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Separation Control on Generic ROBIN Rotorcraft Fuselage Using Plasma Actuators DUSTIN COLEMAN, University of Notre Dame — Active flow control, in the form of dielectric barrier discharge (DBD) plasma actuators, is applied to a NASA ROBIN mod7 generic rotorcraft fuselage model. The control objective is reduce the massive 3-D flow separation occurring over the aft ramp section of the fuselage, thereby improving the vehicle flight characteristics. The plasma actuation methods investigated include: plasma streamwise vortex generators (PSVGs), as well as steady and unsteady spanwise actuation, combined with passive geometric modifications to the ramp section. Experiments were conducted at freestream Mach and Reynolds numbers of $M_\infty = 0.12$ and $\mathrm{Re}_L = 2.65 \times 10^6$, respectively. Aerodynamic loads from each technique were quantified by means of 3-component force balance measurements (drag, lift, and pitching moment), a 128 count static pressure array, and time-resolved PIV wake surveys. Results are compared with previous studies that utilized active flow control in the form of pulsed jets and combustion actuators.

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