



SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)

COIMBATORE-35.



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Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai.

DEPARTMENT OF AUTOMOBILE ENGINEERING

COURSE NAME : 19AUB204 – AUTOMOTIVE ELECTRICAL AND ELECTRONICS ENGINEERING

II YEAR / IV SEMESTER

Unit 3 – Charging System

Topic : Shunt Generator Characteristics



SHUNT GENERATOR



- ❖ Shunt generators are a type of DC generator where the field winding is connected in parallel with the armature winding.
- ❖ This configuration allows the generator to maintain a relatively constant terminal voltage over a wide range of load conditions.





TERMINAL VOLTAGE REGULATION



- ❖ Shunt generators are known for their good voltage regulation characteristics.
- ❖ This means that the terminal voltage remains relatively constant even as the load on the generator changes.
- ❖ The voltage regulation is typically within $\pm 5\%$ of the rated voltage for most practical applications.



FIELD CURRENT CONTROL



- ❖ The terminal voltage of a shunt generator can be controlled by adjusting the field current.
- ❖ Increasing the field current strengthens the magnetic field, resulting in a higher terminal voltage, while decreasing the field current reduces the terminal voltage.



LOAD CHARACTERISTICS



- ❖ Shunt generators exhibit fairly stable voltage characteristics under varying load conditions.
- ❖ As the load on the generator changes, the armature current increases or decreases, but the terminal voltage remains relatively constant due to the self-regulating nature of the shunt field winding.



SPEED REGULATIONS



- ❖ Shunt generators typically have moderate speed regulation characteristics.
- ❖ This means that the terminal voltage may vary slightly with changes in the generator's speed, such as fluctuations caused by variations in the prime mover's speed or changes in mechanical load.



OPERATING RANGE



- ❖ Shunt generators are suitable for both constant-speed and variable-speed applications.
- ❖ They can operate over a wide range of loads without significant changes in terminal voltage, making them suitable for powering electrical loads with varying power requirements.



EFFICIENCY



- ❖ Shunt generators generally have good efficiency, especially when operated near their rated load capacity.
- ❖ However, efficiency may decrease at light loads due to the fixed losses in the machine.



STABILITY



- ❖ Shunt generators are inherently stable machines, with the ability to maintain a steady terminal voltage even under changing load conditions.
- ❖ This stability is crucial for maintaining the stability of the power system they are connected to.



THANK YOU !!!