



REFUSE DERIVED FUEL

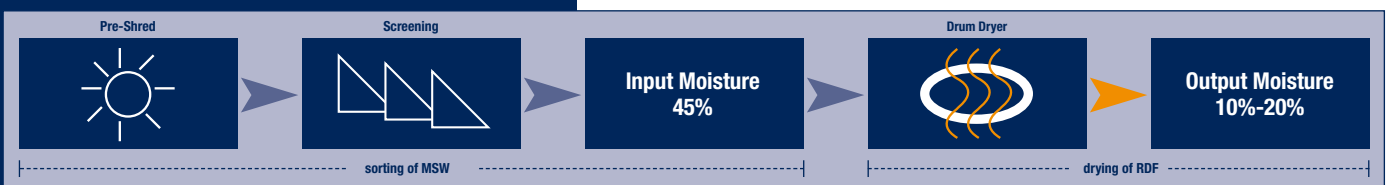
Vandenbroek International is a worldwide provider of turn-key dryer installations, with broad experience in the drying of many kinds of products. Over the years, the Vandenbroek Thermo-Kinetic Drum dryer has proven to be a reliable concept.



MSW processing plant

WASTE TO ENERGY WITH REFUSE DERIVED FUEL (RDF)

Due to changing environmental legislation and the need for alternative fuels, new designs for mechanical and biological treatment of solid waste are being developed all over the world. Refuse-Derived Fuel (RDF) is an alternative fuel produced by shredding, sorting and dehydrating the light fraction of the Municipal Solid Waste (MSW). The objective of this concept is to obtain high-calorific and stable material. These fuels can replace fossil fuels in many applications, such as power or cement kiln plants. An RDF process basically comprises the following steps:



SORTING OF MSW

Mechanical separation of the waste flow in a high and low-calorific fraction. This process involves pre-shredding, screening and classifying the waste material. Metals are taken out and a high-calorific (wet) light fraction product (RDF) remains.



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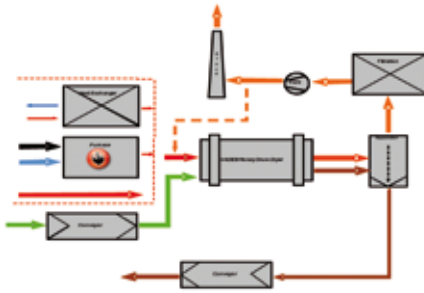
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when drying is part of your business

1. DRYING OF RDF

The wet product is dried with preheated air, where the heating unit is placed in front of the rotary drum. The heat source can be a (bio)gas or (bio)fuel-fired furnace, or alternatively comes from an external (waste) heat source. The heat (e.g. flue gas from power generators) can pass either directly or indirectly (through heat exchangers) into the drum. The heated air flows into the rotary drum within a temperature range of 230-300°C. VADEB® Thermal Kinetic Technology is characterised by a turbulent rinsing of the wet product with the hot air flow. This is done by a multi-dimensional, spiral-shaped passage of air and wet product flow through the drum, the so-called 'Multi-Pass-System'. A dried product with a moisture content as per client request remains (10%-20%). The process air can be cleaned of dust by cyclones and/or filters. Moisture can be reduced by condensers or scrubbers and odours can be removed by chemical scrubbers, biofilters or Regenerative Thermal Oxidizers (RTO).

Irrespective of the heat source – be it fossil fuel, biomass or waste heat – the Thermal Kinetic Technology allows VADEB® to create the best thermal efficiency for the drying system. As a result, the alternative fuels can be produced at minimum cost and with consistent quality. VADEB® RDF dryers are available as drum or belt dryers in capacities up to 30,000 litres per hour of water evaporation.



VADEB® DDD

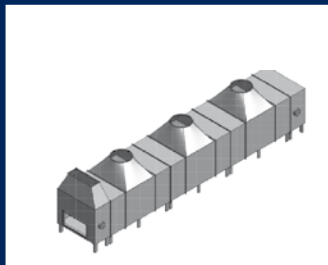
With the **Direct Drying Drum** system the product is **directly heated**, i.e. the hot air flows directly into the rotating drum. The air is heated in a furnace, burning fossil or biofuels, or comes direct as flue gas from a gasmotor or -turbine. The DDD system is very flexible in terms of permissible 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 – 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.



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



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