

## **Danish follow-up programme for small-scale solid biomass CHP plants**

Henrik Flyver Christiansen<sup>a</sup>, Martin W. Fock<sup>b</sup>

<sup>a</sup>Danish Energy Agency, 44 Amaliegade, DK-1256 Copenhagen K, Denmark  
Phone: + 45 33 92 75 64; Fax + 45 33 11 47 43; [hfc@ens.dk](mailto:hfc@ens.dk)

<sup>b</sup>dk-TEKNIK ENERGY & ENVIRONMENT, 15 Gladsaxe Møllevvej, DK-2860 Søborg, Denmark

As a part of the national Danish policy the Biomass Agreement of the 14<sup>th</sup> of June 1993 implies that the electric utilities must incorporate the use of 1,2 mill. tons of straw and 0,2 mill. tons of wood. This is a significant amount of the Danish fuel consumption. Furthermore a broad range of public funded activities has been initiated in order to support private initiatives to establish biomass fired CHP plants.

The follow-up programme makes sure that the progress for the different projects, concerning development of technologies for producing electricity and heat from biomass, are compared each month. This provides the Danish Energy Agency with a clear picture of the status for the operation conditions from the already commercial technologies, but also the status of developing technologies.

### **The objective**

The Danish follow-up programme for small-scale solid biomass CHP plants has been established by the Danish Energy Agency to provide a detailed technical insight in the performance and economic conditions of a wide range of energy producing plants using biofuels.

### **The organisation**

The follow-up programme consists of 11 institutes, which all are specialists within a specific task required in the programme. The consortium is working on fields like, fuel and ash analysis, economy analysis, wastewater analysis, general energy and environment analysis, process analysis and tar and chemical analysis. Furthermore an important task is to write monthly publications, which makes the data accessible for a broad range of people working in the field of using biofuels for energy production.

### **Results**

Data are collected each month from 12 different biomass fired CHP plants. The data are the used amount of biofuels, used amount of other fuel, operation time, production of heat and electricity, consumption of heat and electricity and water consumption. The data are typed into a database and analysed for energy, environmental and economical aspects from the Danish government. In addition to the co-ordinating role the DEA collects general data on operation and energy production of the existing CHP plants. The data is published every two months in Dansk BioEnergi, which is a publication supported by the Danish Energy Agency that presents news in the field of bioenergy. A yearly evaluation of the operation of the CHP plants is planned. This will include a more detailed analysis of the data and a comparison of the operation of plants based on different technologies.

### **Conclusion**

The follow-up programme has proven over the last years to be very important when it comes to collecting and analysing data related to construction, performance, operation and maintenance of different energy from biomass processes. When the data is analysed, it provides a clear picture of characteristics related to different technologies with respect to environment, energy and economy.

It is illuminated that the technologies, which are still only in the state of R/D or pilot plant state, contains great potential for improving efficiencies related to the Danish production of heat and electricity from biomass. There is a possibility to decrease the emissions, both to air and water, if some of these technologies are proven to be technical and economical viable.