Notes from Data Collection and Analysis Meeting at MEC Kołobrzeg 19th of June 2012

Participants:

1. Kamil Zajączkowski, ***Sustainable Business Hub***
2. Mats Larsson, ***Svensk Fjärrvärme***
3. Kamila Kurczyńska, ***MEC Kołobrzeg***
4. Grażyna Bownik, ***MEC Kołobrzeg***
5. Mariusz Zawalski, ***MEC Kołobrzeg***
6. Elżbieta Warchoł, ***MEC Kołobrzeg***
7. Leon Giejsztowt, ***MEC Kołobrzeg***
8. Zygmunt Kornak, ***MEC Kołobrzeg***
9. Stanisław Karnowski, ***MEC Kołobrzeg***
10. Mariusz Dziura, ***MEC Kołobrzeg***

The pupose of the meeting was to discuss management principles and customer relations at MEC Kołobrzeg. This was done based on a questionnaire developed by students from IIIEE which was used to loosely structure the discussion around a number of key themes.

Mats Larsson and Kamil Zajączkowski were also given a tour of facilities. The tour covered all departments with main focus on the boilers, the control room, pumps as well as the optimization system.

The meeting was very productive and friendly, making the visit a success. In addition to the tour, substantial complementary information was received by having discussions with the staff.

The System in Kołobrzeg

In Kołobrzeg there are two boilers of 29 MW each. Each boiler is divided into two halves that can be fired separately. The system in general is over dimensioned and there was no focus on efficiency improvement until the 90s. The principle to use a forward temperature on 130 degrees is based on routine. It has always been that way and this is a general principle in Poland. Now the goal is to reduce the return temperature, which will automatically also reduce the forward temperature.

There are 97 sub-stations and 270 heat exchangers and MEC Kołobrzeg has a good picture of the standard of equipment in each substation. There are several apartment houses connected to each sub-station. The size of the heat exchangers is not optimal.

There is an investment plan for the next three years that is in use, which focuses mainly on refurbishment of pipes. There is a program to change some pipes for new ones and improve insulation in other parts of the pipe system. In the area of sub-stations the main focus is to connect new customers, rather than investing in existing sub-stations. Investments in the sub-stations in some blocks of flats are included in the plan.

There is no recycling of heat from sewage water from apartments. The technology is too old and the standard of equipment is not modern enough for this to be possible.

There is a generously dimensioned pneumatics system, which now is used only for cleaning.

The heating system is automated. A computer calculates the amount of coal, the thickness of the coal bed, and the length of the coal bed that is necessary to deliver the heat necessary. The forward temperature is adjusted based on the outside temperature. MEC Kołobrzeg makes its own weather forecasts for the next few days.

Data (including the forward and return temperatures) is logged on a minute-by-minute basis at the boiler and at sub-stations. During summer the pressure drop between the forward pressure and the return pressure is 0.2. During winter the pressure drop is usually 0.5.

In the system there are two sets of pipes. One is currently not in use and MEC Kołobrzeg considers whether this could be used to supply district cooling to spas.

The system is sectioned in three parts. One part contains the area where the local hospital is located, which also includes an area along the beach where new hotels and spas are going to be built. The second part is the one where most of the hotels and spas are located at present. The third area contains the majority of apartment houses inland. The sectioning has been made in order to be able to turn off the heating if an emergency would occur for less sensitive buildings and continue to deliver heat to the hospital and other key buildings.

A few years ago meters were installed that make it possible for customers to measure their heat use. These have reduced the use of heat to some extent.

Customers and heat use

Kołobrzeg is a town with many spas. The population is 50,000, but in the summer this number is doubled to 100,000 inhabitants. Many new hotels have been built and most of the hotels run spas for their guests. These spas use huge amounts of hot water for different baths, showers and treatments. A common scenario in Kołobrzeg is that spas use a hot water bath for a short period of time and the hot water is then ejected into the sewage system once it has been used.

The heating of water for spas creates a large peak in heat use in the morning when spas open to guests and this heat use is then fluctuating over the day as spas run their operation. After spa-hours there is a decrease in use as only households use hot water.

The spas are in operation throughout the year. There is a dip in early December, but it picks up again over Christmas and New Year’s celebrations.

25% of the heat is sold to households. There are 4-5 large real estate companies and housing associations that are the main customers. There are no customer complaints and the dialogue between MEC Kołobrzeg and the customers can be improved. There is a need to systematically discuss the ideal usage of heat and to teach customers how to efficiently decrease their heat usage/leakage by making improvements to their homes/facilities.

Customers own 60% of the heat sub-stations. When a new house is connected to the system the customers are offered a choice of owning the sub-station in the building or letting MEC Kołobrzeg own it and operate it. In the latter case customers pay for the substations as part of their heat payments. Customers are charged a fixed amount each month based on the amount of heat that they have ordered for the year, which amounts to 30% of the cost, and a fee per kWh for the heat that is actually used, which amounts to 70%.

Customers are currently not focusing on reducing their heat usage and there are no actions taken in order to invest in the improvement of the equipment in sub-stations. MEC Kołobrzeg has capacity to connect additional customers to the system and new contracts are only declined if they are located too far from the system to make the connection financially attractive.

Efficiency and heat losses

The system has a heat loss of 11 %. This is calculated by measuring the produced heat followed by a subtraction of the heat sold to customers. There are substantial heat losses when the equipment is owned by customers, but no measurement has been done to estimate this heat loss. The system in Kołobrzeg is ranked as one of most efficient in Poland which proves that previous improvements are very successful.

Water is replaced 3.5 times per year. This includes both unforeseen as well as expected replacements. The planned replacement of the water is 0.5 per year.

District Cooling

MEC Kołobrzeg is interested in analyzing the opportunity to deliver cooling to some hotels and spas. They are interested in making visits to Swedish installations/companies which have the sufficient technologies/solutions for district cooling. As mentioned above, MEC Kołobrzeg has unused pipes making it very interesting for them to analyze the possibility for district cooling.

Currently many hotels have air conditioning and some may be interested in buying cooling from MEC. New hotels may be offered this depending on the outcome of this feasibility analysis.

Governance

The board has not set measurable goals for the development and improvement of the system. The goals set by the President are high quality and low prices.

Project Goals

The goals that MEC Kołobrzeg wants to pursue in the InnoHeat project are:

- Reduce return temperature
- Evaluate cooling opportunities

- Visit district heating companies/institutions in Sweden that could describe their routines for project planning/preparation and project management in order to develop new principles and guidelines for this at MEC.
- Reduce fluctuations of heat deliveries in the system.

The best time to do the first study tour to Sweden would be 22nd to 25th of October. MEC Kołobrzeg would like to visit:

- Sites relevant for sub-station and heat exchanger technology.
- Companies/institutions that could describe principles for project planning and management as well as implementation of improvements.

End of meeting.