



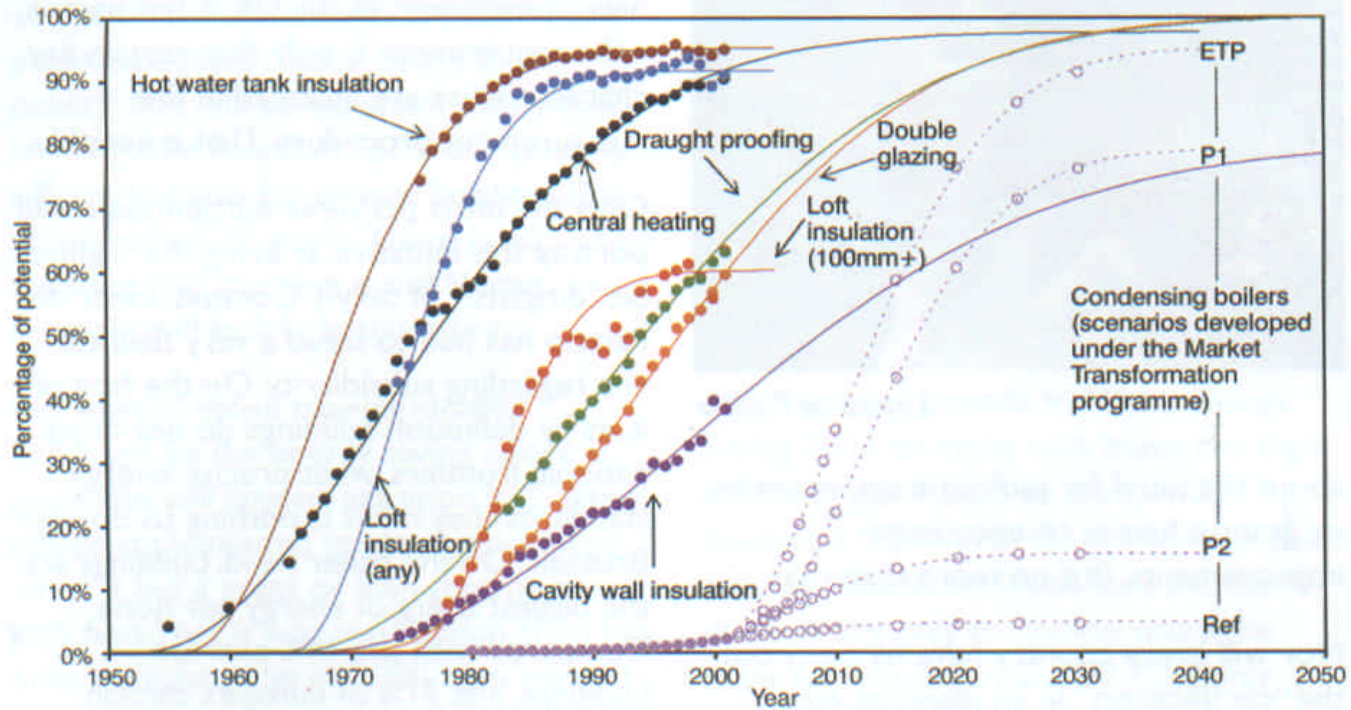
# **Energy Efficiency - Will Technologies Drive the Development?**

**Pete West**

**Project Manager**

- Energy efficient technologies- heating and lighting appliances, combined heat and power units, etc
- How technologies are adopted by the public - different experiences in different EU countries
- Policy and financial barriers
- Technologies alone will not drive the development

### Market penetration of home energy-efficiency related measures



Energy & Environmental Management



## **UK Government Energy White Paper**

February 2003

Our Energy Future- Creating a Low  
Carbon Economy

Target is to save 5 million tons of carbon  
a year from households by 2010



Installation of 60 million low energy lights by 2005 and 160 million by 2010, saving around 0.5 million tons of carbon or 10% of target



Insulating around  
4.5 million cavity  
walls from 2005 to  
2010 saving  
around 1.2 MtC or  
24% of the target



Significantly increasing uptake of A-rated appliances could save 0.4 MtC , 8% of the target

A- rated refrigerator using 160 kWh of electricity per year - running cost £10/year



