CLAIMS

Claim 1:

An integrated layer alternator generator comprising:

a stator assembly (101) comprising a plurality of stator coils (34);

a stator-mounted back plate (36);

a shaft (32) fixed to the stator-mounted back plate (36);

an integrated cylindrical layer rotor (100) surrounding the stator assembly (101);

a plurality of magnet bars (25,26) received in corresponding slots (24,24A) of an outer rotor (20) and an inner rotor (22) of the cylindrical layer rotor (100);

bearings (28) arranged at opposite sides of the rotor (100);

wherein the rotor (100) is rotatable relative to the shaft (32); and

wherein the stator assembly (101) is positioned within a cylindrical space (30) of the cylindrical layer rotor (100), such that magnetic flux generated by the magnet bars (25,26) interacts with the stator coils (34).

Claim 2:

The alternator generator according to Claim 1,

wherein the magnet bars (25, 26) are received in corresponding slots (24, 24A) of the outer rotor (20) and the inner rotor (22), and are arranged in alternating magnetic polarity.

Claim 3:

The alternator generator according to Claim 1,

wherein the stator coils (34), the shaft (32), and the stator-mounted back plate (36) are fixed together to form the stator assembly (101), and wherein the cylindrical layer rotor (100) is rotatably supported relative to the shaft (32) of the stator assembly (101).

Claim 4:

The alternator generator according to **Claim 1**,

wherein bearings (28) are arranged at opposite sides of the rotor (100) and rotatably support the rotor (100) relative to the shaft (32).

Claim 5:

The alternator generator according to Claim 1,

wherein radial magnetic flux generated by the magnet bars (25,26) passes across the cylindrical space (30) to induce current in the stator coils (34).