

Introducción a las Redes de Calor y Frío
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Good morning,

Thank you for the invitation to speak at this occasion; the launch of “La Asociación de Empresas de Redes de Calor y Frío”, the Spanish association for district heating and cooling.

First I would like to briefly present myself:

I am manager of international affairs in the Danish District Heating Association. This Danish association is an organization - like ADHAC - that aims to promote the concept of district heating and cooling and taking care of the interest of the members. We have more than 400 members, representing around 98 % of all district heating sold in Denmark.

District heating is a big thing in Denmark, where 62 % of all homes get their energy for heating and hot tap water from district heating. All major cities and towns are supplied with district heating, often with a local market share of more than 95 %. This is a result of a dedicated and strong energy policy - both nationally and locally - that began back in the 70' ties and 80' ties, when it was designed to meet the challenge of those days: the problems associated with our then total dependence on import of oil and the price increases on this oil.

The high market penetration of the technology that resulted has been recognized by all stakeholders as well as policy makers, as a very important asset in our efforts now and in the future to combat climate change and to ensure energy security. We consider ourselves lucky in having it!

District cooling is still very much in its infancy in Denmark, with only one major scheme and two smaller ones in operation - one major under way - but the demand for comfort cooling is growing as everywhere else.

I represent the Danish association in the European organization Euroheat & Power, which organizes

- the district heating and cooling sector throughout Europe and beyond,
- with members from over thirty-two countries: including all existing national district heating associations in EU countries
- utilities operating DHC systems;
- industrial associations and companies; manufacturers;
- research institutes;
- consultants and
- other organisations involved in the district heating and cooling business.

We also have particular interest in combined heat and power, at this is the most important source of heat input.

We are very pleased, that one of our newest members is now ADHAC. The fact that a Spanish association joins Euroheat & Power punctures the general assumption, that district heating and cooling mainly is something for the countries in Northern and Eastern Europe. It underlines the fact, that all countries, regardless of location, face increasing demands for

thermal comfort - heating and cooling - and also have a potential for meeting this demand while at the same time combating the challenges posed by climate change and energy security.

Euroheat & Power works for an efficient energy supply in balance with sustainability, promoting the advantages of district heating and cooling as well as cogeneration and we pursue international measures to enhance innovation and the further development of our sector.

We represent the interests of the sector, with respect to all European policies of relevance for district heating and cooling and cogeneration - such as energy, competition, environment and research policies - at the political level. In particular in relation to the European institutions and other international organizations – the European Commission, European Parliament, Eurostat, the European Committee for Standardization, the Energy Charter, the International Energy Agency and many others. We are also active in the field of research regarding development and demonstration projects concerning district heating and cooling technologies, markets and policies.

There will be some technical presentations later on, but I will briefly explain the concept of district heating and cooling. It is an infrastructure that transports energy, using water as energy carrier. It can be hot water – sometimes even steam – which is then used as source for space heating and hot water preparation, where you in other cases might use gas, oil or electricity. It can also be cold water, which can then be used to extract heat from buildings, thereby replacing usually electricity driven air conditioners.

The main point of district heating and cooling is, that while delivering energy services that could also be delivered by gas, oil and electricity, it replaces the use of these fine fuels and the energy carrier electricity, with energy that would otherwise be lost as waste heat. Thereby it not only delivers energy service in homes and buildings, it also provides degrees of total efficiency to energy use in for instance electricity production or industry.

This is very important, because Europe today faces a number of challenges with regard to the environment and the energy supply. To reduce our emissions while securing a reliable supply of affordable energy to meet demands seems an overwhelming task. I will argue that we do have some rather overlooked options.

If we look at the whole European energy supply, the main striking characteristic is that it is fundamentally inefficient. With support from the European Union, Euroheat and Power conducted the Ecoheatcool study, which accurately describes how wasteful our use of energy actually is. In 2003, the EU member states and the three countries of the European Economic Area, Iceland, Norway and Switzerland, had a total input of primary energy of 82 EJ. Primary energy is coal as brought out of mines or unloaded from import vessels, crude oil from oil wells or tankers, gas from wells or gas tankers, biomass in its solid form etc. Basically it is the raw energy or fuel available to us.

Most of this primary energy has to be converted to something more usable. Coal to electricity or heat, oil to gasoline or heating oil, gas gasified and purified and so on. Once this has been done in the conversion sector (i.e. power plants, refineries and the like) 33 % of the primary energy input has been lost as waste heat. Very often in the form of warm cooling water.

What we then have is the energy input for final consumption, which is what takes place in households and buildings, industry and transport. And here again the losses are considerable. Inefficiency in buildings, waste heat from industry and losses in vehicles are the causes.

In total 55 % of the primary energy input to Europe is lost before we actually get the energy service we want. It is astonishing how little focus there is on the fact, that the energy sector is a sector that loses 55 % of its resource input, while at the same time we are concerned about our ability to get enough energy in the future. Just to give an impression of the importance: if this energy loss was crude oil, it would have a value at more than 400 bn. Euros at current prices. Lost every year!

This is not only a European problem. The International Energy Agency has documented that globally, 68 % of energy input to thermal electricity production is lost before any electricity reaches the consumer.

