Micro-CHP for Residential Applications

European Utilities Start Dipping Their Toes into the Micro-CHP Water

Utilities will be critical drivers of early micro-CHP market growth in Europe. A report by Delta Energy & Environment explores the level to which they are just dipping their toes in the micro-CHP water, or throwing themselves in head-first. It analyses the different ways and levels in which utilities are engaging with micro- CHP, their business models and strategies, and whether or not they see an opportunity with micro-CHP.

Utilities will be critical drivers of early micro-CHP market growth for residential applications. Consequently, micro-CHP developers are eagerly looking towards utilities, hoping they will take the plunge into the micro-CHP water. Indeed, a handful of European utilities are positioning themselves to embrace new micro-CHP products likely to enter the market in 2010 and 2011. In this article, Delta Energy & Environment provides an overview of European utility engagement with residential micro-CHP and insight on how utilities are pushing micro-CHP to market.

How interested are Utilities in Micro-CHP?

Some European utilities are already dipping their toes in the micro-CHP water: for example in the UK, Centrica and Eon UK are the only European utilities publicly placing forward orders for tens of thousands of micro-CHP products, with Centrica having an equity stake in fuel cell developer Ceres Power. In the Netherlands, Eneco has run prime-time television advertisements in which they offer trial micro-CHP units to residential customers, as well as having an equity stake in micro-CHP technology company Enatec.

A second tranche of utilities – such as GDF-Suez in France, Gasag, MVV Energie (*figure 1*) and EWE in Germany are slowly following the utilities above. And a third tranche are testing a few units out of curiosity.

Why Micro-CHP?

Utility engagement can be segmented into two groups.

To increase Fuel Sales

Fuel suppliers are latching on to micro-CHP to increase fuel sales, and help secure markets for their fuel. They face growing competition from renewable fuels and electrically driven heating. Companies that stand out in this segment are Calor Gas (UK), Eon Ruhrgas (Germany), GDF-Suez (France), Gas Natural (Spain) and VNG (Germany).

Multiple Benefits in Competitve Retail Markets

In competitive retail markets such as the UK and the Netherlands, suppliers of electricity and gas see micro-CHP delivering multiple benefits:

a) A way to deepen customer relationships, resulting in stickier customers.
b) A cost-effective way to meet carbon and efficiency targets.
c) Shaping the customer demand curve by influencing / controlling when micro-CHP units run.
d) Potentially providing lower-cost electricity than the grid.

Companies focusing on this segment include Eon and Centrica

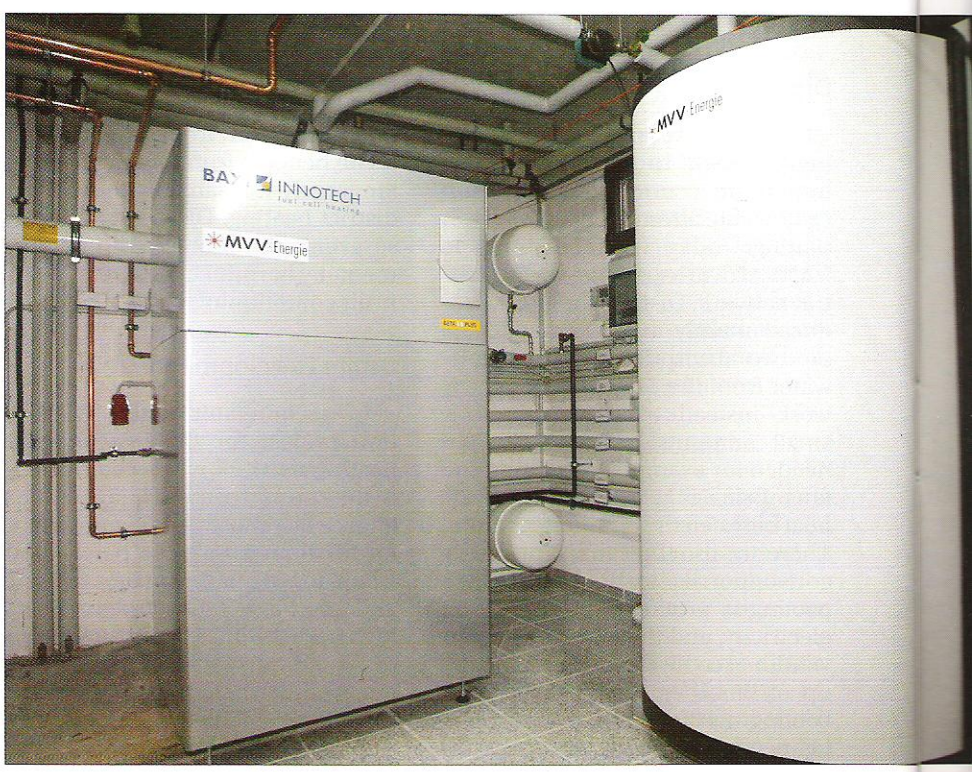

Figure 1. *Testing micro-CHP products*

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(UK) and the three major Dutch energy suppliers – Eneco, Essent and Nuon.

