



# Fuel Cell Module for Highly Efficient Electricity

The future of electricity generation will be using a Distributed Generation network, where electricity can be generated and consumed at the point of use. Distributed Generation networks can address the concerns of; increasing electricity demand, limitations of traditional power generation, efficiency losses through transmission & distribution lines and significant infrastructure investment.

There is a need today, and in the future, for secure and highly efficient generation of electricity with significantly lower greenhouse gas emissions.

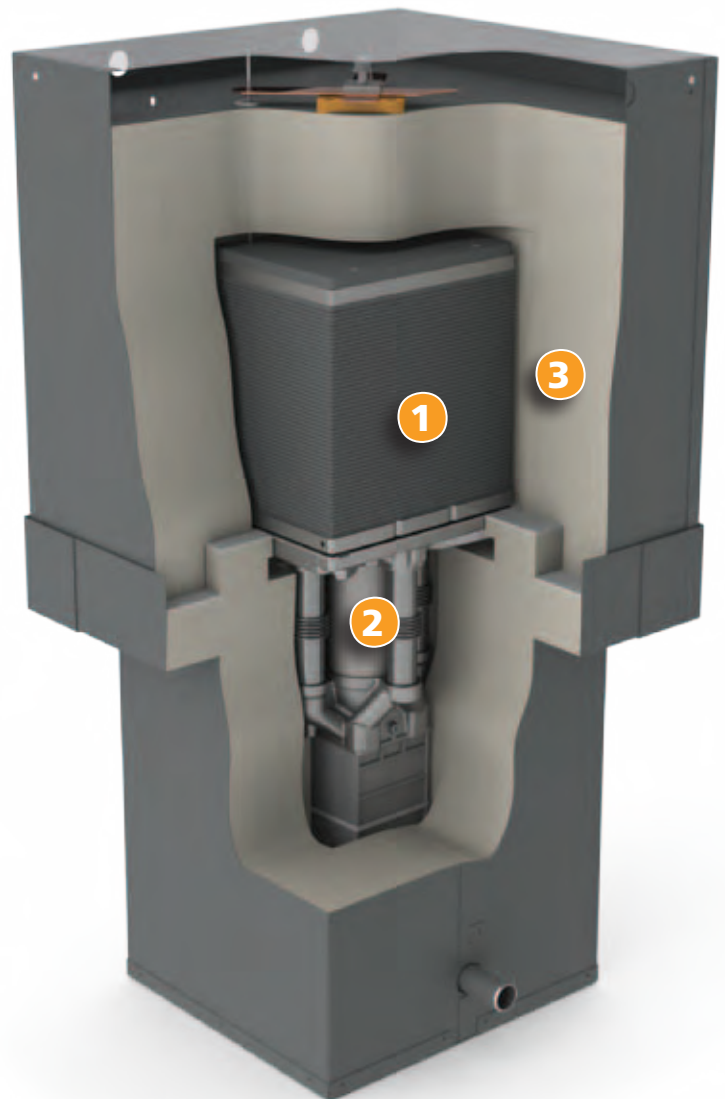
CFCL's Solid Oxide Fuel Cell (SOFC) technology will play a major part in this future providing low emission, highly efficient electricity from SOFC appliances.

The **Gennex™** fuel cell module is designed for integration inside future appliances. **Gennex™** is ideally suited for micro-Combined Heat and Power (micro-CHP) appliances such as high efficiency condensing boilers. **Gennex™** can be used for other applications such as stand-alone generators, air circulation systems and even electric vehicle re-charging stations converting natural gas to highly efficient electricity.

## Features:

- ▲ Converts natural gas to electricity at **60% electrical efficiency** (net AC power export, LHV)
- ▲ Internal steam reforming - for high conversion efficiency
- ▲ Balance of plant components with clearly defined interfaces – simplified integration
- ▲ Compact heat exchanger – for smaller size

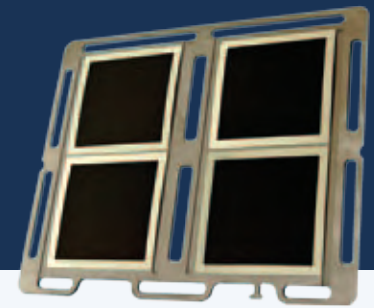
**GENNEX**   
fuel cell module



- 1 Fuel cell stack
- 2 Hot Balance of Plant (integrated steam generator, burner, fuel & air heat exchanger)
- 3 High temperature insulation

