Biomass Heat Accelerator

Bioenergy Capital Grants Scheme Workshop

17th March 2009
Bradford City Hall

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Our mission is to accelerate the move to a low carbon economy

We cut carbon now by

- Providing specialist advice and finance to help organisations cut carbon
- Setting standards for carbon reduction

We cut potential future carbon emissions by

- Opening markets for low carbon technologies
- Leading industry collaborations to commercialise technologies
- Investing in early stage low carbon companies

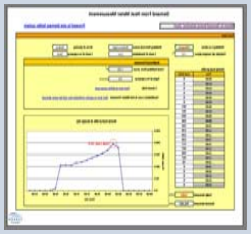
We cut future carbon

- Opening markets
- Technology commercialisation
- Investment

Biomass Heat Accelerator (BHA)

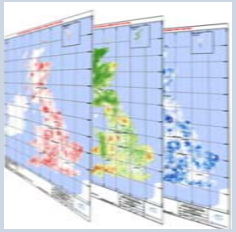
Aim: accelerate biomass uptake by demonstrating best-in-class implementation

5 workstreams



Data gathering

Cost-reduction investigations



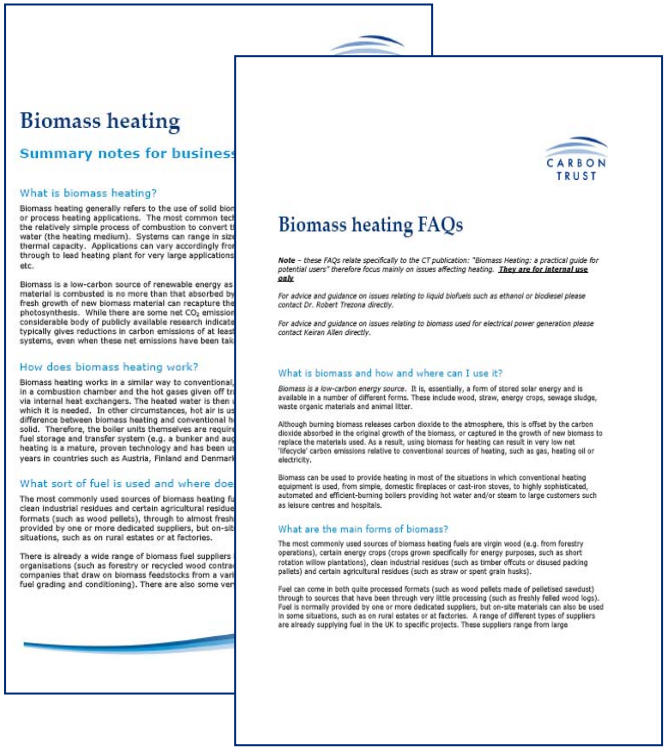
Optimal site development

Fuel supply Risk mitigation

Knowledge /understanding

- 5 year programme (commenced Nov 2006), total fund of £5M (£2.8 spent to date)
- Latest phase underway: to identify, develop and implement a range of "best-in-class" locations.
- Heavy focus on cost effectiveness and performance of equipment

Biomass Heat Accelerator (BHA)



Biomass heating

Summary notes for busines

What is biomass heating?

Biomass heating generally refers to the use of solid bio
or process heating applications. The most common tec
the relatively simple process of combustion to convert t
water (the heating medium). Systems can range in siz
thermal capacity. Applications can vary accordingly fro
through to lead heating plant for very large applications
etc.

Biomass is a low-carbon source of renewable energy as
material is combusted is no more than that absorbed by
fresh growth of new biomass material can recapture the
photosynthesis. While there are some net CO_2 emission
considerable body of publicly available research indicate
typically gives reductions in carbon emissions of at leas
systems, even when these net emissions have been tak

How does biomass heating work?

Biomass heating works in a similar way to conventional,
in a combustion chamber and the hot gases given off tr
via internal heat exchangers. The heated water is then
which it is needed. In other circumstances, hot air is us
difference between biomass heating and conventional h
solid. Therefore, the boiler units themselves are requir
fuel storage and transfer system (e.g. a bunker and aug
heating is a mature, proven technology and has been u
years in countries such as Austria, Finland and Denmark

What sort of fuel is used and where doe

The most commonly used sources of biomass heating fu
clean industrial residues and certain agricultural residue
formats (such as wood pellets), through to almost fresh
provided by one or more dedicated suppliers, but on-sit
situations, such as on rural estates or at factories.

There is already a wide range of biomass fuel suppliers
organisations (such as forestry or recycled wood contra
companies that draw on biomass feedstocks from a var
fuel grading and conditioning). There are also some ver

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Biomass heating FAQs

Note – these FAQs relate specifically to the CT publication: "Biomass Heating: a practical guide for potential users" therefore focus mainly on issues affecting heating. ***They are for internal use only.***

For advice and guidance on issues relating to liquid biofuels such as ethanol or biodiesel please contact Dr. Robert Trezona directly.

For advice and guidance on issues relating to biomass used for electrical power generation please contact Keiran Allen directly.

What is biomass and how and where can I use it?

Biomass is a low-carbon energy source. It is, essentially, a form of stored solar energy and is available in a number of different forms. These include wood, straw, energy crops, sewage sludge, waste organic materials and animal litter.

