

The platform for European research & innovation in District Heating, District Cooling and kindred technologies

## Progressing research & innovation for sustainable energy solutions

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*Text:*  
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The sleeping giant, otherwise known as the heating and cooling sector, is beginning to stir. It is taking time for Member State authorities to put in place new policies and support schemes to trigger changes in heating and cooling markets, but progress is now being made in several EU countries.

At EU level, important policy signals and obligations have been adopted in several Directives, notably the Energy Performance of Buildings Directive (and its recast), the Renewable Energy Directive, the Energy Services Directive and the CHP Directive. More recently, the new Energy Efficiency Directive makes it very clear that Member States must promote sustainable energy in heating and cooling.

How will the new Horizon 2020 programme contribute to more sustainable heating and cooling? Of course, nobody has a complete answer yet, because the Horizon 2020 framework is still being debated by the European Council and the European Parliament. New technologies can always be helpful, especially if they result in lower system costs,

improved lifetimes and reliability. However, what is also urgently needed in heating and cooling markets is non-technological innovation, and help with financing. This is being provided today through the Intelligent Energy Europe (IEE) programme, notably through its support for MLEI and ELENA. In particular, these IEE initiatives are providing project development assistance for local and regional authorities, and this is helping them to bundle many small heating and cooling projects in ways which make them easier to finance. IEE funding is also helping to kick start the construction of district heating and cooling schemes, provided that these are implemented in ways which encourage energy efficient refurbishment of the buildings served.

Discussions are on-going concerning an IEE III programme, inside Horizon 2020. Many members of the European Parliament have made it clear that they would like to see an expanded IEE III, building on the success of the IEE II programme, and a public consultation has been held over the summer (closing date 12 September 2012). If the results confirm the views of the Parliamentarians, then we can look forward to growing EU support for energy efficiency and renewables for heating and cooling (including district heating and cooling) in the years to come ■

# Collaborating in international DHC research

## *Joint research on Smart Cities in the European Energy Research Alliance (EERA)*

As urban environments continue to grow worldwide, currently consuming almost two thirds of our energy, cities must rise to the forefront of climate change actions.

The European Energy Research Alliance (EERA) is helping to make this happen, by bringing together key European organizations in the field of applied research in order to align their individual R&D activities to the needs of the European Strategic Energy Technology Plan (SET Plan), one of the key vehicles of the EU for accelerating the development of large scale deployment of low carbon technologies.

Within the EERA, 13 different Joint Programmes (JP) are currently in operation, focussing on various energy technologies (wind, storage, PV ...). The JP on Smart Cities was launched at the end of 2011 under the scientific lead of the Austrian Institute of Technology (AIT). Within this JP, more than 60 research institutions from 14 European countries are active.

The objective is the development of scientific tools and methods that will enable an intelligent design, planning and operation of the energy system of an entire city in the near future. An integrated approach will be adopted for the planned research activities in order to capture the interfaces between all the relevant elements of the energy system. The entire JP is structured in the following sub-programmes: 1) Energy in Cities, 2) Urban Energy Networks, 3) Energy-efficient Interactive Buildings, and 4) Urban Supply Technologies.

Both electrical networks and thermal networks are considered within the sub-programme "Urban Energy Networks". The related research activities focus on 1) Energy management for districts and cities, coupling of energy (both electrical and thermal), 2) Implementation of data acquisition systems at urban level and 3) human factors influencing energy uses.

Although work within the JP has been on-going since the end of 2011, there is still the opportunity to join the EERA JP Smart Cities for every European research organisation contributing scientific excellence,

innovative ideas, or the latest research on urban energy systems. Industries may also participate as an associate partner. The DHC+ Technology Platform is supporting relevant cooperation between EERA and DHC stakeholders.

For more information on the EERA, please contact [Ralf-Roman.Schmidt@ait.ac.at](mailto:Ralf-Roman.Schmidt@ait.ac.at) or [Reinhard.Schuetz@ait.ac.at](mailto:Reinhard.Schuetz@ait.ac.at), and visit [www.eera-set.eu](http://www.eera-set.eu) ■

## *Global DHC research: the International Energy Agency (IEA)*

Operating within the IEA family of energy research 'implementing agreements', the IEA-DHC research programme has been carrying out its work since 1983 with a membership that spans three continents and brings countries together to research, innovate, and grow District Heating and Cooling (DHC) and related cogeneration.

The work comprises a rich source of technical information on all aspects of DHC. It also includes studies aiming to assist decision-makers in understanding the benefits of DHC, including the pivotal role heat networks have in enabling the re-use of locally available 'waste' heat, and the easier integration of renewable heat sources. Current topics being carried out under Annex X of the programme include low temperature DH, integration of renewable energy sources, developing improved maintenance schedules, and DH primary energy factors. The programme is also initiating an in-depth study of next generation DH systems entitled Low Temperature District Heating for Low Energy Communities.

IEA-DHC has collaborated with the DHC+ Technology Platform from the start, welcoming the invitation from DHC+ for a place on its steering committee, and also accepting a role as its mirror group during its initial development. Cooperation between the two research groups features most strongly with joint actions, exemplified by the work on Policies & Barriers addressed globally with two separate projects, within which DHC+ covered EU countries and IEA-DHC the rest of the world.

