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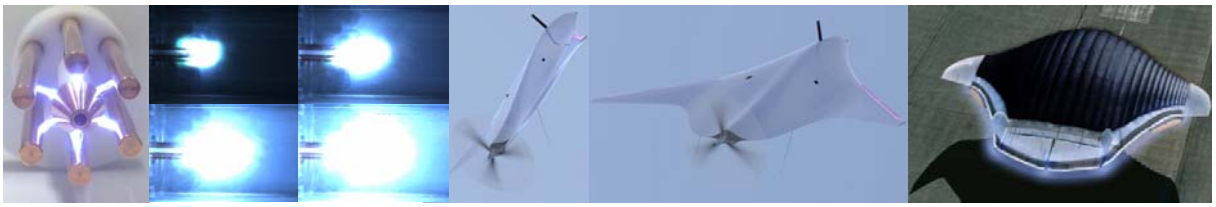
# Press Release

## FIRST BREAKTHROUGH IN AIR-BREATHING PLASMA PROPULSION

IB Goksel Electrofluidsystems presents a first breakthrough in aerospace propulsion technology since the invention of the jet engine. The first critical tests have been successfully completed on the key technology for an air-breathing magneto-plasma propulsion that will enable future aircrafts and airships to reach altitudes from ground to 50km and beyond. It is the first time that a dense plasma focus could be observed at one atmosphere using the innovative preionization technology with nanosecond electrostatic excitations to create self-organized plasma channels for ignition of the propulsive main discharge. Detailed results will be soon published as papers in peer-reviewed plasma physics journals.



The breakthrough was achieved through a collaboration between Mr. Goksel from Electrofluidsystems and Prof. Mashek from St. Petersburg State University. The first idea goes back to 2010 where a team around Mr. Goksel with several universities and companies in Europe submitted a FP7 proposal named PLASMASOL (www.plasmasol.eu). The project was rejected but now needs to be reactivated after demonstration of the new innovative ignition technology at all relevant atmospheric pressures.

Building on years of unique engineering know-how with plasma propelled airships and the soon to be released plasma flyer, the world's first plasma flow controlled flying wing, Electrofluidsystems has shown that Europe remains at the forefront of technological innovation and can get ahead in the global race. This technology, also in combination with other air-breathing chemical propulsion systems like pulse detonation jets, could revolutionize the future of air and near-space travel. It is also possible now to imagine atmospheric high-thrust hybrid propulsion systems using pulsed aneutronic fusion based on boron-11-nucleus and ionized hydrogen (proton) fuels. The resulting highly energetic carbon-12 product fissions into three alpha particles with an energy output of 8.9 MeV without any gamma rays:

$P + {}^{11}B \rightarrow {}^{12}C \rightarrow 3\,({}^{4}He) + 8.9\ MeV.$

So far this technology was only proposed for high thrust space propulsion with thrust levels of 1000 kN and beyond by scientists from the AFRL at Edwards AFB, the University of Illinois at Urbana, and the University of Alabama (http://nextbigfuture.com/2012/06/nasa-working-on-lightweight-z-pinch-and.html). Now the magnetoplasma flux compression technology is in reach for atmospheric plasma propulsion and will enable a new set of revolutionary single-stage to orbit (SSTO) spaceplane designs which will go far beyond those recently proposed with combined air-breathing rocket engine technology.

IB Goksel Electrofluidsystems Berlin, 13 December 2015

www.electrofluidsystems.com