**Small, powerful base-load  
electricity generation**

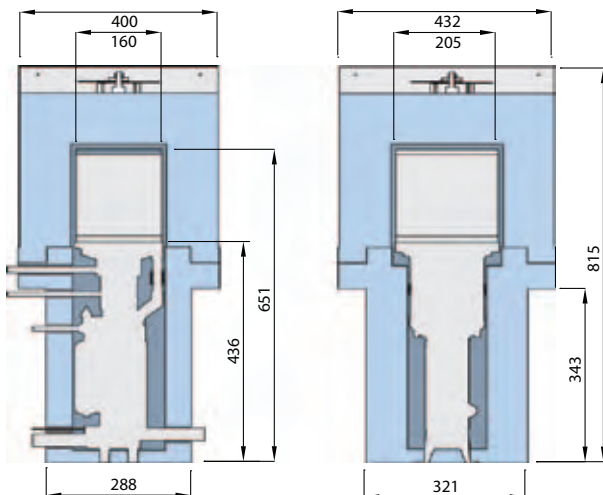
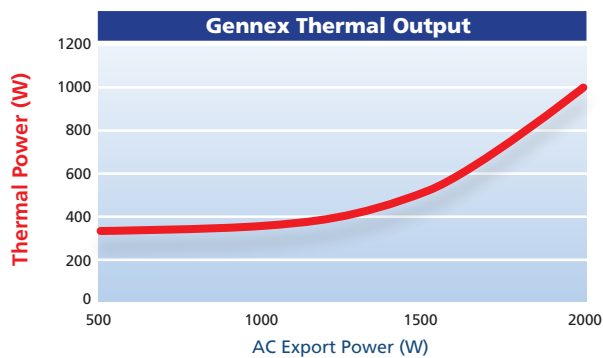
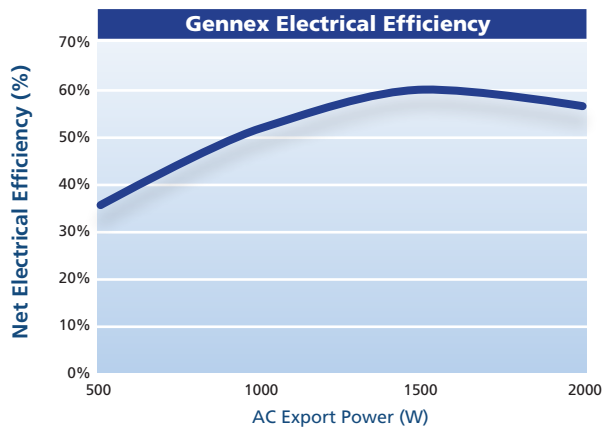
# Gennex™ Fuel Cell Module



**Gennex™** is a SOFC module designed for commercial production. Using CFCL's experience and expertise in fuel cells, stacks and complete fuel cell systems - manufacturers can now integrate a SOFC electricity generator into future appliances.

**Gennex™** delivers high electrical efficiency and less heat – this enables operation throughout the year; 24 hours per day, 7 days per week.

CFCL has developed the matching set of balance of plant components for easy integration.



## Specifications

Performance			
	Min	Optimum	Max
Electrical Output	500 W	1500 W	2000 W
Electrical Efficiency	36 %	60 %	57 %
Thermal Output	Approx. 400 W*	Approx. 540 W*	Approx. 1000 W*
* Based on exhaust gas cooled to 30 °C			
Power Output Modulation	From 0 % to 100 %		
System Efficiency	60 % to 85 % Depending on heat and condensate recovered		
Emissions			
Gennex Emissions	CO <sub>2</sub> & H <sub>2</sub> O (vapour) Virtually no NOx or SOx emissions		
Gennex Exhaust Flow	Up to 200 standard litres per minute		
Gennex Exhaust Temp.	20°C to 200 °C (dew point 54 °C)		
Connections			
Grid Connection (integrated by customer)	Parallel 220 to 240 VAC 50 Hz single phase		
Natural Gas	Supply pressure 0.9 to 2 kPa (Gas desulphurisation integrated by appliance manufacturer)		
Water	Supply pressure min. 100 to 600 kPa (Water treatment integrated by appliance manufacturer)		
Operating Conditions			
Ambient Temp.	+1 °C to +45 °C		
Inlet Air Temp.	-20 °C to +45 °C		
Installed Location	Indoors (recommended)		
Start-up time	25 hours		
Other			
Mass	45 kg (excluding ancillary equipment & high temperature insulation)		
Other Balance of Plant	System Control Electronics Power Management System Water Treatment System Gas Delivery System & Gas Safety Electronics Air Delivery System Gas Desulphurisation		

For more information about **Gennex™**, please contact your closest CFCL office.



**CERAMIC FUEL CELLS LIMITED**

Clean power for your home

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