Abstract Submitted for the GEC13 Meeting of The American Physical Society

Successful experiments on an external MHD Accelerator: wall confinement of the plasma, annihilation of the electrothermal instability by magnetic gradient inversion, creation of a stable spiral current pattern JEAN-PIERRE PETIT¹, JEAN-CHRISTOPHE DORE², Lambda Laboratory France — MHD propulsion has been extensively studied since the fifties. To shift from propulsion to an MHD Aerodyne, one only needs to accelerate the air externally, along its outer skin, using Lorentz forces. We present a set of successful experiments, obtained around a model, placed in low density air. We successfully dealt with various problems: wall confinement of two-temperature plasma obtained by inversion of the magnetic pressure gradient, annihilation of the Velikhov electrothermal instability by magnetic confinement of the streamers, establishment of a stable spiral distribution of the current, obtained by an original method. Another direction of research is devoted to the study of an MHD-controlled inlet which, coupled with a turbofan engine and implying an MHD-bypass system, would extend the flight domain to hypersonic conditions.

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Date submitted: 13 May 2013

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