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## Reconfigurable High Voltage Load for Pulsed Power Applications

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**Abstract-** The evaluation of pulsed power systems and their constituent components requires unconventional loads with exceptional voltage, current, impulse energy, and continuous power dissipation capability. This paper presents the design and construction of a reconfigurable resistive load with active temperature monitoring for the evaluation of ultra-high voltage pulsed power modulators and semiconductor devices. The load consists of a network of 15 ceramic resistors (outer diameter of 2.54 cm and length of 30.48 cm) mounted vertically in an oil filled aluminum tank. To enable exceptionally high power dissipation, the oil is pumped through the tank and through a radiator. A microcontroller based module activates a fan on the radiator if a preset oil temperature is surpassed. Experimental results gathered demonstrate that the load withstood 1.5 kW at 12 kV for two hours, and that the temperature of the oil reached only 40 °C without activation of the radiator fan. Based on radiator efficiency calculations, the load is expected to be able to withstand 10 kW of continuous power dissipation.

**Authors:** BAYNE, Stephen (Texas Tech University); BILBAO, Argenis (Texas Tech University); KIM, Matthew (Texas Tech University); SCHROCK, James (Texas Tech University)

**Presenter:** KIM, Matthew (Texas Tech University)

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