



InnoHeat



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Training in Substation Theory and Practice

For the final part of InnoHeat, MEC Kolobrzeg appointed the district heating engineer at Krafringen, Holger Feurstein, to train employees in the theory and practice of substation dimensioning and design. Krafringen operates a network supplying the municipalities of Lund, Eslöv, and Lomma with heat and the company applies a well structured method for developing the efficiency of its network. Through a current project, the Krafringen network will be connected to the networks of Landskrona and Helsingborg on the west coast of Skåne. At his assistance Holger has Jörgen Persson from ESS, and he and the team have also mobilized the services of the supplier of heat exchangers and substations, Alfa Laval, to present their most modern range of heat exchangers and provide training in the dimensioning of substations.

Following two visits by the project team to Kolobrzeg, in order to study the current state of the substations and entire system, the team set up a training programme set in Lund and Ronneby in Sweden. The first day was led by Holger, who presented the improvement strategy and practices of Krafringen and trained the employees from MEC in how to apply the same practices in Kolobrzeg. This involves the application of the Top-10-List that is designed to identify the ten least efficient substations of the network. Once these have been identified, the next step will be to analyze the performance and design of each of these in order to define improvement steps that will bring the substations back to optimal performance.

For MEC this involves the development of a tool-kit of improvement activities that includes communication with customers that own and operate substations, redesign malfunctioning substations by moving sensors, filters, and pumps to their optimal positions, repairing or replacing malfunctioning equipment, or complementing existing equipment by new heat exchangers or dive sensors. A difference between Polish and Swedish substations is the extensive use of accumulator tanks in Poland. This practice was discussed at length during the training and Holger and the other experts suggested that tanks should be removed in as many cases as possible. Instead, the experts suggested, MEC should install an accumulator tank on the primary circuit to buffer daily fluctuations in heat demand. Modern heat exchangers are so efficient that they can supply the entire need for heat and hot water to a house without the use of accumulator tanks.

On the second day Alfa Laval trained participants in the dimensioning of heat exchangers and other equipment in the substations. This led to lively discussions. Overall, the Polish guests took a great interest in all the information and learning that was provided by the hosts and they engaged in detailed discussions of which measures should be the ones to start with upon their return to Poland.

Based on the observations made during the visits to Poland it was concluded that MEC has a very good basis for improvements. Its system contains, in many instances, modern equipment, including systems for computer monitoring and control of all substations. This, together with a large share of modern heat exchangers and valves, form an ideal basis for improvements. The computer system that MEC has invested in during InnoHeat offers opportunities for monitoring and control superior to the systems of most Swedish district heating companies. Regardless of this, the participants from MEC made many valuable insights and they realized that they need to build the knowledge, experience and practices that Holger and the other employees at Krafringen have built over the past decade as they work through the improvements of the system in Kolobrzeg. This will be a journey of development for MEC, for which they have now received a method and a detailed list of steps to take in the various challenging situations that they

encounter. Based on these tools they also need to learn to improvise and translate the guidelines so that they can be used in new situations.

When it was time to go home a winter storm was building up over southern Sweden and many ferries and flights had been cancelled. The Polish delegation went back by car across the bridges connecting Sweden and Denmark with Germany. During the trip they had ample time to discuss the experiences and how they are going to tackle the different improvement opportunities in the years to come.

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Part-financed by the European Union
(European Regional Development Fund)