Characterization of 50 Hz Dielectric Barrier Discharge Plasma Actuator Operating in Atmospheric pressure

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Abstract:

Surface dielectric barrier discharge (DBD) plasma actuators are widely investigated for their ability to manipulate airflow. Their main advantages are their very short response time and their low power consumption. Plasma actuators are electrical devices that generate a wall-bounded jet without the use of any moving parts. For aerodynamic applications, they can be used as flow, control devices to delay separation and augment lift on a wing. The aim of this work is enhancing the electric wind produced by a typical single DBD actuator for flow control. The study examines the effects of the applied voltage amplitude, the width of encapsulated electrode and the distance between exposed and encapsulated electrodes. I-V waveforms, consumed powers and plasma extensions were measured to estimate the optimum condition.

Key words:

DBD plasma, plasma actuator, flow control, micro-discharges