



CERAMIC FUEL CELLS LIMITED

Clean power for your home



Introduction to CFCL

A Company Overview

Ceramic Fuel Cells Limited
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www.cfcl.com.au



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Overview

- Introduction
- Strategy
- Distributed Generation
- Customers and Partners
- Developing Products
- Manufacturing Scale-up
- Current Snapshot





Introduction

- **CFCL develops fuel cell modules to generate electricity inside home heating systems**
- **Much more efficient than the current electricity grid**
- **First volume order for 50,000 units, with agreed targets**
- **Building volume manufacturing plant, ready in June 2009**
- **Solid Oxide Fuel Cells:**
 - Convert gas into electricity, through an electrochemical reaction
 - Have an electrical efficiency of >50%, total efficiency >80% (vs Coal ~25%)
 - Emit 60% less CO₂ than Coal, with no NO_x or SO_x emissions
 - No combustion, no noise, European CE approved
 - Operate on Natural Gas, LPG, Ethanol, Bio-diesel, Hydrogen...
- **Ceramic Fuel Cells Limited**
 - Formed in 1992, 110 staff
 - Broad IP portfolio, 29 global patent families
 - Melbourne HQ, UK and German offices





Strategy

CFCL supplies fuel cell products for integration into micro-generation appliances

■ Energy Market Forces

- Growing Demand vs Supply Constraints, & Emissions Squeeze

■ Products

- Fuel Cell module inside existing appliance 'footprint'
- Micro combined heat & power (CHP)
 - boiler that generates electricity
- Tri-gen: power, heating, cooling
- Remote area, off grid generators
- Auxiliary Power Units

■ Large Markets

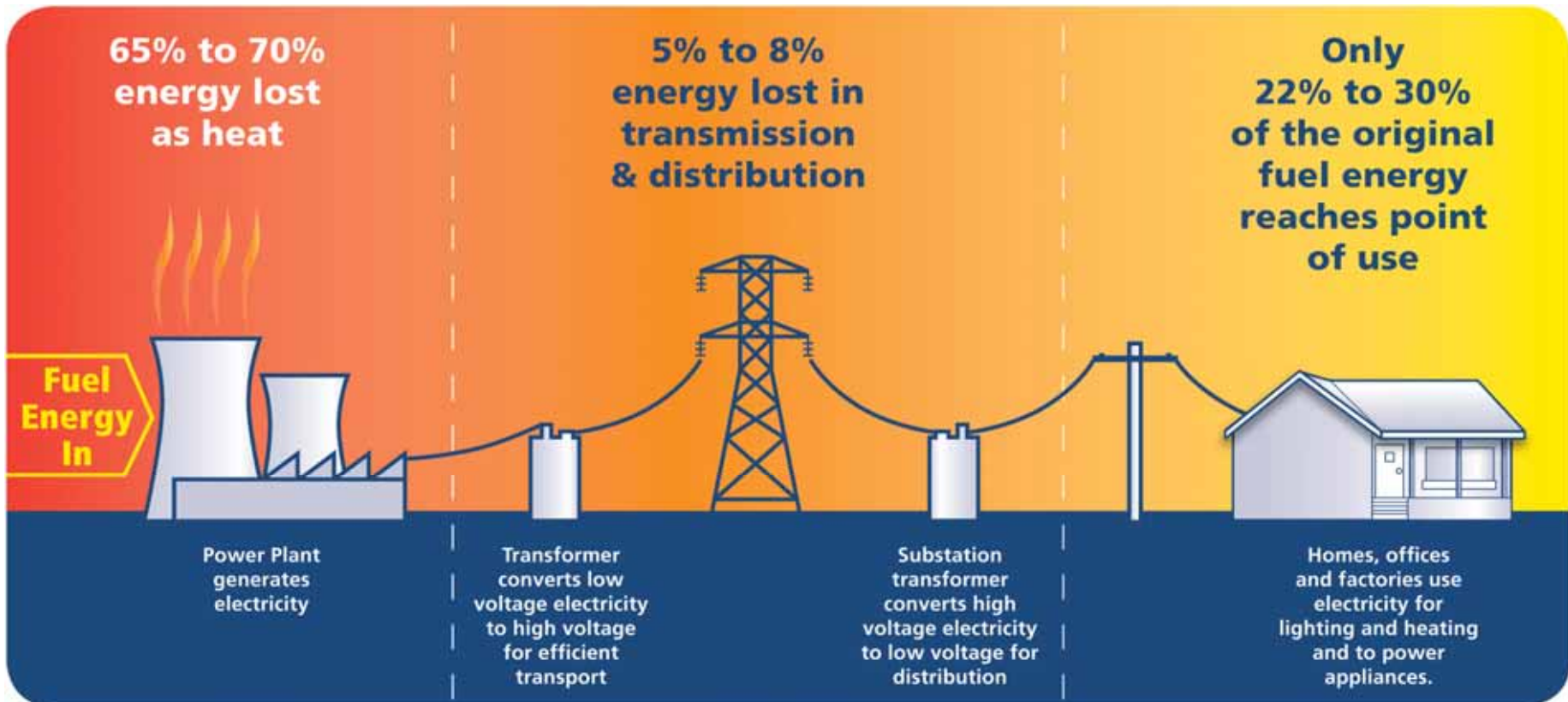
- Europe: >8 million boilers sold per year
- Japan: >4 million boilers sold per year





