New Plasma Power Supply Technologies with adjustable positive pulsing for ***Flexible-Bendable-Adhesive Metal Coatings*** *on temperature sensitive materials for AM (additive manufacturing) or medical applications.*

Magnetron sputtering or any metal coatings on temp sensitive materials have always been a challenge. At 4A-PLASMA, its industrial and academic partners we have solutions.

Example 1: Stretchable and Flexible Ti/Cu Coatings on Medical Applications on FKM and Viton

Tests results of a Titanium (Ti) 30nm and Copper (Cu) 400nm
Layer1: Ti (adhesion layer on FKM) - Layer 2: Cu (functional, conductive layer).

Motivation: To compare and evaluate a new asymmetrically bipolar pulsed power supply technology, the **PLASMA***TEC* **AP**, co-development of **4A-PLASMA** and **J.Schneider Elektrotechnik** vs a standard PS technology, both "asymmetrically bipolar pulsed power supplies".

Processing: Layer 1: Ti Layer, dep. with **hiP-V,** HiPIMS PS (already qualified as standard layer)
Layer 2: Cu-Layer -> comparison layer, deposition of Cu, with standard PS vs **PLASMA***TEC* **AP**

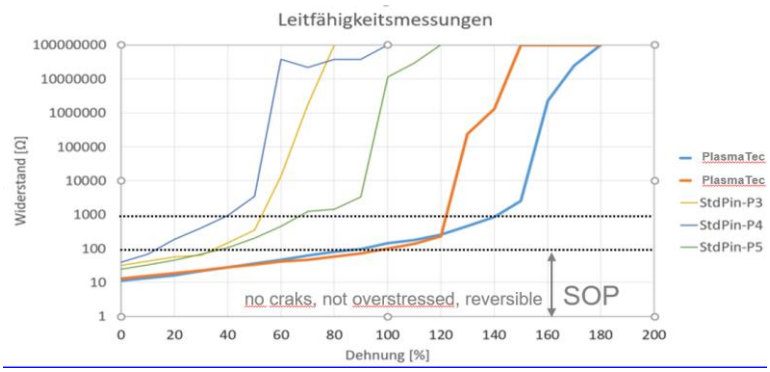
Results: Stretchability increase **by factor 3!**
Same process parameters, just by using the new **PLASMA***TEC* **AP** PS vs standard PS, without a loss of functionally, no overstretching, no cracks.

Difference of DC-P Power Supply Technology:

1. The new system is a true current source, with all obvious advantages of lowest arc energy and fast arc suppression.
2. The positive pulse in the new PS technology can be adjusted in voltage peak (from 0-1400V) and pulse length vs the standard nonregulated induced positive pulse.

CU-Film

CU-Film
Overstretched



SOP Save Operating area

StretchTest Apparatus

Data published at PLATHINIUM 2019, "Facilitated processing of complex thin films by using a refined power supply technology", Gerhard Eichenhofer, 4A-PLASMA). Test Facility NMI-Reutlingen

For more technical details or information on PLASMATEC AP asymmetrically bipolar pulsed PS or hiP-V HiPIMS-PS please contact us at **info@4A-PLASMA.eu**

4A-PLASMA, Gerhard Eichenhofer; Ust-ID-Nr. / VAT No.: DE 814010056;
Aichtalstr. 66, 71088 Holzgerlingen, Germany; Tel. +49 (0)7031-8175680; Fax.+49 (0)7031-8175681; Mail: info@4A-PLASMA,eu
---- www.4A-PLASMA.eu ----