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Importance of RF Measurements in Pulsed-Plasma Applications

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The capability to measure RF power in plasma systems has existed for many years but key parameters, such as impedance of the plasma and delivered power, can be difficult to measure with high accuracy. This is especially true in pulsed RF systems, where it is difficult for the system to achieve a conjugate match from the rapidly changing plasma impedance to the RF source, resulting in reflected power. Actively monitoring the power and shape of the pulses is critical to develop and maintain consistent and repeatable processes. Changes in these measurements can indicate problems like equipment wear, drift, and instability and serve as a great starting point for process improvement. In this work, RF pulsing is studied in different pulsed-plasma applications and it is then demonstrated how directing attention to and gaining understanding of the RF measurements can assist in improving the processes.

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