



Denyo Open-Delta Winding

One outstanding feature of all MQ Power WhisperWatt™ engine-generator packages is the patented, Denyo open-delta design alternator. Of all the hardware assembled to form a complete generator package, the AC alternator is probably the single most important albeit misunderstood component in the assembly. The MQ Power alternator is built like no other on the market. This is why MQ Power WhisperWatt™ generators offer industry-leading motor starting with minimum voltage dips and quicker recoveries.

The AC alternator or power generator is the device bolted to the back of the engine bellhousing that rotates at engine speed to produce AC voltage and current. The alternator system is basically comprised of four component systems that work together to produce AC power. These components consist of the fixed-mount stator or armature coils, the rotating field or rotor, the exciter and the automatic voltage regulator. So what does all this mean in real life? All synchronous generators have a stator, a rotor, an exciter and a voltage regulator. What makes MQ better?

MQ's Open-Delta Coil Excitation System design is a separately excited generator. That is, the AC voltage regulator is powered by a separate excitation winding which is placed on the stator core, together with the armature windings. This excitation winding provides dedicated input power to the automatic voltage regulator, which controls the AC voltage output. The voltage regulator increases or decreases exciter current as it senses changes in output voltage and frequency, based on changes in load, thus increasing or decreasing the generator field strength. The main benefit of having a separate exciter winding is the fact that voltage input power supplied to the voltage regulator is un-affected by load-induced fluxuations, specifically, non-linear loads. And, during motor starting operations, the Denyo automatic voltage regulator switches the configuration of the internal open-delta connections to provide virtually unlimited excitation voltage, resulting in superior motor starting ability, better voltage response and voltage transient conditions. This system is so unique in design and benefits, it carries U.S. patent #4268778.

Other manufacturers' systems consist of a self-excited generator. That means the input power supplied to the regulator is tapped (shunted) from the generator power output. The effectiveness of the voltage regulator in managing this event is somewhat decreased when the available AC voltage signal provided to the regulator is derived from the same AC voltage circuit being fed to the load. If there are load induced fluxuations, precise voltage regulation is compromised.

Other manufacturers' typically offer to provide their alternator with a PMG or permanent magnet generator. This is an extra cost, bolt on, alternator modification that does provide the voltage regulator with separately derived, voltage input power. However, it is not as effective as MQ. And, it is extra cost.

The combination of open-delta excitation system and automatic voltage regulation which contribute to precisely control the generator output voltage and provide a stable supply of in-rush current for motor starting, makes the MQ WhisperWatt™ engine-generator packages superior to all others in the industry.