for business bioenergy

Recommendations for biomass delivery contracts

Dr. Torsten Schmidt-Baum
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Why delivery contracts are needed?

Wood is a is an inhomogeneous starting material, which has manifold processing paths

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Why delivery contracts are needed ?

- Ensuring a reliable fuel supply and quality
- The quality of the fuel has a great impact on the economy of the heating plant
  Woodchip quality has a direct influence on the operating and maintenance costs
  => The controllability of a boiler is limited; In the case of strongly fluctuating fuel qualities (water content, foreign substances) the boiler can only be adjusted to a limited extent automatically
  Critical operating conditions (especially in partial load operation)
  => **Cost-benefit consideration**

Slagging of the combustion chamber walls by the use of inferior fuel

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Factors affecting contract content

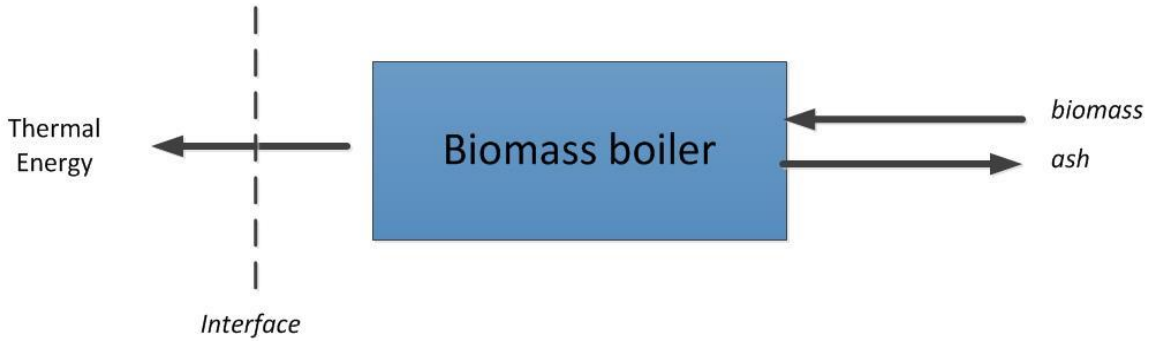
When should a contract be drafted?

Customer/facility management

- *Pays for biomass fuel or for heat output of the heating plant*
- *Responsible for buildings and constructions*

Operator/Supplier/disposer

- *Fuel supply*
- *Ash disposal*
- *Takes over boiler operation, maintenance and cleaning*

