

## **Experimental Evaluation of Methods for Characterization of Power Output of High Power Ultrasonic Transducers**

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This paper reviews the evaluation of different techniques used to characterize the power output of high power ultrasonic transducers, primarily used for ultrasonic welding thermoplastics. Two laboratory measurement techniques were studied: 1) a so called “back-to-back” load and 2) a water load (calorimetric). The loads were theoretically modeled and their thermal, mechanical, and electrical losses were identified. Experiments were conducted under a variety of loading conditions. It was found that the most accurate power measurement was based on multiplication of the measured voltage and current without the use of filters or methods that attempt to differentiate between stored and dissipated energy.