FORPA
Biomass to the Masses

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GOOD PRACTICE EXAMPLE

Bioenergy district heating plant Ritten

bioenergie
Fernheizwerk Ritten

TIS
innovation park

www.foropa.eu

1. History

In 2006, a study for the future energy supply on the Ritten was made. The study concluded that the implementation of a district heating plant would only be expected for factions Klobenstein and Upper Bolzano, with the heating system in the Handwerkerzone Klobenstein. Even in 2006 a working group was established, which initiated the realization of the project.

In July 2007, the "Bioenergy Fernheizwerk Ritten cooperative" was founded. 2007 also a form for the connections and the connection fees was drafted - The aim was to reach a minimum height of approximately 9,000 kW within February 2008. In spring 2008 they started to bid for the work. It was decided to design the system not only in the production of thermal energy, but also to install an ORC module to generate electricity.

On 21 June 2008, the foundation stone for the construction of the center took place. In December 2008, the trial run has already been taken. The work on the pipeline network, especially concerning the main lines, was completed in 2008.

By the End of 2010 was also started with the construction of the first wood chip drying silo in South Tyrol. This was completed in the spring of 2011, and so the first wood chips could be dried in April 2011.

2. Technical data

Description	Data
Raw material consumption	approx. 62.000 loose cubic meter per year
Storage capacity of round wood	approx. 6.000 solid cubic meter
Storage capacity of wood chips	approx. 12.000 loose cubic meter
Nominal firing power	5,4 MW
ORC, thermal power	4.200 KW
ORC, electrical power	990 KW
Length of the district heating network	approx. 23.000 m

3. The raw material

The development in the last four years shows that more and more wood is supplied by local forest owners. The delivered biomass comes mainly from local forests, but also from other areas or cultures such as parks, river embankments, pasture or alp clearings, alleys, orchards, etc., so that deliveries could be progressively scaled back from the sawmills. The percentage of wood supplied by the major suppliers of wood (sawmills) is 30.60. From small wood suppliers (forest owners, members and non-members) 69,40% of all wood is delivered in the form of wood chips and logs.

4. The delivery

The delivery of the wood can be in the form of wood chips or logs. During the construction of the district heating plant a truck scale has already been installed for weight measuring. Initially, the moisture was measured by a probe that has been inserted into the unloaded wood chips pile. Since this system was, however, very inaccurate, it was decided to transfer to another, more accurate and reliable moisture meter (humimeter). The device has a 12 liter container, which is filled with wood chips. The moisture is then determined in the meter. The duration is including sampling, preparation of the measuring device and measuring about 5 minutes.

(Foto: www.humimeter.com)

5. The billing

The rates are defined in advance by the cooperative. The calculation of the price is due to the weight and the water content. The measured values are transmitted via a software system to headquarters, from where the credit amount is determined. Depending on whether the supplier is a member or non-member will be charged different amounts. Members receive a higher amount per solid cubic meter. In addition, there is a delivery quota which defines the max. possible quantity supplied by each member based on the forest area owned, which is charged at member prices. Currently, this amount is 20 SCM / ha of woodland. Further deliveries are charged at a lower price. Last but not least the payment is done.

6. Wood chips dryer

By the end of 2010, the construction of the first wood chip drying system in district heating plants in South Tyrol began by the facility managers. Since no standard product could be delivered for the needed requirements, it was self-made. The dryer consists of two covered silo, which are equipped with a fine-mesh grid. Below the silos there are two fans that blow the excess process heat from electricity production up to the silos. By means of flaps, there is the possibility to regulate the quantity of heat flowing through electronically. The wood chips dryer was completed and put into operation in April 2011. The wood chips dryer brings immense benefits. Contribution of the current production residual heat can be used and must not be wasted. In addition, the district heating plant stores and burns mainly dry wood chips, which leads to considerable savings in aspects of mass loss (storage) and calorific value.

7. Economical data

Description	Data
Amount of employees	3,4
Investment main building	approx. 7,5 Mio Euro
Investment in network	approx. 10,0 Mio Euro
Average heat price	0,115 €/kWh
Amount of heat consumers	274
Amount of sold heat	approx. 11,0 Mio kWh

(Fotos: DHP Ritten)