Today – Centralised Generation

Large, inefficient electricity generators, a long way from the users

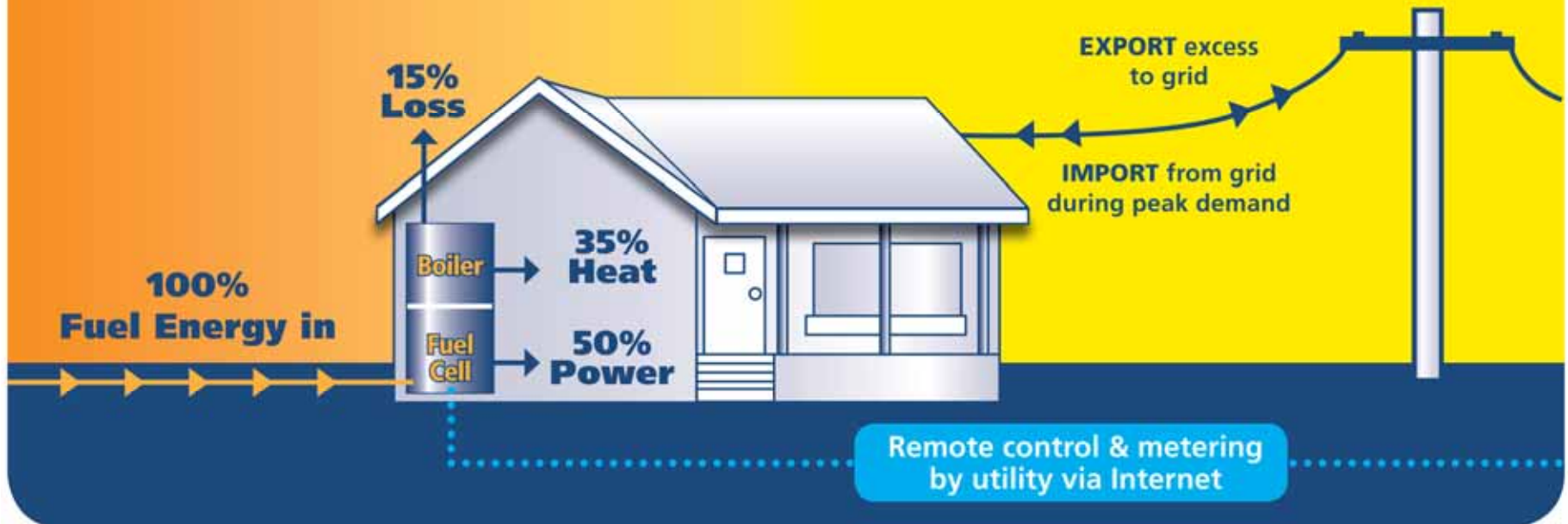




Micro-CHP – Distributed Generation

Very efficient, clean, quiet “mini power station” in the home

Home with Fuel Cell Micro CHP





Creating Value

■ Value for Utilities

- Distributed Generation - many benefits over centralised generation
- Cheaper baseload power & heat with lower emissions
- Widespread micro-CHP deployment can generate strong IRR
- Bundled contracts to reduce customer churn

