

## > Different generation technologies

Big efficiency solution for small-scale distributed generation.

Here's how:

According to the International Energy Agency, in 2008 over 20 trillion kilowatt-hours (kWh) of electrical energy was generated worldwide. Approximately 68 per cent of this energy was produced using conventional thermal power generation sources.

### What makes up thermal power generation?

Generally, the core technology of thermal power generation is a mechanical turbine or engine that transforms rotational (kinetic) energy into electricity, through electromagnetic induction in a generator. A source of energy is required to provide this rotational force. Often, this energy involves a process of combusting fuel to provide rotational propulsion, which in turn, drives the generator. Essentially, the chemical energy stored in the fuel is converted to kinetic energy, which is then converted to electricity.

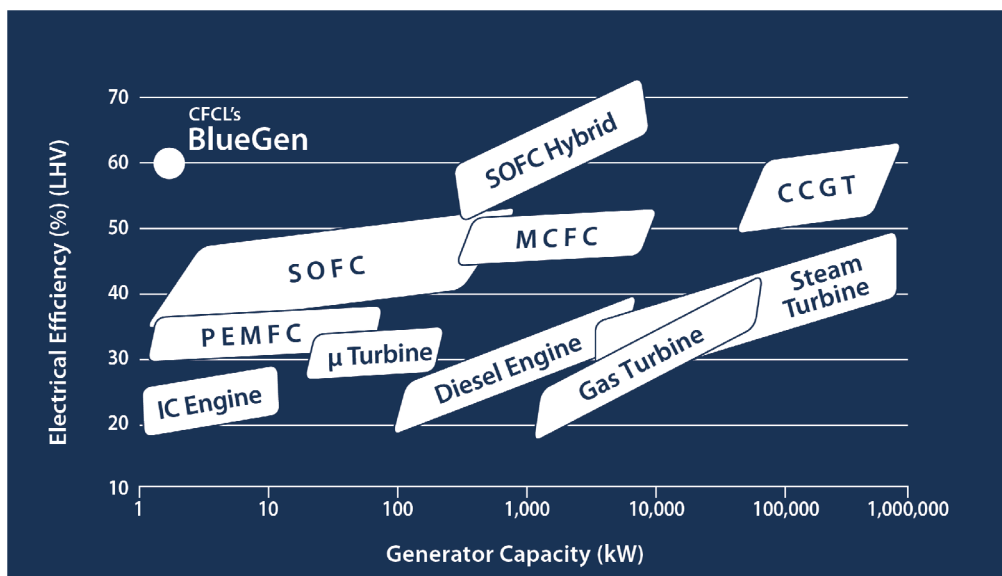
### Electric generators can vary immensely, due to several factors:

- > Capacity – from less than a kilowatt to hundreds of megawatts
- > Propulsion mechanism – internal combustion engines to large steam or gas driven turbines
- > Fuel source – petrol, diesel, natural gas, coal and others
- > Operating mode – continuous (base-load), variable (peaking), on-demand (back-up)

Generally, larger thermal power generation plants have higher efficiencies than smaller plants. The exception is modern Combined Cycle Gas Turbine (CCGT) power plants fuelled by natural gas.

### Here's the challenge for Distributed Generation technologies...

They must be small, yet efficient in order to compete effectively against large, centralised thermal power plants. As the diagram displays, Ceramic Fuel Cells technology provides outstanding efficiency (the same as a CCGT plant) from a small capacity.



Ceramic Fuel Cells' technology is a clear choice to maximise electrical efficiency for Distributed Generation applications.