

TECHNICAL AND COMMERCIAL APPLICATION

Specialist in the field of FC, producers of fuel cell prototypes as well as utility companies have agreed in the next statements concerning the SOFCs for residential use:

- a) The availability of the systems is too low.
- b) The lifetime of the systems is relatively short.
- c) Lack of durability of the planar SOFC stack.
- d) The electrical and the overall efficiency over time are low.
- e) The system lacks robustness.
- f) The costs of the system are still too high.
- g) The system is too big (It must fit in the existing space).

SOFC CHPs are currently targeted at the distributed power generation and APU markets, which feature mature and comparatively cheap competing products. This makes SOFC technology too expensive for unshielded broad market exposure.

In specialist applications where high efficiency, quiet operation and low pollution levels are valued more highly, SOFC CHP power generation is a viable commercial proposition. These opportunities will become more widespread as pollution legislation becomes more stringent and fuel prices rise and a greater value is placed on efficiency.

To expand from low-volume specialist applications to a mainstream market adoption the capital cost of a SOFC CHP unit has to come down. Although technological advances, particularly in fuel cell materials and construction, will reduce costs, the reduction necessary to become competitive requires unit mass production.

To overcome all these barriers governments have to launch programmes, by means of subsidies and funding, to achieve a validated technology in the near future. For instance Germany is a country leading solutions to this situation, via its "National Innovation Plan".

SOFC has a niche market in the small scale applications, i.e. for domestic and residential use, hotels, etc. Lower 35 kW there is no competing technologies as micro-turbines or internal combustion engines, therefore the use of SOFC would be an alternative once the barriers of the capital costs and the size of the equipment are overcome.