District heating and cooling is crucial to bring renewables into the heating market and to increase their share,” said Gerhard Stryi-Hipp, President of the European Technology Platform on Renewable Heating & Cooling, at the annual conference. It was not least for this reason that the platform ventured a new approach and for the first time organised its branch meeting together with the European association for district heating and cooling, Euroheat & Power. “This is an exciting experiment and my feeling is that it is a great success,” was the conclusion drawn by Stryi-Hipp at the end of the two days. The increased attendance certainly seems to confirm this positive assessment. Around 300 participants from more than 25 countries came to the Danish capital Copenhagen. That is twice the number which attended last year’s conference in Budapest.

Copenhagen was furthermore an ideal location at which to speak about combining renewable energies with district heating and cooling (DHC): “98 % of the buildings here are incorporated into a district heating network,” reported Birger Lauersen, President of Euroheat & Power. He described district heating and cooling as the backbone of future energy supply systems in Denmark. Some 62 % of the Danish population is already connected to a local or district heating system. This figure puts Denmark in second place after Latvia (64 %) in the corresponding rankings of all the EU member states (a more detailed article about renewable DHC in Denmark will be published in one of the next issues of S&WE). There are approx. 6,000 DHC systems in operation across Europe. To date, however, the district heating energy has been predominantly a product of co-generation in conventional power plants. It is not surprising, therefore, that the conference devoted particular attention to the question of how DHC can become “greener”.

Intelligent heat recovery and thermal energy storage concepts are subjects at the top of the agenda in Helsinki, as presented by Director Marko Riipinen from Helsinki Energy: with a heat output capacity of 90 MW and a cooling output of 60 MW, the Katri Vala heating and cooling plant is the largest in the world using heat pumps to produce district heating and cooling. The heat sources are domestic waste water and the waste heat from the computers in a data centre, while the cold is

Promising liaison

Renewable energy sources feeding district heating and cooling networks – the potential of such a green transition sounds extremely promising for the renewable heating and cooling branch. The subject was correspondingly a key topic at the recent annual conference of the European Technology Platform on Renewable Heating & Cooling.
taken from sea water pumped into the plant from the nearby Baltic Sea. The principle of free cooling with sea water is implemented at two points, with the water stored in two underground bedrock storage facilities with capacities of 11,500 m³ and 23,500 m³.

Else Bemsen from the consulting office Cowi drew attention to the Energy Efficiency Directive of the European Commission, according to which all member states must draw up a national heating and cooling plan by January 2014. Corresponding guidelines are contained in the Energy Roadmap 2050 published by the EU Commission last December. This paper, however, has been heavily criticised by eleven European associations of the renewable energy and heating markets: in a joint statement, they bemoan the fact that there has been practically no consideration of the heating and cooling sector in any of the scenarios. The roadmap thus lacks a coherent, future-oriented vision. “It seems that the European Commission does not foresee a bright future for district heating and cooling,” said Prof. Sven Werner from the University of Halmstad in Sweden. After all, no information is provided on the local conditions which are vital for the realisation of DHC.

Identify hot spot areas

With this in mind, Euroheat & Power has commissioned a “Heat Roadmap Europe 2050”, to be elaborated by the universities in Halmstad and Aalborg, Denmark, together with the Danish company PlanEnergi. Werner presented the “mapping of local conditions” compiled within the framework of preliminary studies between January and April 2012, for which GIS-based data were

Strategic research agenda
The European Technology Platform on Renewable Heating & Cooling has defined strategic research priorities (SRP) for its individual sectors. Brochures describing the research focus are already available for biomass, geothermal energy and cross-cutting technologies, and solar thermal is expected to be added to the series in the next few weeks. The overall strategic research agenda of the RHC Platform is intended to offer orientation for EU budget planning in the forefront of the next “European Framework Programme HORIZON 2020” for the period 2014 to 2020.

The individual SRP brochures can be downloaded from the Internet at www.rhc-platform.org/publications.
Marko Riipinen, Director of Helsinki Energy, explained how intelligent heat recovery and thermal energy storage concepts contribute to a “smart” district heating system in Helsinki.

According to Stryi-Hipp, this complicated situation is difficult to understand and influence. The greatest influence is thus exerted by the prices for oil and gas. Different investments may then find themselves in competition with each other.” Stryi-Hipp attributed the problems for the heating and cooling market to the decentralised and highly inhomogeneous structure. That makes it difficult to understand and influence. The greatest influence is thus exerted by the prices for oil and gas. According to Stryi-Hipp, this complicated situation is perhaps the reason why the heating market is often passed over in political decision-making.

**Biomass dominates the renewable heat market**

To date, biomass has been the dominant renewable heat energy source in the EU, with an annual production of 712 TWh in 2010, reported Striy-Hipp. Geothermal energy from deep and shallow sources – exploited by way of heat pumps – accounts for 33 TWh, and solar energy for 17 TWh. Each technology has its own panel within the RHC Platform. Biomass panel Chairman Kari Mutka from Vapo, Finland, named the most important of the future-critical topics under discussion: “We need intelligent concepts to save energy and thus biomass,” he said. A shortage of classic wood-based biomass is already foreseeable: “We must therefore develop the supply chains for alternatives like agricultural waste (straw, hay).” Mutka also believes that co-generation using biomass could be expanded to integrate cooling and refrigeration, whereby it would also become an interesting option in the South European and Mediterranean countries.

For Pierre Ungemach from GPC IP, France, the problem for the geothermal sector, alongside sustainability issues, is the fact that the technology is classified differently in the individual countries: for some it is deemed renewable, for others a mineral resource. As far as solar thermal is concerned, the costs remain the greatest obstacle. Xavier Noyon from the European association ESTIF pointed out that, in many countries, solar thermal is still a very small sector. “Here, we are in the land of solar district heating. But use of this technology needs to be strengthened in other countries, too,” was his appeal. Denmark currently counts 25 solar thermal district heating systems.

**Further information:**
- RHC Technology Platform: www.rhc-platform.org
- Euroheat & Power: www.euroheat.org
- Energy Plan: www.energyplan.eu
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