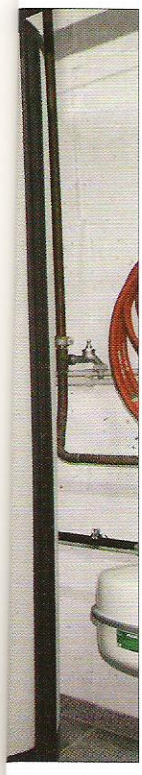
What can Utilities offer to Micro-CHP?

Utilities can be the quickest way to market in the short-term.

Why? Well, customers are sensitive to new technology and utilities can throw a heavyweight brand behind micro-CHP. They also have access to customers and can help with electricity export and metering. Installers are also sensitive to new products and require training, nurturing and in some cases incentives to work with new technologies. So utilities that have their own installers are well-placed to train them to install micro-CHP.

In the long-term, if and when micro-CHP becomes a widely available product, it is possible the relationship between utilities and micro-CHP will fade and boiler manufacturers will have a stronger market position as they do now with boilers.

Fuel cell micro-CHP might be the only case where utilities and micro-CHP tie the knot. This technology will have a much greater impact on utility businesses due to their higher electrical efficiency and therefore higher annual electricity production. Fuel cells could be part of a utility's distributed asset base, essentially as an electricity generator with heat as a by-product (rather than the other way round – for Stirling engines and Rankine cycle products).



Examining Utility Micro-CHP Engagement Under the Microscope

There are three key areas where utilities can play a crucial part in deploying micro-CHP depending on the country:

1. Partnerships with product developers,
2. Route to market
3. Customer proposition

Partnerships with Product Developers

At least 16 European utilities have partnered with micro-CHP developers. These utilities have opted to work with micro-CHP developers in many different ways – we have categorised these into three approaches, as shown in *figure 2*.

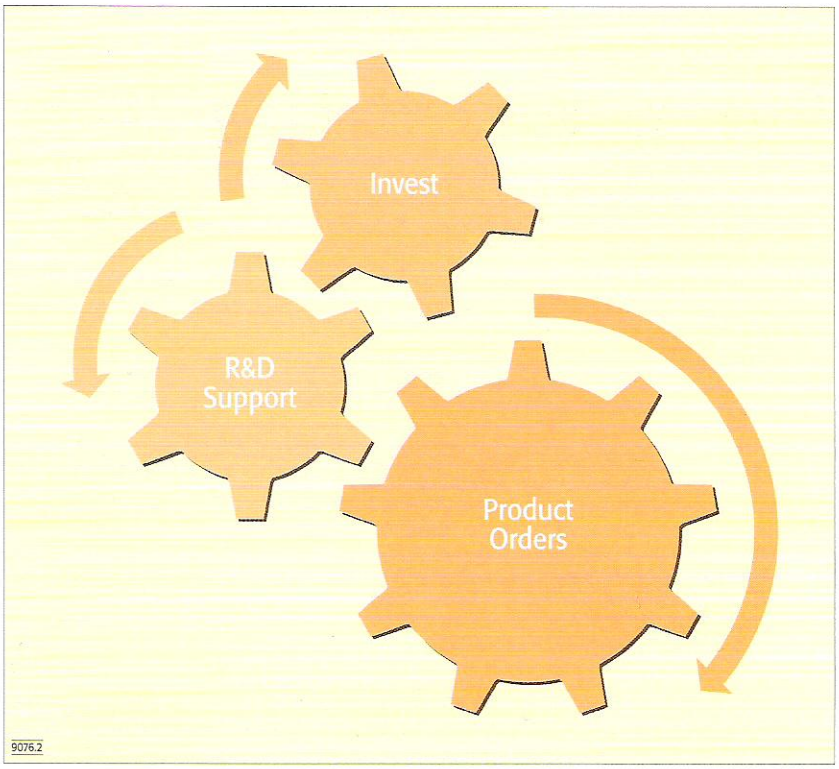


Figure 2. *How Utilities Support Micro-CHP Product Developers*

The most common, easiest and lowest cost option of these three is to field trial micro-CHP units to assess their commercial readiness. In some cases, utilities more proactive by providing product development support to help ensure that the eventual products are suitable for their applications and market.

> »Utilities can be the Quickest Way to Market in the Short-term for Micro-CHP Technology«

Routes to Market

What role will utilities play in a micro-CHP product's journey from the factory gate to a customer's home? *Figure 2* illustrates different ways that utilities can get involved in this route to market.

