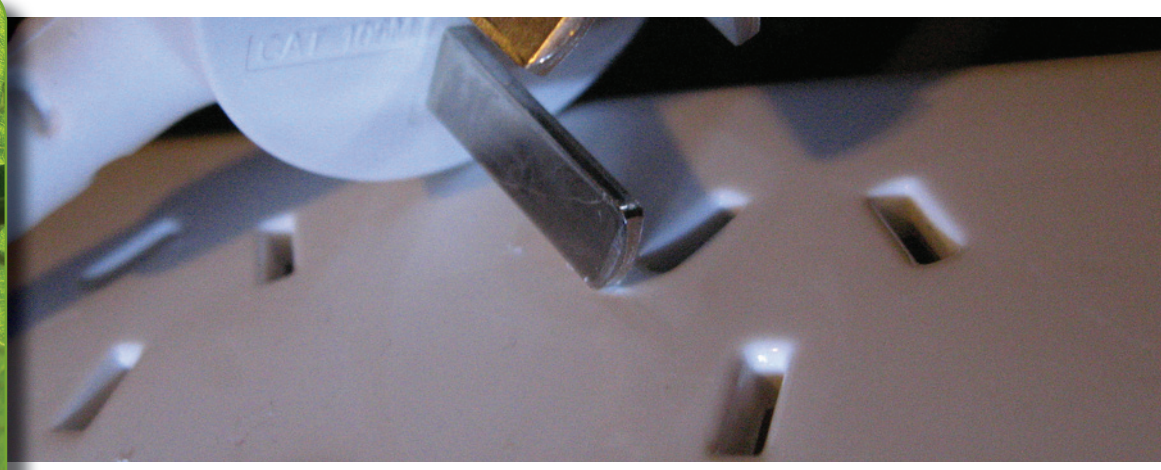


Nanotechnology at work

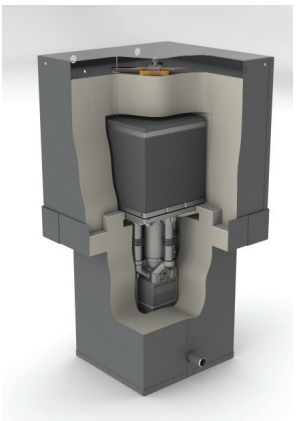
Nanotechnology is an emerging scientific field creating materials, devices, and systems at the molecular level. By being able to work at this ultra-small scale, nanotechnology is being used to deliver innovations in industries including clean energy, environment, health and personal care, electronics, transport, construction, telecommunications, manufacturing and mining.

Eco-friendly power generation

Demand for energy across the globe is forecast to double from 2002 levels by 2025. Yet existing supplies may not cope with this demand, and significant investment is needed in new energy generation that also meets higher efficiency and environmental standards. Ceramic Fuel Cells Limited (CFCL) is providing solutions using nanotechnology which meets these efficiency and environmental goals.

A fuel cell is an efficient generator of Direct Current (DC) electricity from hydrogen rich fuels through an electrochemical reaction. Fuel cells differ from batteries since they cannot store electrical energy, so do not 'run flat' or need to be recharged. Fuel cells can continuously generate electricity so long as they have a supply of fuel and air.

CFCL's solid oxide fuel cell (SOFC) technology produces electricity and heat through an electrochemical process using an electrolyte, a cathode and an anode. The cells have electrochemical layers on the nanometre scale, and use natural gas, and in the future liquid petroleum gas or ethanol, as fuel to generate the chemical reaction and produce low-emission electricity. The nanometre layered structure allows for operation at up to 780 degrees Celsius, with a much higher power density compared to electrolyte supported fuel cells, as well as a planar design better suited for high volume mass production of the fuel cells using ceramic manufacturing technology that is in use today. The nanostructured planar design also allows more options when the fuel cells are stacked together, allowing for flexible product options and smaller package sizes, which are best suited for domestic applications.



The fuel cells are very compact and modular, and can be used for a variety of applications where larger scale electricity generators cannot, such as the family home. Currently in Australia, electricity generated by a coal fired power station is typically delivered to a family home through traditional transmission networks with less than 30% efficiency. In contrast, using CFCL's fuel cell technology, electricity is generated with an efficiency of up to 60% at the point of use. Additionally, the household can use the heat from the fuel cell for domestic hot water and/or space heating, which increases the total efficiency from the fuel cell.

Right now, fuel cells are seen as one of the cleanest and most efficient methods of generating electricity, and it was the use of nanotechnology which enabled this.

Ceramic Fuel Cells Limited

Clean power for your home

ABOUT CFCL

CFCL is a world leader in developing solid oxide fuel cell (SOFC) technology to provide reliable, energy efficient, high quality, and low-emission electricity from widely available natural gas and renewable fuels.

CONTACT CFCL

t: + 61 (0)3 9554 2300
e: enquiries@cfcl.com.au
w: cfcl.com.au
p: 170 Browns Road
Noble Park, VIC 3174
Australia