

3 phase alternator working principle pdf

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to the alternator. For understanding working of alternator let us think about a single rectangular turn placed ALTERNATED CIRCUITS (AC) As it will be shown later, alternators operate with both alternating (ac) and direct-current (dc) electric power. Aphase alternator is a synchronous machine that converts mechanical energy into phase electrical energy through the process of electromagnetic induction. When the rotor is rotated (say in anticlockwise direction) by a prime mover (engine, turbine, etc.), the stator winding (serves as armature winding) is cut by the magnetic flux of the rotor poles. Unit Three-Phase Alternators. The dc can be considered a particular case of the general ac, with frequency equal to zero. Excitation current (DC) in the rotor is required to establish the magnetic field. Hence, brushes, slip-rings and commutator are eliminated Construction of Phase Alternator or Synchronous Generator Alternator consists of two main parts, namely the stator and the rotor. produced in them Working of Phase Alternator. The frequency of an alternated circuit is measured by the number of times the The rotor is an electromagnet that provides the magnetic field needed to induce a voltage into the stator windings. The stator is the stationary part of the The machine which produces phase power from mechanical power is called an alternator or synchronous generator. exciter and a group of rectifiers supply d.c. It relies on Faraday's law of electromagnetic induction, which states that current is induced in a conductor moving relative to a magnetic field. As we discussed in previous chapters, a phase alternator, also called a phase synchronous generator, has a stationary armature and a rotating magnetic The working principle of an alternator is straightforward, mirroring the basic principle of DC generator. When the rotor rotates, the stator conductors (being stationary) are cut by the magnetic flux, hence they have induced e.m.f. Due to electromagnetic induction, an EMF is induced in the armature winding. Hence, brushes, slip-rings and commutator are eliminated. exciter and a group of rectifiers supply d.c. This induced EMF is alternating See more systems have been developed in which a phase a.c. The alternator produces three sine wave voltages 120° out of phase with each other The working of an alternator is based on the The three-phase alternator, as the name implies, has three single-phase windings spaced such that the voltage induced in any one phase is displaced by 120° from the other two systems have been developed in which a phase a.c. to the alternator.

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Sommaire

Étape 1 -
Commentaires

Matériaux

Outils

Étape 1 -
