



## Fuel Cell Module for Electricity Generation

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.

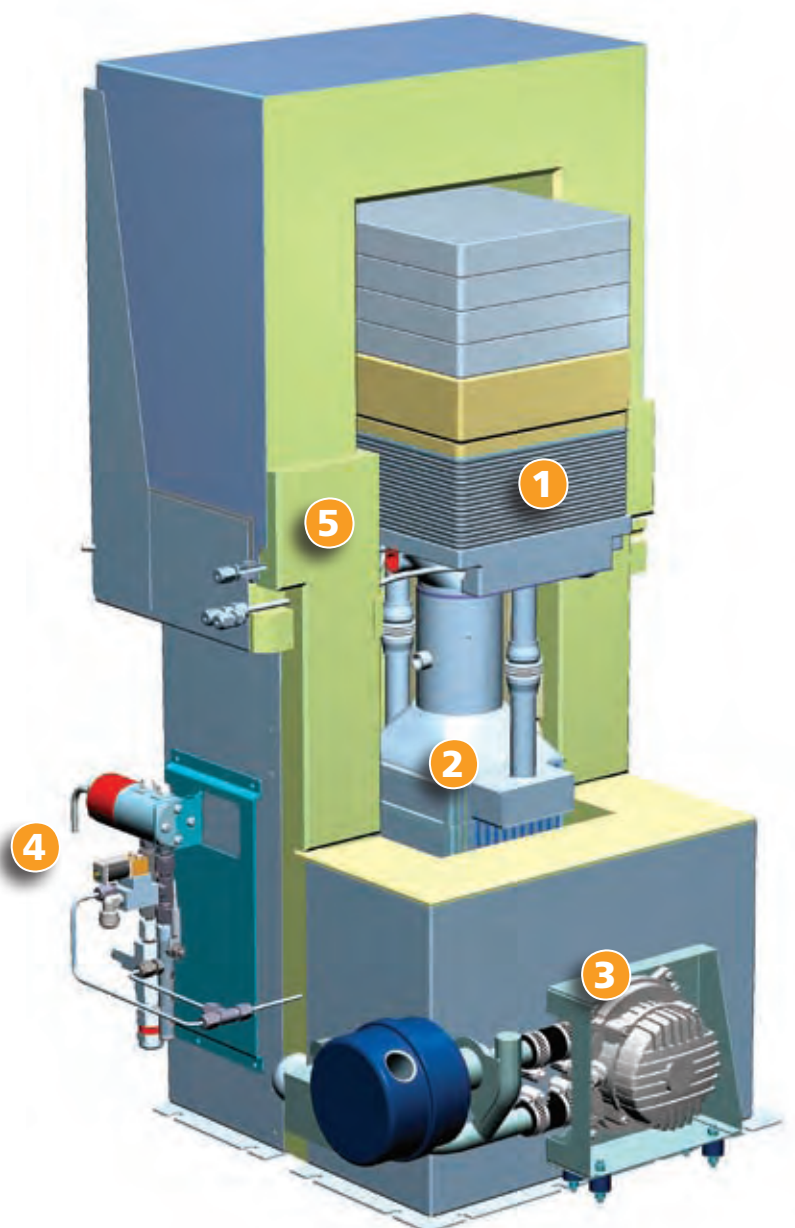
CFCL's Solid Oxide Fuel Cell (SOFC) technology will play a major part in this future providing low emission, highly efficient electricity from SOFC appliances.

**Gennex™** is a 1kW fuel cell module, which 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, heat pumps and air circulation systems. **Gennex™** can be used for other applications such as stand-alone generators.

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

# GENNEX

fuel cell module

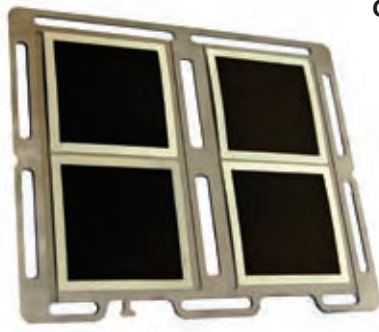


- 1 – Fuel cell stack
- 2 – Hot Balance of Plant  
(integrated, steam generator, burner, fuel & air heat exchanger)
- 3 – Air delivery system & air filter
- 4 – Water delivery system
- 5 – High temperature insulation

# Preliminary Specifications

## Gennex™ Fuel Cell Module

Preliminary Specifications



**Gennex™** is a fuel cell module designed for commercial production. Using CFCL's experience and expertise in fuel cells, stacks and complete fuel cell systems - appliance 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.

To fully integrate the **Gennex™** fuel cell module into future appliances, CFCL can provide a complete integration program incorporating a specialised engineering team.

### Features

- ▲ Uses CFCL's latest **Pentra™** metal-ceramic fuel cell technology – for higher power density
- ▲ Internal steam reforming – for increased electrical efficiency
- ▲ Optimised hot Balance of Plant design – for simple mounting and minimal heat loss
- ▲ Full integration support from CFCL – systems engineering experience

### Preliminary Specifications

Performance	
Electrical output	1 kW
Thermal output	~250W – exhaust stream cooled to 60°C ~650W – exhaust stream cooled to 20°C
Electrical efficiency	Greater than 50%
System efficiency	60 to 85% depending on exhaust temp.
Emissions	
From fuel cell	CO (<10ppm) & H <sub>2</sub> O (vapour) Virtually no NO <sub>x</sub> or SO <sub>x</sub> emissions
Exhaust flow	90 to 130 standard litres per min
Exhaust Temp.	155 °C (Dew point 54°C)
Connections	
Grid connection	Parallel 220 - 240 VAC (integrated by customer) 50Hz single phase
Natural gas	Supply pressure 0.9kPa to 3.0kPa (Gas desulphurisation integrated by appliance manufacturer)
Water	Supply Pressure 400kPa (Water treatment integrated by appliance manufacturer)
Operating Conditions	
Size: L x W x H	400 x 420 x 900 mm (excl ancillary equipment & high temperature insulation)
Ambient temp.	+2 °C to +40 °C
Inlet Air temp.	-20 °C to +40 °C
Location	Indoors
Start-up time	13 hours
Mass	55kg + (excl ancillary equipment & high temperature insulation)
Integration	
Waste heat recovery	By appliance manufacturer
Gas desulphurisation	By appliance manufacturer
Water treatment	By appliance manufacturer
Flue	By appliance manufacturer

Preliminary specifications only, data subject to alteration.

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



**CERAMIC FUEL CELLS LIMITED**

Clean power for your home

Founded in 1992, CFCL is a world leader in developing solid oxide fuel cells to provide sustainable distributed electricity generation. CFCL's fuel cells have the potential to meet significant market demand in Europe and Asia for clean, efficient and reliable electricity derived from natural gas, LPG or renewable fuels.

With over 100 skilled staff and extensive patented technology, CFCL is pursuing partnerships to integrate its fuel cell products into domestic scale micro-generation appliances.

CFCL is a publicly listed company on both the London Stock Exchange - AIM market and the Australian Stock Exchange (code CFU).

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