



## For Distributed Power Generation (DG) Applications 6kW - 1.2MW High Speed Permanent Magnet Generators and Grid-Tied Inverters

Distributed generation refers to a variety of technologies that generate electricity at or near where it will be used, such as solar panels and combined heat and power. It may serve a single structure, such as a home or business, or it may be part of a microgrid (a smaller grid that is also tied into the larger electricity delivery system), such as at a major industrial facility, a military base, or a large college campus. When connected to the electric utility’s lower voltage distribution lines, Distributed Power Generation can help support delivery of clean, reliable power to additional customers and reduce electricity losses along transmission and distribution lines.

TPS’ generator is designed to meet the requirements of the Distributed Power Generation markets, and can be powered from natural gas and diesel-powered reciprocating engines, gas turbines, fuel cells, solar panels and wind turbines. When connected to a low voltage distribution line, TPS generators can provide many advantages including: compactness, light weight, low cost, low emission, greater power density, high flux densities, light and compact designs result in increased efficiency and stator core losses minimized.

In the residential sector, TPS generators can fit into common distributed generation systems:

- Solar photovoltaic panels
- Small wind turbines
- Natural-gas-fired fuel cells
- Emergency backup generators, usually fueled by gasoline or diesel fuel

In the commercial and industrial sectors, TPS generators can fit into distributed generation resources such as:

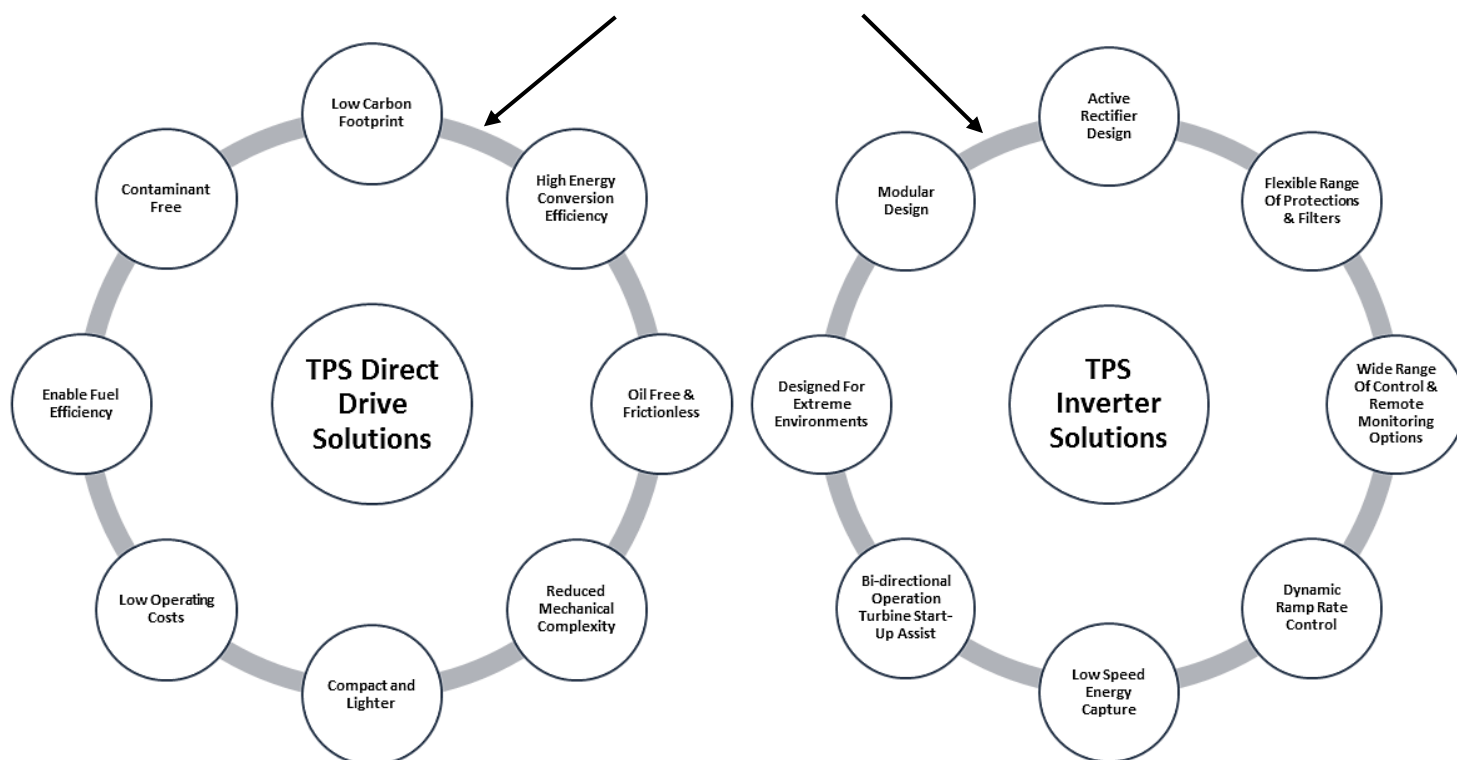
- Combined heat and power systems
- Solar photovoltaic panels
- Wind
- Hydropower
- Biomass combustion or cofiring
- Municipal solid waste incineration
- Fuel cells fired by natural gas or biomass
- Reciprocating combustion engines, including backup generators, which are may be fueled by oil

## Performance Table

Standalone Generator	Generator 1 – 1.2MW	Generator 2 – 400kW/613kW	Generator 3 – 600kW/1MW
Nominal Operating Speed (rpm)	23,000	20,000	18,000
Over-speed Capability (rpm)	25,300	22,000	20,000
Output at full speed (kW)	1250	400/613	600/1000
Torque Rating (Nm)	519	191/286.2	329/548
Efficiency	98.3%	>96%	>97%
Phases	9	3/6	6/12
Output Frequency (Hz)	767	667/1000	600/600
Bearing Type	Active Magnetic	Active Magnetic	Active Magnetic
Shaft Output	Spline / High Speed Coupling	Stoffel Polygon	110mm Hirth
Stator Cooling	Water Glycol	R134a or Water Glycol <sup>[1]</sup>	Water Glycol
Rotor Cooling	Filtered Ambient Air	R134a or Filtered Ambient Air	Filtered Ambient Air
Cooling Temperatures (°C)	-20 to +40	-20 to +40	-20 to +40
Approximate Dimensions (H×W×L mm)	490.5×591.7×821	664.5×457.2×691.5	647.7×759.1x 824.1 / 990.7
Approximate Mass (kg)	520	320	546/687

[1] Other fluid options are available.

### Following are the key benefits of our direct drive technology over conventional systems:



TPS are able to deliver a suite of permanent magnet based electric machines operating in the speed range of 16000rpm to 23000rpm. These utilise the latest in magnetic bearing technology to deliver oil free, frictionless and low vibration operation. Our systems will also work with other types of bearing technologies such as journal, foil and air bearings. Variable machine configurations are possible – radial or axial flux designs, linear machines, outer-rotor design, light-weight design, torus machines and toothless or coreless designs. With over 40 years' experience, a team of highly skilled engineers and technicians, and a track record in creating world-class high speed machines why go anywhere else? To discuss your project or for any further information please contact our marketing department at [marketing@turbopowersystems.com](mailto:marketing@turbopowersystems.com) or +44 (0) 0191 482 9288.