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## Improving high power precision Electron Beam and Ion Beam performance and reliability by improving High Voltage power quality

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### **Introduction**

When researching improvements to high power precision Electron Beam and Ion Beam performance power systems knowledge of High Voltage power quality terms, specifications, and key performance factors can be essential to selecting or improving the best available technology or for working with suppliers on specific needs. Examples of key High Voltage Power Supply elements resulting in performance & reliability gains are outlined. This material can enable system researchers & designers to identify key observations, facilitate change, and ultimately deliver better performance, accuracy, and repeatability.

### **Methods**

Test stand configuration diagram along with unique test fixture requirements will be outlined. Commercial High Voltage and Low voltage test equipment used for control & measurement will be listed with accuracy data. Overall accuracy and repeatability of HV measurement will be established with data & graphs. High Voltage devices evaluated for performance will be identified.

### **Preliminary Data (Abstract)**

High Voltage power source quality terms will be defined. Data presented for High Voltage energy storage, slew rates, overshoot, settling, stability (drift over time, temperature, load), and arc management (response time, technique) measurements (Tables & Graphs) from example High Voltage devices up to 10kW. Key observations will be outlined with conclusions and will illustrate key parameters of High Voltage power quality.

### **Novel Aspect**

High Voltage power quality specifications, device selection, and performance verification can directly improve Electron Beam and Ion Beam power system performance

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