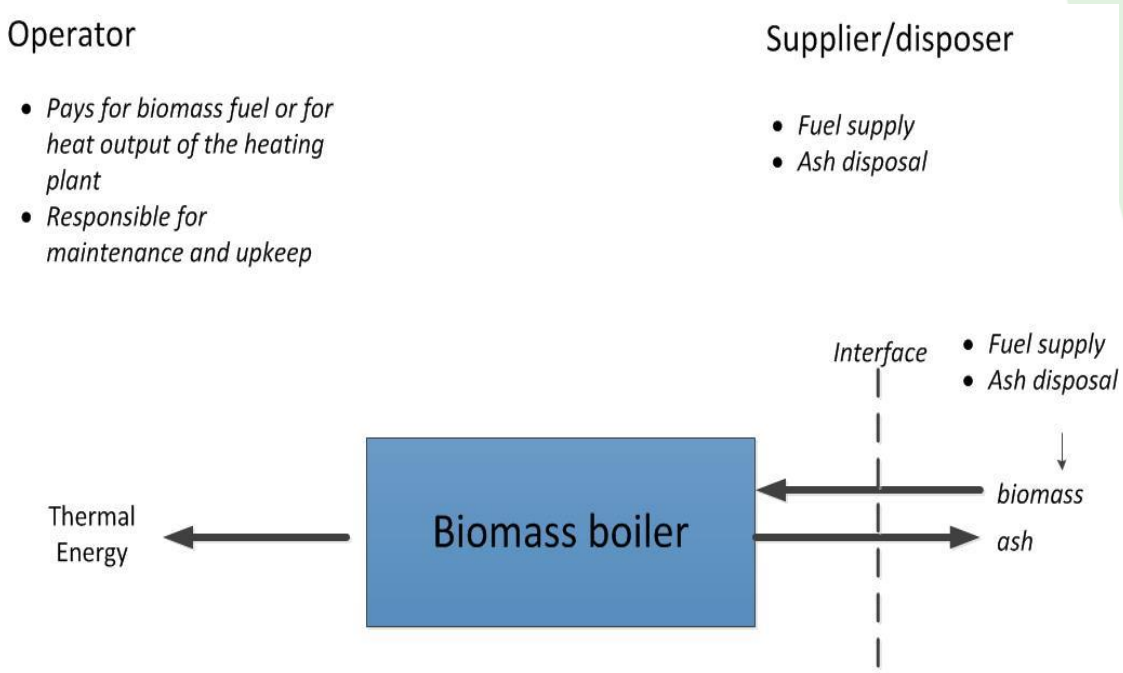


Recommendations for biomass delivery contract

Factors affecting contract content

When should a contract be drafted?

If the operator and the fuel supplier(s) are **different legal persons** the mutual rights and obligations should be recorded in a contract



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Objectives of the plant operator

Why I contract should be drafted?

- For a **long-lasting economic operation** of their systems, operators of heating (power) plants have to ensure a longest possible supply with biomass fuel.
- In many cases the conclusion of a long-term supply contract **is a basic prerequisite for bank lending** anyway.
- Only by keeping a defined fuel quality, matching to the specific heating plant, a **low-disruption operation** can be guaranteed.
- specify the delivery quantity, delivery times and quality of fuel suitable for the selected firing system, the remuneration and other rights and obligations of each party. Price escalation clauses bear the general market trend into account and facilitate the **conclusion of long-term contracts**.

Depending on the type of fuel, the number of suppliers and the willingness / ability of the plant operator to internal labour there are differences with respect to the contract contents.

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Contents of a supply contract

- Delivery contracts are designed to specify the **delivery quantity, delivery times** and **quality of fuel** suitable for the selected firing system, the remuneration and other rights and obligations of each party. Price escalation clauses bear the general market trend into account and facilitate the conclusion of long-term contracts.
- Depending on the type of fuel, the number of suppliers and their range of service as well as the willingness / ability of the plant operator to internal labour there are differences with respect to the contract contents.
- To encourage the relevant stakeholders from the industry, commercial, agricultural and service sectors to a fuel switch to solid biomass, the following statements are focused on the plant operators and less on the fuel supplier.

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Possible Billing models

Volume	This method has the **least effort**. The volume can be **determined from the dimension of the hold** (bulk goods) or in case of straw bales of the **number and the dimensions of the bales.** In an clearing on volume, even the type of wood has to be considered. The **accuracy of this method is low**, because the bulk density of fuel assortments can differ, which have a major impact on the measurement result. Therefore this method is **only recommended for homogenous fuel assortments**.
weight and water content	The weight determination is **done mostly with in-house scales** and is often more complicated than the volume determination. Because of the disadvantages mentioned above this billing model is **more suitable for inhomogeneous fuels.** To increase the accuracy in the determination of the energy content an additional **water content measurement is required.** In a clearing on the weight and water content, the type of wood is negligible, as all wood species have an almost identical calorific value per kilogram of wood.
generated heat quantity	The advantages of this method are the **reduced effort at the fuel delivery** (a quality control can usually not yet discontinued) and **high measurement accuracy.** However, **systematic measurement errors may be occur during the operation of the plant;** contamination of the boilers´ flues can result in higher temperatures and thus in lower effectiveness. This method is **only useful when the reference biomass is delivered exclusively from one supplier**, since otherwise a clear assignment is getting difficult.