The study actually revealed that the amount of waste heat available in Europe is greater than the amount of energy actually used for space heating and hot tap water production.

This also puts policies aiming at increasing and/or diversifying the European energy import in perspective. Why pursue such policies without looking at the resource - the negajoules - already available right where we are.

Another defining feature of our energy sector, also identified in the study, is the fact that the biggest energy service demand is for heat. Heat for industrial use, space heating and hot water preparation. The biggest demand is not for electricity, as many people seem to believe, or for the services provided by electricity, for which there is no alternative, for instance: lighting, computers and machinery. The biggest demand is for heat. Yes, electricity and gas is also used for heating and cooling in industry and buildings, but are in many cases replaceable with some other source of heat.

Cooling is also a growing demand. The Ecoheatcool study identified a new trend in Europe, and especially in Southern European countries - including Spain, of growing demand for cooling combined with electricity demand peaking in summer rather than in winter. This puts huge strain on electricity grids and capacities and adds to already abundant amounts of waste heat. A perfect match for district cooling!

Considering that we have in Europe an abundance of waste – or surplus – heat from energy conversion - mainly electricity production - and industrial energy use, and considering that we have a huge demand for low temperature heat in buildings and hot water preparation, and considering we have the technology to convert low temperature heat to cooling, the solution should be obvious. Connect the demand for heating and cooling with our heat resource, through one of the simplest; most proven technologies – the Romans did it 2.000 years ago – district heating cooling.

Expanding the use of combined production of electricity and heat – cogeneration or CHP – and district heating and cooling in Europe, we could achieve a much higher total energy efficiency of our energy sector. Where 55 % of primary energy is lost in the European system, the share lost is less than half of that in Denmark, mainly due to the extensive use of cogeneration and district heating.

The Ecoheatcool study also demonstrated, that a doubling of the use of district heating and cooling, for which the main source of heat is cogeneration, combined with improved existing systems in Central and Eastern Europe, could reduce primary energy use with the equivalent of the whole energy consumption of Sweden, it would reduce energy imports to the EU with the equivalent of the whole energy use in Poland and it would save CO₂ equal to the whole CO₂ emission from fuel combustion in France!

That is the reason we believe, that Europe should to a greater extent should adopt the use of a hierarchy amongst energy measures.

First of all, we must focus on energy efficiency in the end use of energy. Buildings must be more energy efficient, industry, transport all sectors must reduce their energy losses, as this will have significant positive effects through the whole energy chain up to and including the use of primary energy resources. Reduce consumption!

Secondly, we must use the resources we already have and especially those that are already there and would otherwise be wasted. Thermal electricity production will continue for any foreseeable future, and while electrical efficiency may improve, huge losses will continue to occur and they must be utilised. Same applies for industrial use of energy.

Despite recycling rates of municipal and industrial waste may improve, we will also in future have an energy source in the form of incinerable waste, that can be used in cogeneration. An energy source that is generated and can be used where people live. We must recycle energy and fuels otherwise wasted.

Thirdly we must replace fossil fuels with renewable energy sources. Biomass can and will play a role in the future supply of energy - also heat - in Europe. But questions remain about available amounts, prices, sustainability and so on. True renewables, like geothermal, solar, wind, wave energy and what have you, are abundant but costly and - some of them - unpredictable. But we must replace fossil fuels.

By assuming the hierarchy “Reduce –Recycle – Replace”, when we design our response to the climate and energy challenges, and using cost-benefit analysis to place measures in it, we ensure efficient use of financial resources and focus on the right priorities. Simply focusing on the supply side, overdoing efficiency in end use or introducing renewable into a fundamentally inefficient energy system is costly and suboptimal.

The message “Reduce-Recycle-Replace” is the message that Euroheat & Power is trying to promote towards the European institutions, the Commission, the European Parliament and others. The coming months the EU energy debate will focus on two new initiatives: an Energy Strategy 2020 and an updated Energy Efficiency Action Plan.

We will aim at turning the focus of the EU Energy Strategy away from the traditional sector approach, that only focuses on the supply side, towards a cross-sector approach, that focuses on integrating sectors and achieving energy goals like security of supply, affordable energy and sustainability in the most cost effective way.

The Energy Efficiency Action Plan will be an update of the one from 2006, which has delivered little of significance. The update plan must still address inefficient end use of energy, but should place equal emphasis on upstream efficiencies. Pursuing efficiency at ever higher costs in end use, without identifying and addressing inefficiencies elsewhere, is simply not cost efficient and risks ridiculing improvements in citizens' energy use.

We are in dialog with both Commission and parliamentarians, but trying to change traditional EU energy policy is very much as trying to turn a super tanker. It is a slow process and takes time. We need all the support and good examples we can get, and therefore it is a great asset for Euroheat & Power to be able to point to developments in Spain. We need to be able to show, that district heating and cooling is a universally applicable concept, not isolated to exotic places. And we appreciate the initiative that has been taken in Spain, with the support of local operators, to establish an organization to promote the concepts of district heating and cooling and to support the expansion nationally. And we look forward to cooperating with La Asociación de Empresas de Redes de Calor y Frío in what we hope is a bright future for district heating and cooling in an energy efficient and sustainable energy sector in Europe.

Thank you very much!