

# Pelletising of mixed biomass pellets at Pusch AG



## Background

The PUSCH AG provides a comprehensive concept for the decentralized production of mixed biomass pellets from agricultural and woody raw materials. Based on the license concept "agrarSTICK®" different license holders are producing and marketing alternative pellets based on specific recipes. Therefore these partners are provided with complete production, sales and logistics support based on a virtual trading platform for all internal and external business activities.

Based on the „produced in and for the region“ - philosophy, the agrarSTICK® will be distributed in the respective region.

## Raw material

In general mixtures from herbaceous, fruity and woody biomass have been pelletised so far. Since kind and potential of the available raw materials differ significantly between the regions, a suitable combination of different raw materials and additives has to be developed. Due to the fact that the pelletising plant PM 6-28 has low requirements on mechanical properties and water content usually no pre-treatment of the raw material is necessary.

To ensure a transparent communication with the costumers a data sheet will be provided from the production partner.

## Pelletising process

In contrast to pelletising processes with roller dies a hydraulic press offers less work and cost intensive pretreatment of the raw materials. Therefore, the production of different mixed biomass pellets can be done without changing the press die.

Due to these advantages the Pusch AG has developed and manufactured the pelletising plant PM 6-28 with a production capacity of 1,000 kg/h. The modular design provides an increase of the production capacity to a maximum of 4,000 kg/h.

The benefits of the technology are:

- User-defined pellets from a mixture of raw materials can be produced.
- Raw materials with residual moisture up to 30 w. -% can be used.
- No additional grinding (e. g. hammer mill) or pre-treatment processes are necessary for raw materials with a length up to 5 cm.
- The production energy is reduced by an efficient plant technology.
- Rotating parts are not installed in dirty parts of the pelletising plant.



Pelletizing plant PM 6-28

Two different products are offered by PUSCH AG - the agrarSTICK® black for the utilisation in public and small industrial combustion plants above 100 kW and the agrarSTICK® yellow for small combustion plants. In the region of Rhineland-

Palatinate pellets produced from Miscanthus and grape marc have a high potential.



Miscanthus pellets (left) and pellets made from 2/3 Miscanthus, 1/3 Grape marc (right).



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The mean values of these pellets are listed in the following table:

Raw material	2/3 Miscanthus and 1/3 grape marc	Miscanthus
Moisture content, w.-%	6.0	4.0
Heating value, MJ/kg (dry basis)	18.6	17.8
Bulk density, m <sup>3</sup> /kg	676	645
Ash content, w.-% (dry basis)	3.8	2.3
Cost of raw material, €/t	50.00	80.00
Range for price of pellets, €/t (incl. VAT)	100 - 130	130 - 160
Raw material potential in the area, t/a	4,500	2,500

## Producers view

To establish the production of alternative (mixed) biomass pellets in several regions in Germany and Europe the marketing of the pellet presses is of

great relevance. Important aspects for enhancing regional pellet markets are:

- The requirements of the target groups regarding the optimal (regional) mixture are often unknown.
- The technical know-how of the key actors for production of alternative (mixed) biomass pellets is too less.
- Regional market structures do mostly not exist.

Due to these aspects the agrarSTICK® concept will provide the partners with know-how of the production of alternative (mixed) biomass pellets and support for the marketing of their products.

By 2020 a production of 1,000,000 t / a alternative (mixed) biomass pellets with about 60 to 90 partners is planned by building up a decentralized production network which will be coordinated by Pusch AG.

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