



PM Permanent Magnet Generator

Website: <http://permanentmagnetgenerator.net>

Email: mail@permanentmagnetgenerator.net

Advantages of “The PMG (Permanent Magnet Generator)”

The PMG (Permanent Magnet Generator) offers levels of performance unattainable with conventional generators through greater energy efficiency, improved operational flexibility, reduced size and weight, and lower life-cycle cost.

To summarize, the PMG (Permanent Magnet Generator) offers the following advantages over conventional generators:

- **SIMPLE, LOSSLESS CONSTRUCTION**

The PMG (Permanent Magnet Generator) utilizes rare earth type permanent magnets on the rotor.

No coils are used on the rotor.

- **NO BRUSHES** to wear out, unlike conventional generators.

Using permanent magnets on the rotor, there is no need to input energy to the rotor coils.

Brushes that input the power to the rotor and heat losses of core material are totally eliminated.

- **MUCH LESS COPPER** windings in the coils

The super magnets create the current, not the wire windings, which eliminates some resistance losses.

- **MUCH LIGHTER WEIGHT**

The overall size of the 10 hp prototype generator is approximately 100 cm X 100 cm with a width of approximately 18 cm and a weight of 70 kg.

- **OPERATES COLD**

This makes possible a much greater electrical output, inch by inch, pound per pound.



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Efficiency of the PMG (Permanent Magnet Generator) Compared to Direct-Current Machines.

Loss of energy in direct-current Generators and Motors is normally composed of the following items:

1. OHMIC LOSSES due to the heating effect of current flowing through the resistance of:

a) The armature winding

PMG: There are no armature windings in the PMG (Permanent Magnet Generator) as SUPER POWERFUL PERMANENT MAGNETS (SPPM's) are used instead of windings.

b) The field windings

PMG: The field coils are designed for very low inductances using amorphous metals in the cores; substantially smaller coils can be used to achieve the same power output, consequently the copper resistance values are much smaller.

c) The brushes and brush contacts

PMG: There are no brushes used on the PMG

2. CORE LOSSES due to:

a) hysteresis in the armature core and teeth

PMG: No cores used in armature as SPPM's are used

b) Eddy currents in the armature core, teeth and pole faces

PMG: No cores are used in armature as SPPM's-are used



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3. MECHANICAL LOSSES due to:

- a) Bearing friction

PMG: the PMG is much smaller and lighter in weight and therefore needs only smaller bearings which will wear much less; this loss could be eliminated completely with the use of patented cone-shaped magnetic bearings, which enables the shaft to ride on air.

- b) Friction between moving parts and air, called "windage"

PMG: windage is minimal because of the aerodynamic shape of the rotor (essentially only a simple two sided flat plane; this factor is also much reduced because watt for watt, the PMG is much smaller than typical DC machines

- c) Brush friction

PMG: There are no brushes in the PMG .

4. STRAY LOAD LOSSES caused by:

- a) Eddy currents in the armature conductors

PMG : No losses using SPPM's

- b) The short-circuit currents in the coils undergoing commutation

PMG : Digital sensing and switching allows for more control of current through coils

- c) Pulsations of the flux set up by the currents in the commutated coils and by the variation of reluctance of the main magnetic circuit due to the presence of teeth and slots

PMG : No teeth and slots are present on the PMG

- d) Eddy currents in the end plates of the armature core, in non-insulated bolts through the laminated core, etc.

PMG : There are no end plates, laminations or non-insulated bolts on the PMG

- e) Distortion of flux in the armature core and teeth, produced by reaction to the metals in the armature

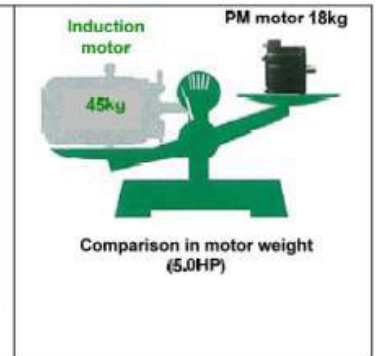
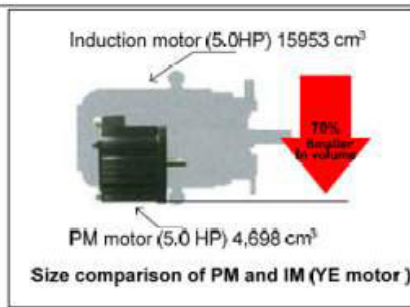
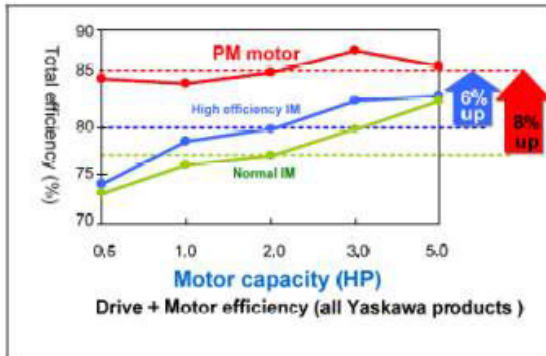
PMG : No armature core as the PMG (Permanent Magnet Generator) uses SPPM's



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Read Generator for Motor.