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### **Industrial Plasma Antennas<sup>1</sup>**

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This presentation summarizes an extensive program on plasma antennas. Plasma antennas are just as effective as metal antennas. In addition, they can transmit, receive and reflect lower frequency signals while being transparent to higher frequency signals. When de-energized, they electrically disappear. Plasma noise does not appear to be a problem. New technology that has been developed include a method of operating at high plasma density at minimal power consumption, a novel technique of noise reduction, and a method of opening a plasma window in a plasma microwave barrier on a time scale of microseconds rather than the usual time scale of milliseconds due to plasma decay. We are at present testing an intelligent plasma antenna in which a plasma “window” in a circular plasma barrier surrounding an antenna rotates azimuthally, seeking a radio transmitter. When located, a computer locks onto the transmitter. When the transmitter is de-energized, the plasma window recommences scanning. Commercial interest is strong, with invited papers being presented for 4 years in succession at the SMi Stealth Conference in London, UK, an operating model on permanent exhibition at the Booz-Allen headquarters in Alexandria, VA, and strong interest from Lockheed-Martin.

In collaboration with Ted Anderson, Haleakala R&D Corp.; Esmail Farshi, Fred Dyer, Jeffrey Peck, Eric Pradeep, Nanditha Pulasani, and Naresh Karnam, University of Tennessee.

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