■ Value for Appliance Partners

- Access to new technology
- Leverage existing assets and networks into an emerging market

■ Value for Homeowners

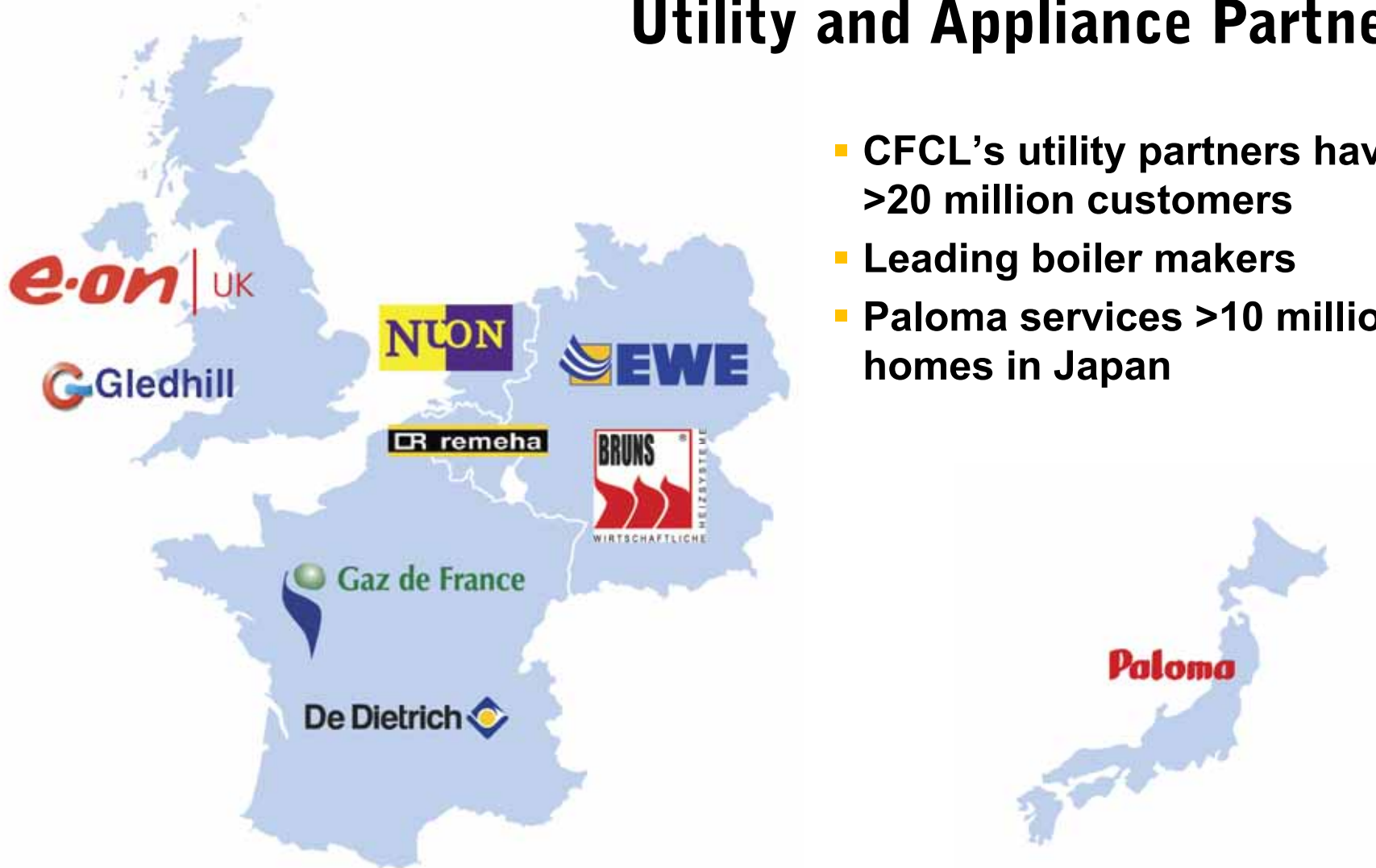
- New 'boilers' with no up-front capital cost
- Discounted power & heat, other incentives from utilities

