reduction and lift improvements. However, the surface roughness non-uniformity can result in early separation. The paint quality was found to be very critical in protecting the composite body of the aircraft against excess loads and UV radiation as well as maintaining the integrity of the fuselage and wing.

Biography

Pooya Kabiri completed his PhD at the age of 29 years from Clarkson University. He is the Chief Engineer at Leading Edge Aviation Service, the world's largest aircraft painting company, which provides service to major MROs and OEMs such as Boeing and Airbus. He is a senior member of AIAA and one of the AIAA OC Council Officers.

kabirip@clarkson.edu