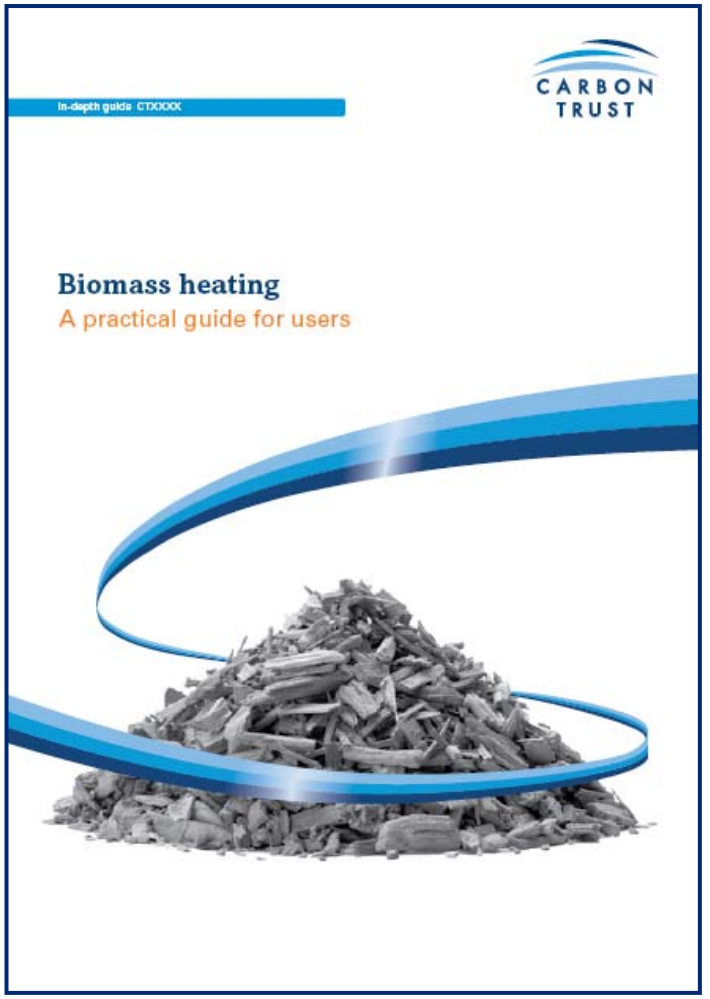
Although burning biomass releases carbon dioxide to the atmosphere, this is offset by the carbon dioxide absorbed in the original growth of the biomass, or captured in the growth of new biomass to replace the materials used. As a result, using biomass for heating can result in very low net 'lifecycle' carbon emissions relative to conventional sources of heating, such as gas, heating oil or electricity.

Biomass can be used to provide heating in most of the situations in which conventional heating equipment is used, from simple, domestic fireplaces or cast-iron stoves, to highly sophisticated, automated and efficient-burning boilers providing hot water and/or steam to large customers such as leisure centres and hospitals.

What are the main forms of biomass?

The most commonly used sources of biomass heating fuels are virgin wood (e.g. from forestry operations), certain energy crops (crops grown specifically for energy purposes, such as short rotation willow plantations), clean industrial residues (such as timber offcuts or disused packing pallets) and certain agricultural residues (such as straw or spent grain husks).

Fuel can come in both quite processed formats (such as wood pellets made of pelletised sawdust) through to sources that have been through very little processing (such as freshly felled wood logs). Fuel is normally provided by one or more dedicated suppliers, but on-site materials can also be used in some situations, such as on rural estates or at factories. A range of different types of suppliers are already supplying fuel in the UK to specific projects. These suppliers range from large



www.carbontrust.co.uk/biomass

What the Biomass Heat Accelerator could do for you

- A Biomass Heating project requires more than money to be successful….
  - *How should it be designed, how big should it be?, how much will it all cost? what permissions are required, how much maintenance will it need?, where will the fuel come from?*

- The Biomass Heat Accelerator could help your project with **expertise and impartial advice**

- Support available in three main stages (depending on project progression):
  1. Detailed feasibility study
  2. Development
  3. Implementation

- Total value could be equivalent of up to **£45K**
  - No cost for feasibility phase
  - Development and Implementation phases require 25% contribution from you

What we are looking for in a potential project

1. Not connected to the natural gas network;

2. “High” annual heat loads (no preset level but need to be spending >£10K pa on heating bills)

3. No major logistical challenges for fuel supply and delivery

Other requirements?

- Organisational commitment
- Willingness to co-fund

The Biomass Heat Accelerator and the Bioenergy Capital Grant Scheme

- Independent programmes, no formal connection
  - Apply for one only, both or neither(!)
- Participation in Biomass Heat Accelerator does not guarantee receipt of a grant from the Bioenergy Capital Grant Scheme
- Projects will work well in parallel
  - Ensure funding well spent
  - Project management support

More information / how to apply

- Contact Biomass Heat Accelerator Team:
  biomass@carbontrust.co.uk

Keiran Allen (020 7832 4528)

Daniel Sullivan (020 7832 4741)

- Discuss proposed project
- Simple, online questionnaire