■ Value for CFCL

- Revenue from selling fuel cell modules
- Annuity stream from replacement fuel cell stacks
- Control strategic IP to maintain margin / pricing power



Utility and Appliance Partners



- CFCL's utility partners have >20 million customers
- Leading boiler makers
- Paloma services >10 million homes in Japan



Blue Chip Partners



- Among the largest German utilities. Leader in DG, fuel cells. 5,800 staff, sales of €9B. www.ewe.de



- Specialist German boiler maker, various brands. www.bruns-heiztechnik.de



- One of Europe's largest gas utilities now entering the electricity market. Sales of €27B, 13M customers. www.gazdefrance.com



- Leading French boiler manufacturer, extensive distribution network. Part of the Remeha group. www.dedietrich-heating.com



- Large, innovative Benelux utility with operations in Germany. 2.5M customers, sales of €5.6B. www.nuon.com



- Large global boiler & heating systems manufacturer, sells into 40 countries. 2,500 staff, sales of €540M. www.remeha.com



- One of the UK's largest integrated power and gas companies, experience with deploying CHP units. 8M customers, sales of €12B. www.eon-uk.com



- UK boiler and storage vessel specialist. www.gledhill.net



- Leading global gas appliance company. Based in Japan, operations in Asia, Oceania, Americas. Largest water heater manufacturer in the USA. Sales of US\$2.5B, 15,000 staff. www.palomaglobal.com



Developing Products

CFCL
Field trial
units

CFCL & Appliance partner
Semi-integrated units

CFCL & Appliance partner
Fully-integrated units

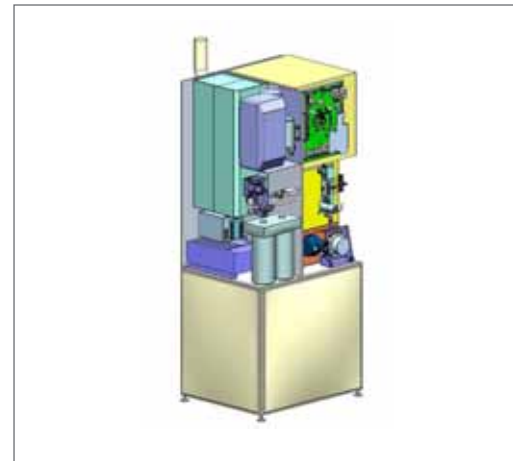
Commercial
Production

2006-07
Complete
Four units, Aust,
NZ, Germany

2007-08
Installed units in:
Germany, France, UK,
Holland & Japan, mid-08

2008-09
Integration underway
Component Supply Chain,
Cost-down

2009+
Volume orders
Utilities and
appliance partners





Volume Order from Nuon

- **Order for 50,000 mCHP units**
- **Based on meeting agreed commercial micro-CHP unit specifications**
 - Physical weight and size
 - Power and heat output
 - Efficiency
 - Lifetime
 - CO₂ savings
 - Price and value model
- **CFCL makes the fuel cell module, Remeha makes the mCHP unit**
- **Substantial potential revenue over five years**





Manufacturing Scale-up

■ UK Powder Plant

- Proprietary processes to make high quality zirconia powder
- 20T plant, commissioned October 2007
- Internal use & potential external sales



■ Australian Pilot Plant

- R&D, Testing, Product Development
- Pilot Fuel Cell manufacturing plant
- Making fuel cell modules for product development projects





Volume Manufacturing

- Large-scale fuel cell plant in Heinsberg, Germany
- Site prepared, hired local staff 2007
- Project cost €12.4m
- Completion June 2009
- Initial capacity 10,000 units per year
- Later potential expansion
 - Up to 160,000 units in same building
 - Option over Greenfield site
- Long term cell supply partnerships





Current Snapshot

- **Delivering on a clear and focused Strategy**
 - Expansion into Europe
 - Validated path to market
 - First Volume Order secured
- **Reduced Technology Risk**
 - Real world field trials
 - Increasing power density and efficiency, reducing costs
- **Blue Chip partners in five key markets**
 - Due diligence on CFCL technology & value model
 - Committing real resources
 - Developing products today
- **Manufacturing Scale Up**
 - Outsourcing volume components
 - In house core IP & strategic strengths
 - Building scale to reduce costs
- **Powder IP & Potential Sales**

