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**SCALABLE LINEAR MICROWAVE PLASMA SOURCE AT ATMOSPHERIC PRESSURE**

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For surface treatments such as etching, coating, or activation, process and plasma source play a key role concerning the quality and feasibility of the process. For vacuum processes a huge assortment of large area and powerful plasma sources exists, however, the repertory for atmospheric pressure is more limited. The interest in simple, efficient, and primarily large area treatment technologies is still growing. The implementation of today's available plasma technologies is either limited or uneconomic.

At Fraunhofer IWS Dresden the feasibility of deposition and etching using a 10kW@2,45GHz 11" iplas microwave plasma source was demonstrated. The scalability of the technology is limited to 160mm treatment width by its microwave generator and resonator. Any further up-scaling is uneconomic or physical not reasonable. However, experiments show that it is possible to operate a microwave plasma source at atmospheric pressure pulsed down to a few hundreds of kHz, even with high gas velocities through the source. At the PSE 2010 we introduced our work for developing an up-scalable, in-line process optimized linear microwave plasma source made of low cost components. A complex control and pulse technology helped to keep the plasma in the centre of the cavity. Multiple low cost and on high peak power driven magnetrons was used. A alternate powering of the magnetrons prevented a destructive interference of the microwave radiation.

Now we can present our first prototype plasma source. A cavity with a width of 400mm and a length of 100mm, powered by four magnetrons with each 6kW pulse power.

**Keywords**

scalable  
linear  
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