Improved heating controls, changes to the building regulations and community heating with CHP saving around 1 MtC or 20% of target

The Energy Saving Trust  
Energy Efficiency Advice Centres

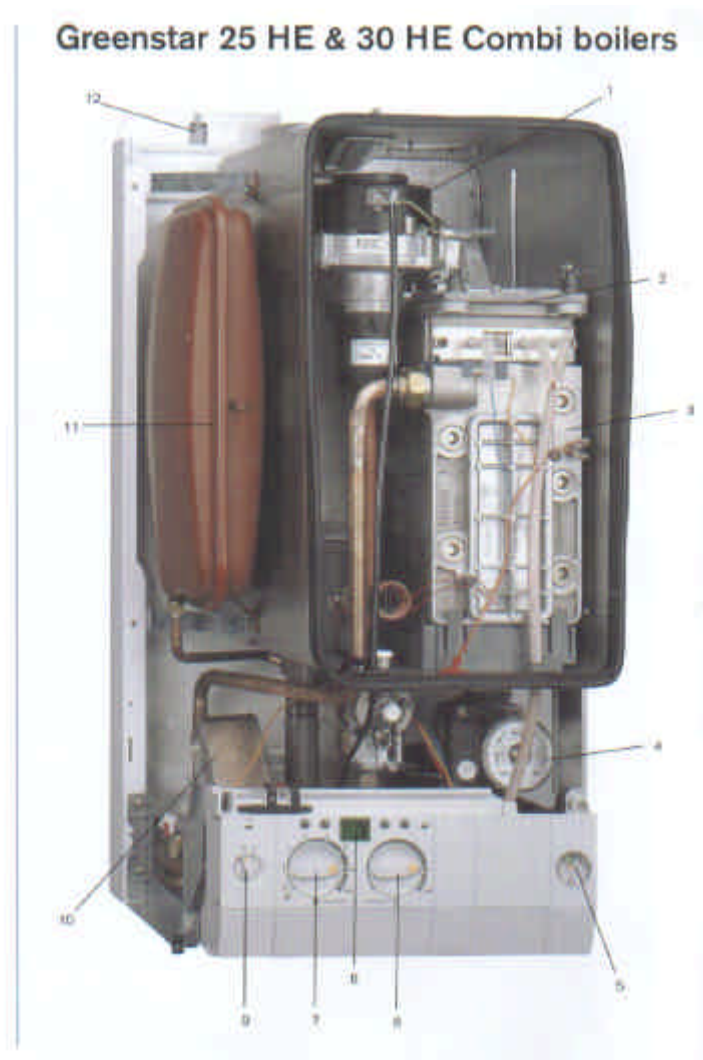
**THE BUILDING REGULATIONS 2000, PART L1**  
(England and Wales)

and

**THE BUILDING REGULATIONS, PART J**  
(Scotland)

**Technical Update**  
September 2002





Installation of 5 million condensing boilers by 2010 saving around 0.6 MtC or 12% or target

## Condensing boilers - a case study

### **The Netherlands**

1980 -1987 subsidies for condensing boilers and a wide-spread information campaign

1995 Building Regulations require new build to fit condensing boilers

1996 Energy tax introduced

2002 Condensing boilers account for ~75% of Dutch market

### **UK**

1996 -1999 Government funded cashback schemes

1997 Energy Efficiency awareness raising campaign

2000 Subsidies linked with manufacturers

2002 Condensing boilers ~10% of UK market

2005 Proposed changes to the Building Regulations



Viborg CHP plant in Denmark - there is very little use of district heating in the UK. CHP is more common on industrial sites.

CHP GOING BACKWARDS • EFFICIENCY IN HOUSING • LIBDEM'S RADICAL THINKING

ATE

## CHP growth goes into reverse

The growth in combined heat & power has gone into reverse for the first time since records began, according to government statistics.

The publication of the Digest of UK Energy Statistics (DUKES), the authoritative document on energy use in the UK, reveals that once again the Government has failed to achieve its original target of installing 5,000MWe of CHP by the year 2000. This target was set in 1993 as a key environmental output of the Rio Earth Summit in helping the UK reduce its carbon dioxide emissions.

