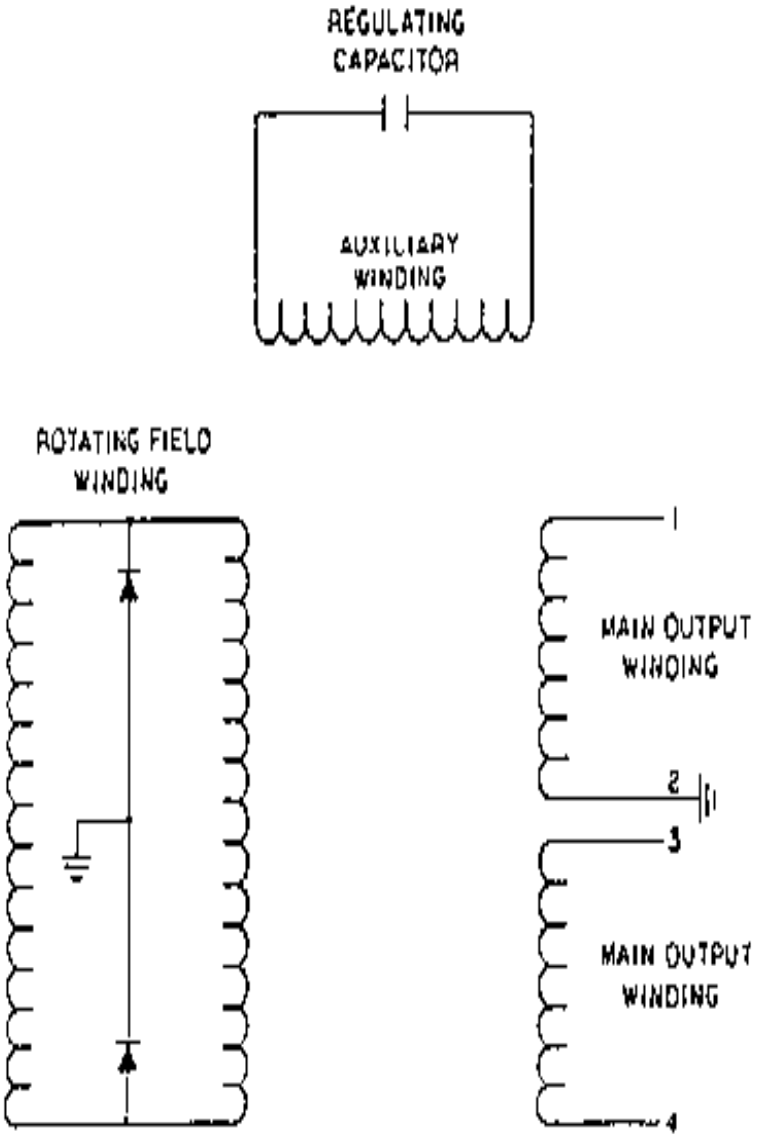
EXCITER FIELD



The exciter field is a vital part of the generator system. It provides the impetus for energizing the rotating magnetic field of the rotor and it provides a voltage regulating function for the main windings.

The exciter field consists of a capacitor connected to auxiliary coil windings arranged in a closed loop. The windings of the auxiliary field coils are placed in stator slots along with the main output windings. The auxiliary windings are 90 electrical degrees out of phase with the main windings.

In its exciter mode the auxiliary windings receive a very slight flow of electrical current from the residual magnetism of the rotor's mass - - which became magnetized by a "jump start" from the exciter field during manufacture of the generator- - as the rotor begins to turn. The faster the rpm of the rotor, the greater the induced voltage and current of the exciter.

The fluctuating magnetic field of the exciter cuts the rotating field windings as the rotor spins. The magnetic field of the rotating field becomes far greater than the small excitation field, and this rotating field cuts the coils of the main windings in the stator. The main windings in turn produce an alternating voltage which generates an alternating current when an electrical load is applied to the output terminals.

In its regulating mode the capacitor and coil windings of the exciter field prevent the main winding voltage from dropping off when an electrical load is applied. This voltage stabilizing effect is called ***"Power Assist"*** and is an exclusive design feature of the generator.