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Ash disposal

For the sake of simplicity the customers often indenture the supplier to dispose the ashes. However this is not necessarily the least expensive solution. Because the disposal of ash is not the core activity of the supplier and the delivery vehicles cannot be used for the removal of ash, **the ash disposal by specialized companies is commonly more cost effective.**

But it is difficult to make a blanket statement, because there are **differences in starting conditions in the EU-countries.** For example in Denmark commissioning of a company that takes care of the ashes will increase the costs due to high labour costs and taxes. So it is recommended to consider alternatives.

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Essential contract contents	Details
delivery obligations	• Sufficient specification of the solid biomass fuel in terms of its content of plant species and the way of its conditioning • Requirements for the minimum standards of quality (water content, contamination, etc.) • Agreements on minimum delivery volumes and their temporal distribution (e.g. in the form of weekly or monthly plans). • Release or indemnification from delivery promise, e.g. in case of adverse weather and crop conditions
	·**TIP** *In addition, extraordinary deliveries can be arranged, in case the stock of biomass fuel is running out or a shortage of fuel supply is foreseen*
purchase commitment	• Release or indemnification in case of non-culpable plant standstill. • Right to obtain biomass from third parties, if the supplier fails to meet its obligations.
remuneration arrangement	• Determination of the price of fuel delivery to the plant for the year of initial start up • Regulations adjusting the basic fuel price in case of deviating (from the agreed base case) fuel qualities and agreed delivery times as well as regulations for future price changes (price change clauses) • Dates of payment and consequences of default in payment
contract duration	Start and end of contract
	TIP *It is recommended to arrange an as long as possible contract period of at least five years with an option for an extension of the contract. This leads both parties to a calculable residual risk assessment. Most financial institutions demand long supply contracts, before they issue a credit, as well.* *3 year contracts are common in DK. The straw supply is subject of large variation depending on climatic conditions. In some years there are excessive amounts of straw, pressing down the prices. In other years there are shortages and prices go up. The 3 year period is kind of a compromise between buyers and suppliers to ensure stable supply and foreseeable (fair) prices.*

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Essential contract contents	Details
proof of origin/incoming control	• In accordance with the required fuel assortment and the resulting imposed condition, proofs of origin must be arranged with the fuel supplier • Incoming control to determine the delivered quantity and various quality characteristics • Rejection of the goods in the event that the fuel quality is insufficient in terms of combustion or of subjects to regulatory approval as well as agreed proofs of origin are missing
Other provisions	• Notice periods, conditions for an immediate dismissal of its settlement process, • assumption of risk and liability responsibility, • assumption of costs for damage and malfunctions by force majeure, • contract changes and additions, • arrangements for invalidity and ambiguity of interpretations • jurisdiction clause.

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General information of trade and measurement - Woodchips

- Chips traded as loose bulk material. Depending on the type of wood size and water content, a cubic meter of woodchips correspond an amount of 250 kg to 450 kg. The heat content per cubic meter varies between 630 kWh and 1,100 kWh.
- Woodchips are usually delivered loose by regional suppliers. Lately, woodchips can be blown into the fuel storage.
- The settlement in cubic meters is relatively imprecise due to the mix of types of wood, the different chips' size and the compaction of the bulk material during transport. Shipments with unmixed chips are practically very rare. For this reason woodchips should be accepted by weight and water content. T**he** pricing is based on ton of absolutely dry (atro) woodchips. The exact delivery weight is easy to determine by weighing the delivery vehicle on a weighbridge before and after the load.
- The water content can be quickly determined with commercially available measuring instruments.

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Quality requirements - Woodchips

- Each biomass has certain demands on the chip quality that is determined by the manufacturer of the heating plant or the lanners in the form of a reference fuel.

  The main quality standards for woodchips are:

  - Low water content
  - Uniformity (uniform possible lumpiness)
  - Low proportion of fines
  - A little amount of green and pollution

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Model Contracts

- Further Information and Model Contracts can be downloaded form the project website: http://www.bioenergy4business.eu/
- Where possible, formulation aids are added, too. But - due to the specific conditions of each heating plant **- in any case a legal aid should be consulted to elaborate the biomass supply contract**.

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Thank you