



# BIOMASS DRYING

Vandenbroek International is a worldwide provider of turn-key drying equipment, with extensive experience in the drying of many kinds of products. Over the years, the Vandenbroek Thermo-Kinetic Drum dryer has proven to be a reliable method of drying.

VADEB's rotary drum is suitable for drying wood chips up to 40 x 10 x 4 mm, thereby reducing the requirements made of log chippers. Emission control is effected by installing highly efficient cyclones or wet scrubbers.



High efficient cyclones

## ALTERNATIVE FUEL PRODUCTION FROM BIOMASS

Alternative fuels derived from a natural source can replace the use of fossil fuels in many applications. As with many natural products, water constitutes the majority of the mass content, which does not contribute to the heating value of the fuel itself and does not allow natural products to be stored for longer periods in an appropriate manner. In addition, the use of dry fuel provides significant benefits to combustion boilers, such as increased efficiency, lower air emissions and improved operation.

**VADEB**'s thermal drying followed by pelleting is the answer for those applications upgrading natural product to a valuable energy source.

The **VADEB**'s MPS drum dryer and **VADEB**'s belt dryer are suitable for a wide range of natural products and allow full drying in the shortest possible time, without the use of fossil energy sources. Thanks to the flexibility of the MPS single pass drum interior, a constant throughput can be realised for all kind of products. Following this with a hard pelleting or briquetting process, a dense high-calorific fuel can be produced, suitable for combustion in domestic heaters or power plants.



VANDENBROEK International

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**VADEB®** biomass dryers are suitable for many kinds of biomass sources:

- saw dust
- shavings
- wood chips
- straw
- bagasse
- peat
- bark
- grain waste
- coffee waste



**VADEB®** biomass dryers are available in capacities from 600 to 30,000 L/H water evaporation per drying unit. Type and system design depend on customer's availability of heat source for the drying process.



### **VADEB® DDD**

With the **Direct Drying Drum** system the product is **directly heated**, i.e. the hot air flows directly into the rotating drum. The air is heated in a furnace, burning fossil or biofuels, or comes directly as flue gas from a gasmotor or -turbine. The DDD system is very flexible in terms of permissible variation in inlet temperature. By recycling a part of the process air to the dryer, the efficiency is improved and the amount of airborne gas to the stack is considerably reduced.



### **VADEB® IDD**

In the **Indirect Drum Drying** system the process air is **indirectly heated** using a heat exchanger. In this case the recirculation of process air is up to 95%, resulting in lower energy consumption. The indirect type of heat transfer makes the IDD dryer ideal for applications where waste heat is available in the form of steam, or flue gas from gasmotors or -turbines.



### **VADEB® BD**

Direct or Indirect Belt Drying solutions for low temperature applications in the range from 90°C - 180°C. The woven steel belt does not require maintenance and keeps overall electrical power consumption low. Due to the modular design the **VADEB®** belt dryer is well-suited to all manner of applications.



**VANDENBROEK  
Thermal Processing B.V.**  
Albert Plesmanstraat 2  
3772 MN Barneveld  
The Netherlands

Phone +31 (0)342 40 42 40  
Fax +31 (0)342 40 42 41

Email [info@vadeb.com](mailto:info@vadeb.com)  
http [www.vadeb.com](http://www.vadeb.com)

All **VADEB** RDF dryers can be supplied with automatic process control allowing easy operation of all parameters



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