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# Experimental Analysis of DC Shunt Generator Characteristics

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## **Abstract**

In this experimental study, the operation of a self-excited DC shunt generator what will happen to it if the load condition changes. This study examines the relationship between load current, output voltage, and power delivery by comparing experimental readings with theoretical expectations. The same experiment was carried out by three independent test sets, showing significant variations in generator performance that indicate real-life challenges in electrical machine testing. First, although the generator voltage regulation follows the expected sag shape, the magnitude of the voltage drop varies significantly between test sets. Output power measurements show that optimal transfer occurs at medium range loads, but the corresponding operating point varies depending on equipment conditions. The study identified key parameters that affect performance consistency such as equipment aging, measurement accuracy and load selection. The results have significant implications for electrical engineering laboratory practice and education, and the importance of regular equipment maintenance and standardization of test procedures. Practical recommendations are made to improve experimental reliability and data consistency when conducting experiments with DC shunt generators. This study facilitates the understanding of real-life generator behavior and serves as a guide for academic learning and industrial practice in applications that require accurate voltage regulation.

**Keywords :** *DC shunt generator, voltage regulation, load characteristics, experimental analysis, electrical machines*

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