

GOOD PRACTICE EXAMPLE

Round wood takeover by weight and moisture content at biomass trade center Leoben



1. General

The biomass trade center Leoben is an association founded in 2009 that currently involves 300 members who cultivate a total forest area of 13 700 ha. The center buys energy wood for the production of premium wood chips in the form of round wood, which is not suited for the use in sawmills, mainly from its members. The wood is bought at the forest road; the transport is organized and paid by the biomass trade center (Metschina 2012).

Green wood contains between 50 and 60 % of water. As the water content directly influences the weight of the wood, considerable price fluctuations may occur if it is traded only by weight. The easiest method is the acceptance by volume. Since the energy content, which is in no direct relation to the volume of the wood, is of major importance in the case of energy wood, the acceptance by volume is also not the ideal method. Also, the density of wood, which can differ substantially between different wood species as well as within in the same species, speaks against the trade by volume.

Therefore, round wood is accepted by weight, with additional determination of water content at biomass trade center Leoben. This procedure is the most precise method for round wood acceptance and enables a transparent and fair way of invoicing, as it is only paid for the sole wood mass and not for the contained water

In the process of round wood acceptance, the manager of the biomass trade center, a truck driver and, if required, an employee of the center for unloading of the wood, are involved.

2. Delivery and acceptance of round wood

The energy wood is delivered by a round wood truck which is weighed on a calibrated weigh bridge when it enters the biomass trade center. The wood is then unloaded at the storage area. When the empty truck leaves the center, it is weighed again to determine the dead weight of the truck which allows calculating the mass of the green wood in difference to the weight of the loaded truck.



Weighing of the truck and unloading of round wood

3. Sample taking

While the loaded truck is standing on the weigh bridge, an employee of the biomass trade center takes wood shaving samples from different logs of the delivery by cutting them with a motor saw. The sample is then weighed, dried to 0 % moisture content (absolutely dry) in a drying cabinet and then weighed again to determine the dry matter. From the weight of the green wood and the moisture content determined from the sample, the dry matter of the whole delivery is determined in $t_{\text{dry matter}}$, which provides the basis for invoicing with the supplier.



Sample taking and determination of dry matter

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4. Invoicing

Invoicing is carried out on the basis of the dry matter of the round wood determined before and is executed through a credit memo procedure. Data gained from weighing and the determination of



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dry matter is captured by software and transmitted to accountancy. The calculated credit is then transferred directly to the supplier.

The charging by weight and moisture motivates the supplier to store the round wood adequately before he delivers it to keep moisture content low. This does not only lead to a higher price per m³, but also has a positive effect on the utilization of the load volume of the truck and therefore reduces transport costs.

Depending on whether the supplier is a member of the biomass trade center or not, different invoicing conditions apply. Non-members only get a standard price per solid m³ of wood while members get an additional bonus payment per m³. The bonus payment does only apply to the delivery contingent of the member which depends on its association share. If a member delivers more than its contingent, it only gets paid the standard price for the additional amount.

5. Technical data

Round wood delivery distance	30 km
Round wood demand	10 000 -12 000 solid m ³ /year
Storage capacity	18 000 solid m ³
Average round wood stock	6 000 – 10 000 solid m ³

6. Economic data

Total investment costs	130 000 €
Investment costs weigh bridge	30 000 €
Investment costs drying cabinet	5 000 €
Round wood costs	30 - 33 €/solid m ³ (at forest road)
Transport costs to BTC	9 - 10 €/solid m ³
Storage costs	1,5 - 3 €/solid m ³

Costs for wood harvesting amount to about 28 € per solid m³, costs for transport to the forest road lie between 2 and 5 €, which causes total feedstock costs between 30 and 33 € per solid m³ at the forest road. The round wood transport to the biomass trade center costs between 9 and 10 € per solid m³. Storage cost for round wood are in the range between 1,50 and 3 €/m³ (Gaber 2013). Total costs per solid m³ of round wood amount between 40,50 and 46 € delivered to the biomass trade center, including storage.

Total investment costs for the biomass trade center added up to around 130 000 € in 2009 (Metschina 2012).

7. Environmental data

As the delivered round wood mainly originates from the region and the biomass trade center limits the maximum delivery distance to 30 km, long-distance transports are avoided. Therefore, energy demand, as well as emissions of CO₂ and other pollutants interrelated with round wood transport are kept relatively low.

8. Socio-economic data

Currently, two persons are employed at biomass trade center Leoben: a manger for one day a week and an employee for two to three days per week, depending on the actual season and order situation.

9. References

Metschina, C. (2012): Der Bedarf und die nachhaltige Vermarktung der festen, holzartigen Biomasse zur energetischen Verwendung in bäuerlichen Biomasse Nahwärmanlagen am Beispiel des Aufbaus von regionalen Biomassehöfen unter Berücksichtigung geopolitischer und ethischer Rahmenbedingungen in der Steiermark. Dissertation. Graz: Karl Franzens University.

Gaber, M. (2013): Personal communication on 5.6. and 9.7.2013. Niklasdorf: Biomass Trade Center Leoben.