Not only has Government admitted that they have once again failed to achieve their original target of 5,000MWe

"Today's announcement is a massive wake-up call to Government over its sustainable energy ambitions," said Graham Meeks, deputy director of the Combined Heat and Power Association. "Despite the brave words in the Energy White Paper, these figures show how much remains to be done over the pressing question of climate change."

The Digest, which details information for CHP operation over the calendar year 2002, also reveals that 11MWe less CHP was operating in 2002 than in the previous year. This follows a dismal performance in 2001, where only 38MWe of new CHP capacity was added, investment in 600MWe of new CHP capacity is needed every year if the Government is to achieve its target of 10,000MWe of CHP by 2010.

The shortfall in this year's figures mean that the opportunity to save an additional 12 million tonnes of carbon has been lost, says the CHPA. The loss of generating capacity will also fuel speculation of an impending crisis in security of electricity supply as more and more power plants are taken out of commission. The CHPA is calling for:

- the introduction of a CHP Obligation, similar to that which is now driving forward the UK's renewables industry;
- legislation to stop Government imposing the costs of the renewables.



**Figures for 2002 show a net fall in UK CHP capacity.**

UK reveals that once again the Government has failed to achieve its original target of installing 5,000MWe of CHP by the year 2000. This target was set in 1993 as a key environmental output of the Rio Earth Summit in helping the UK reduce its carbon dioxide emissions.

Not only has Government admitted that they have once again failed to achieve their original target of 5,000MWe

AL  
 114  
 152  
 162  
 168  
 178  
 188  
 198  
 208  
 218  
 228  
 238  
 248  
 258  
 268  
 278  
 288  
 298  
 308

UK target for CHP is 10GWe by 2010. A total of 4.8GWe was installed by 2000 but only 38 MWe was added in 2001 and there was a reduction of 11MWe in 2002 largely due to low electricity market prices and the New Electricity Trading Arrangements based on advanced competitive bidding



Models:  
XRG1 9 diesel  
XRG1 17 diesel  
XRG1 15 natural gas

CHP units for  
schools, blocks of  
flats etc.

15 - 19 kWe plus  
16 - 35 kW thermal

Imported into the  
UK from EC power  
Denmark



Advertisement feature.

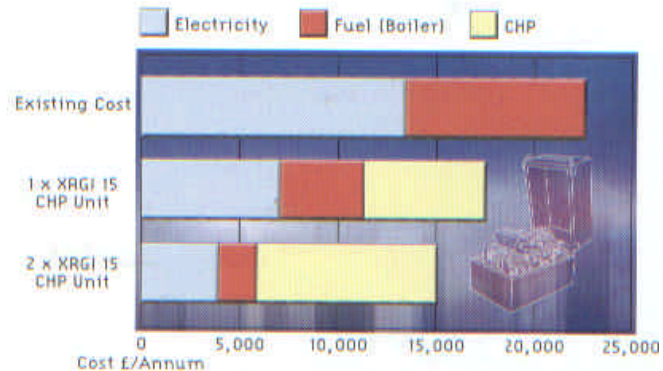
By Steen Møller Jensen,  
*International Sales and Marketing  
Manager, EC Power A/S.*

With an ever increasing focus on energy efficiency and greenhouse gas emissions, the launch of a new Danish micro CHP technology has been widely applauded in the UK.

The company with its new UK team is working towards repeating its successful entry into its native market where their systems have logged more than one million operating hours. Backed by Statoil ASA, the Norwegian energy giant, they have developed a range of systems with electrical outputs of 9, 15 and 17kWe - producing heat outputs ranging from 16 to 35 kWt.

The key to the success of these systems is the intelligent management system that constantly monitors the demands of the consumer and instantaneous adjusts the output to ensure that production does not exceed demand. Add the fact that the waste heat from the exhaust, lubricating oil and coolant system is recovered and it becomes easy to achieve fuel efficiency levels of 90%.