Looking forward to the next Annex, it is an excellent time for new countries to join and for all members to continue to cooperate on related projects. Special terms are available to new members, who can initially join as sponsors. For more information on the programme see the programme website at [www.iea-dhc.org](http://www.iea-dhc.org) or please contact [WiltshireR@bre.co.uk](mailto:WiltshireR@bre.co.uk) ■

## Capturing biogas for green heat

### BIOGASHEAT

#### *Looking at new heat markets for biogas plants all over Europe*

Worldwide, the production and use of biogas is increasing, and Europe is no exception. Nonetheless, ensuring the sustainable and efficient use of biogas as an energy source will require using heat from electricity producing biogas plants that is currently wasted.

Supported by the Intelligent Energy Europe programme, the BiogasHeat project aims at promoting sustainable heat use from existing and new biogas plants. The project addresses

appropriate heat use solutions by developing business models, strategies and promising services for the use of excess heat from biogas combined heat and power plants.

Currently, the project is finalising an overview of good practice examples of heat use from biogas plants in Europe, as well as a study about the state of the art of heat use from biogas plants in nine European countries. Both studies will be available on the project website: [www.biogasheat.org](http://www.biogasheat.org). An important outcome of the project is a handbook on "Sustainable Heat Use from Biogas Plants", which will be available online at the beginning of the 2nd quarter of 2013. The handbook will focus on technical solutions, which are available for

enhancing biogas heat recovery and use in heating, drying, and cooling and for additional electricity production. A dedicated chapter of the handbook will show innovative concepts for highly efficient biogas conversion.

If you would like to know more about this project or become a partner for getting a feasibility check and assistance in a field test, please contact BiogasHeat dissemination partner Euroheat & Power at [dhcplus@euroheat.org](mailto:dhcplus@euroheat.org) or your BiogasHeat national partner



#### *Green heat fresh from the farm: an example from the Polderwijk*

More than 3,000 inhabitants of the Polderwijk in the Dutch city Zeewolde consume heat produced by a dairy cattle farm, where Farmer Van Beek operates manure co-digesters and a CHP plant running on biogas since December 2008. The distance between the farm and the CHP plant at the Polderwijk is 5 kilometers. A pipeline for raw biogas connects the CHP with the digesters.

Essent Local Energy Solutions, which operates a district heating grid in the Polderwijk, purchases the green heat from the farmer and adds heat from a natural gas boiler in winter periods. In 2011 farmer Van Beek sold 7,634 MWh of green heat. That is 67 % of the total heat production for the Polderwijk. The biogas CHP generated 7,917 MWh of renewable electricity.

The CHP performed extremely well in 2011 with more than 8,000 operating hours at full load and an average energy efficiency of 79 % over the year including the summer period with low heat demand.

Next year the share of green heat will be close to 100 % although there will be new houses connected to the district heating. In the summer of 2012, Farmer van



Source: Klaas De Jong

Beek connected digesters at another dairy cattle farm to the pipeline. The increase in biogas production made it possible to install a second CHP unit. The total power of this new biogas plant is now 2.3 MW electric and 2.2 MW heat.

Having received an IEA certificate of merit under the global energy climate awards competition ([www.districtenergyaward.org](http://www.districtenergyaward.org)), the biogas achievements in the Polderwijk have also gained international recognition.

For more information, please contact Klaas de Jong at [Klaas.de.jong@essent.nl](mailto:Klaas.de.jong@essent.nl) ■

## New Initiatives on the Horizon

Don't miss the next opportunity to contribute to progressing research & innovation for sustainable energy solutions in DHC. If you are a student enrolled in a European university, you may be eligible for our **1<sup>st</sup> International DHC+ Student Awards**. Calls for applications are being accepted until 8 January 2013. Find out more about the Awards at [http://www.dhcplus.eu/?page\\_id=419](http://www.dhcplus.eu/?page_id=419)

## Upcoming Events



27 - 28 May 2013

### 36<sup>th</sup> Euroheat & Power Congress

Smart and competitive: DHC for cities of the future

The congress programme is out now! Join us for two full days of panel debates, presentations, workshops, followed by networking events. Registration is open, maybe you are one of the repdigits and will receive a special gift. Don't miss out and register today! Have a look at the website to find out more and to register:

[www.ehpcongress.org](http://www.ehpcongress.org)

### Next Committee Meetings

The next DHC+ Technology Platform Steering Committee meetings will be held within the framework of our "The Next DHC Generation" conference on 9-10 October 2012, and again at the beginning of 2013. Contact us at [dhcplus@euroheat.org](mailto:dhcplus@euroheat.org) if you are interested in participating or becoming a member of the Platform.

### Be Part of The Next DHC Generation

Learn more about our past and upcoming conferences highlighting DHC projects and supporting innovation and the transfer of know-how. For more information and registration details see [www.dhcplus.eu](http://www.dhcplus.eu) or contact us at [dhcplus@euroheat.org](mailto:dhcplus@euroheat.org)

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