

Abstract Submitted  
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**Plasma Technology R&D at SMU**<sup>1</sup> ADY HERSHCOVITCH, ANDRZEJ SOCHA, RADOVAN KOVACEVIC, SMU — A program designed to develop enabling technologies for electron beam materials processing in air centered on plasma shielding was initiated at Southern Methodist University (SMU). Plasma shielding is designed to chemically and thermally shield a target object by engulfing an area subjected to beam treatment with inert plasma. The shield consists of a vortex-stabilized arc that is employed to shield beams and workpiece area of interaction from atmospheric or liquid environment. The vortex is composed of a sacrificial gas or liquid that swirls around and stabilizes the arc. A simpler, low-tech concept, which is a radiation and gas shielding chamber dubbed Shield Box, is also slated to be developed. The box is to be mounted on swivel wheels with suspension to facilitate smooth motion of a workpiece during welding or other processing. Sealing of the gap between the box solid walls and the workpiece is to be made out of flexible x-ray shielding material like bismuth cloth, lead vinyl, Demron fabric, etc.

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