# Micro CHP – major savings

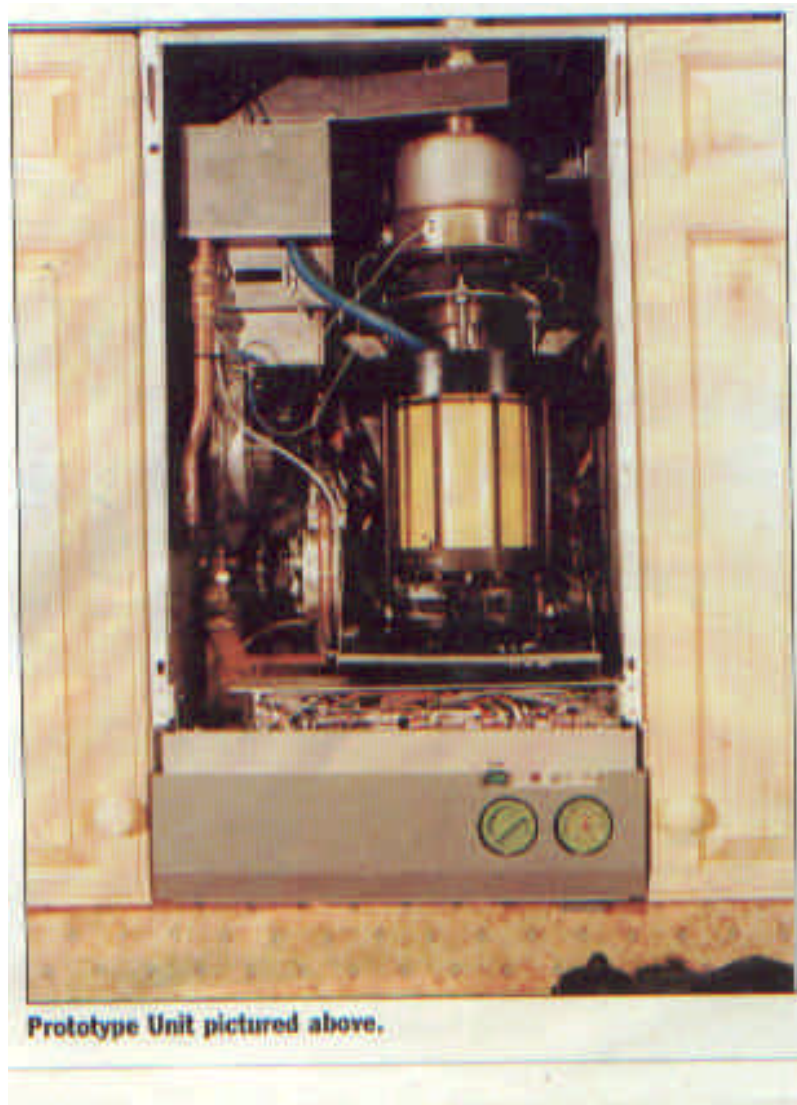


The calculations show that using a micro CHP system will yield an annual energy cost saving of £5,092, some 22.5%. This offers a simple payback period of a mere three years. The modular design of EC Power's systems allows for the units to be placed together to meet larger demands, so calculations were also

### Who can benefit?

The Micro CHP units are designed for local production. Each system can provide sufficient energy for consumers such as 15 average households, a farm, or small to medium-sized company.

Installation cost, including commissioning, of 15 kWe model is £15,500 typical energy cost saving £5092. Payback 3 years.



British Gas  
(Advantica)  
wall hung  
domestic  
sterling  
engine CHP  
boiler

1kWe plus  
15 kW heat

Prototype on  
field trials

## **What is the role of NGO's in the sustainable energy sector, regardless of new technology?**

- Lobbying and responding to Government consultations
- Building partnerships with local government , etc
- Awareness raising and independent advice services
- Educational work and preparing educational resources
- Project work to facilitate the uptake of clean energy technologies, especially projects in the community sector
- Seeking funding for sustainable energy projects
- Providing training courses





1200 local people attended a 1 day Eco Festival  
on a farm in N.Pembrokeshire September 2003



Six presentations on renewable energy given in a barn at the Eco Festival with straw bales for seating!



Support for a local farmer's son to start a business fitting  
Elsbett plant oil conversion kits for diesel engines





Setting up a “Solar Club” to train local people to install solar water heating panels. Launch at the house of our local Member of Parliament, Cynog Dafis



“Solar Club” training day in a local school



Supporting a successful planning application for the first commercial scale (600kW) wind turbine to be approved in Pembrokeshire. February 2003.