A growing number of European utilities have developed, or are developing, home energy services businesses with their own installer network. Many are looking to push micro-CHP down this route (»Sales/Service« in *figure 3*), selling product and servicing contracts as they currently do with boilers. But there are some interesting alternative approaches.

German utility, EWE (a sizeable regional utility based in north-western Germany) is opting for a unique ownership model for fuel cells. They hope to install, own and operate fuel cells in customers homes, selling the electrical and thermal outputs to the customer. This strategy fits well with their renewable generation assets and management of supply and demand.

Customer Proposition

It will take more than a great micro-CHP product and a utility route to market to shift large numbers of products. Utilities (or other micro-CHP vendors) will have to develop compelling customer propositions.

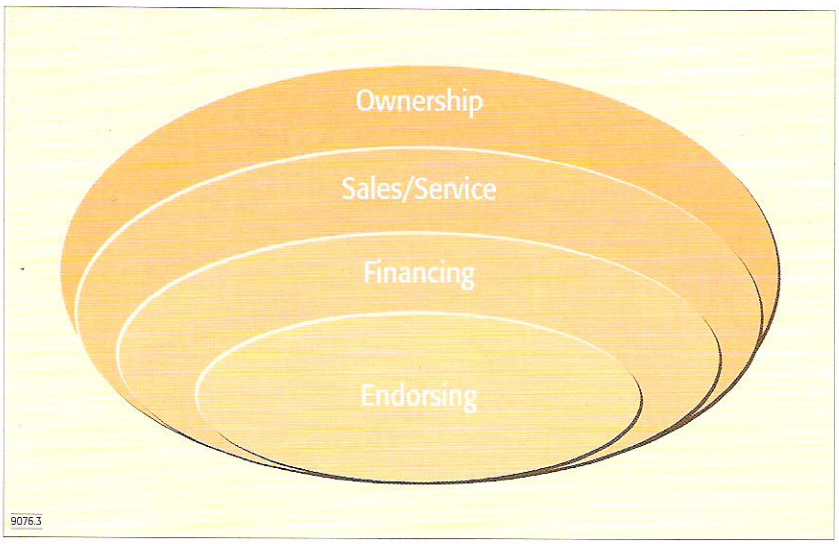


Figure 3. *Potential Utility Roles in Taking Micro-CHP to Market*

Country	Delta View
Denmark	Danish utility Dong is working with Danish fuel cells developers with the objective of deploying micro-CHP fuel cells in the medium to long-term. Their strategy and business model will be finalised when products are further developed – 2013 or later.
France	A challenging market environment and the absence of government support means that, despite significant effort from GDF-Suez in field trialling hundreds of Stirling engines, it will be 2012 or later before there is significant utility push towards customer offerings.
Germany	Some utilities are trialling Stirling engines, but none are likely to drive the market before 2011 or 2012. A larger number of utilities are working hard on fuel cells – through field tests and product development partnerships.
Southern Europe	Spanish, Portuguese and Italian utilities have little or no involvement with micro-CHP developers, and these countries are far from attractive markets in the short-term. Recent efforts by Spanish utility Gas Natural are the exception to the rule.
The Netherlands	Utilities are engaging heavily in field trials of Stirling engine based products, but need more confidence on product performance before they drive market growth – likely in 2010 or 2011.
United Kingdom	In the largest boiler market in Europe, only two of the six utilities are seriously engaged – Centrica will launch a micro-CHP product possibly as early as this year, with Eon UK following in 2010. These two companies are working closely with three different micro-CHP developers.

Table 1. *Summary of Delta's View on Utility and Micro-CHP Engagement according to Country*

These must communicate micro-CHP and its benefits to customers in an exciting and engaging way.

Here Delta Energy & Environment sees a large gap between current utility micro-CHP preparedness and what will be required for market growth – few energy utilities have explored or developed robust customer propositions.

In Europe, the Netherlands is furthest ahead in this area – with utilities and the wider micro-CHP industry already creating a consumer micro-CHP brand. Micro-CHP is branded as the next generation high efficiency boiler which also produces electricity (HRe-Ketel). Eneco has gone a step further, raising awareness with prime-time television advertisements and offering trial units for customers for only €2,000 (the price of a normal condensing boiler with installation).

Delta's View of Utility and Micro-CHP Engagement

Delta believes it is likely to take between one and three years (2010 to 2012) for utility micro-CHP offerings to arrive to customers, with most utilities tending towards the end of this timeframe. *Table 1* summarizes our views for each European market. For utilities such as Centrica, Eon UK, Dutch utilities Essent, Eneco and Nuon, and MVV in Germany, it will be a swift plunge into the micro-CHP pool as they drive forward micro-CHP offerings to their customers. Other utilities will slowly dip their toes in the water – building on limited field tests today – but are unlikely to dive in deep. Only a few believe that micro-CHP products are yet ready for market today, and they are certainly hoping for lower product prices and/or government support to mitigate initial high costs. ■

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