

Workshop 2: District heating and cogeneration

JELGAVA, 16 SEP 2009, 15:45-18:30h

Moderators: Ms Bataraga/Fortum Jelgava (LV); Mr Knorr-Siedow/UrbanPlus (DE)

Summary

After a comprehensive introduction into the urban history and development of Jelgava by the town's mayor, Ms. Bataraga, who is the responsible for the local power generation company introduced the current situation of heat and energy provision in Jelgava.

Jelgava as an example of an integrated strategy for co-generation

The town being spatially split along a river is provided with heat by two co-generating power stations, which are also delivering electricity into the grid. Both power-stations and the heat distribution system of pipe-lines stem from the Soviet period and were of minor quality. As a first step in the improvement of the energy balance of Jelgava, the insulation of the piping was improved and later, both power stations were re-developed to a modern standard of co-generation on the basis of natural gas with the option in both systems for a future instalment of bio-mass as the basis of energy production.

On top of this system, the aim is to upgrade individual buildings and whole neighbourhoods by better insulation and energy management through metering and refined distribution technologies.

The aim of the city is to develop an environment-friendly system based upon the existing infrastructures under the slogan – Big – Efficient – Green - implying that the improvement on the basis of the existing system will provide for a good heat and electricity.

Both the mayor and Ms. Bataraga described the task the town and its energy provider are facing for the future as highly complex and in their results as interdependent:

- There is a technological task to be met in a dynamically changing market
- Economic tasks are on the agenda both on the level of town and company financing, as well as marketing to customers
- Ecological choices have to be made with regards to developing a logical link between what is achievable on the short run and what are the long term perspectives
- The different actors – especially the producers, distributors, the municipality the home-owners' associations and house-owners - must be helped to understand their part in the process of improvement and to enter a rational process of dealing with the possible conflicts of interest to reach a continuous collaboration
- Especially the end-user perspective and their economical potential must be taken into account.

In order to continue on a path towards an improved energy use, the town has started to enter a vision process, which aims at including the end-users into the further development of system improvements.

The state of the art and imminent problems

Jelgava has entered a process of improvement which at the time is seen as highly successful, even though it needs much more emphasis on a widening of heat conservation through better insulation and better distribution within the buildings as well as metering. The existing model-buildings, which were co-funded with EU funds and supported by the municipality and other sources are seen as a first step to allow joint learning and for all engaged, first of all the end-users.

Technical systems, the legal situation and the socio-economical situation



It is seen as a problem within the town's strategy that heat and energy are provided at a cost, which for many residents exceeds their financial capability. At the time, appr. 60 percent of the town's residents are provided with heat produced by the two co-generating power-stations. These would run much more efficiently, if more residents opted for becoming customers. However, due to the economic situation, not only is the number of those connected not rising, but due to the prices of the heat provided, there is a tendency to either save on energy by cutting off individual rooms – with negative effects on the building structure – or even to entirely leave the system and start individual heating systems, which often are not as ecologically efficient as the present system. There is also an urban development problem included in the residents' demand to increasingly build on (cheaper) ground outside of the present perimeter of the system, which would lead to very high connection cost. The debate made the danger of over-capacity apparent, which would endanger the ecological and economic status of the current system.

In the debate

In the debate, many questions were asked about the details of generation, provision, the legal situation with regards to a connection.

One result of the debate was that an integrated approach to urban development and CO₂ reduction on the level of co-generation is necessary. Compact urban structures are a precondition for the BIG-EFFICIENT-CLEAN concept, which is dependent on a steady demand and little dynamics in customer-producer relations.

It was understood that the strategy based upon a small number of large co-generating power-stations suits towns and cities of a certain size and urban structure, but that low density towns and towns growing in space (and not necessarily in population) with this type of system are in danger of over-investing into the technology. In many cases other ecologically sound systems of co-generation on a smaller technological size and targeted on the provision of neighbourhoods might be of interest and a coexistence of large and smaller units might be feasible.

Overall, three levels of risk were seen:

- A technological risk of meeting on only one technology, which is inflexible towards customers choices changing
- An economic risk which especially during the crisis becomes apparent and shows the need for intelligent financial support through lending and grant systems as they were developed in many European countries and in North-America
- A policy risk that appears, when technology and cost are preventing policy and practice action leading to the desired outcomes of CO₂ reduction.
- Generally technology as such, starting from generation though distribution and to the end-users, were not seen as inherently problematic. Also on the level of technology, no knowledge problems were seen as of importance.
- There seems, however, to be a lack in customer care, participation and awareness raising with the end-users, which prevents tested technologies to reach the possible outcomes.

Swarm production as a partial alternative

A recent development of a collaboration between the largest German eco-energy producer and a car factory that is based on intelligently linking small-scale 'home-power-stations' co-generating heat for individual buildings and small groups of houses and feeding electricity into the grid following the 'swarm theory' was presented and found great interest within the working group. It was seen as a possibility to widen the areas of co-generation especially in lesser dense areas – and a possible threat to large industrial solutions for the future due to the great ecological potential of these small-scale solutions being introduced on a massive scale.

