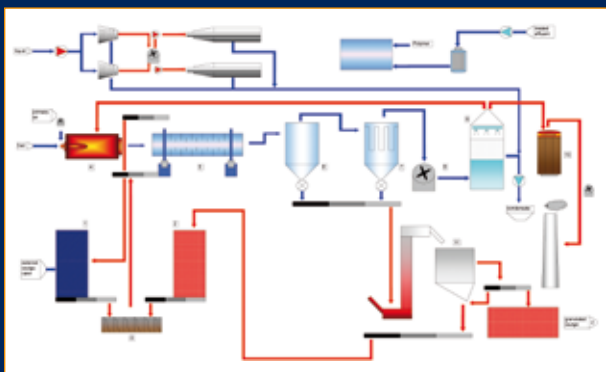




SEWAGE SLUDGE DRYING

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 second generation of DDD sludge dryers was introduced in 1995 for the Water Boards of the province of Limburg in the Netherlands. The dryer is directly linked to the sludge output from the centrifuge. In addition, 40% of sludge from smaller regional WWTPs is introduced. The plant is only manned during the day and runs for 8,000 hrs per year. Produced granules are supplied as a secondary fuel to the cement industry.



VADEB® DDD Sludge Dryer

SEWAGE SLUDGE TREATMENT IN A SUSTAINABLE PERSPECTIVE

For the residual outcome from the wastewater treatment plants, a further volume reduction is required before it can be used in other process applications. Thermal drying is an effective final or intermediate solution to upgrade sewage sludge to a beneficial product. Vandenbroek International has more than 25 years experience in thermal drying of dewatered sludge cakes. The Multi-Pass-System drum dryer is reliable and not sensitive to fluctuations in sludge composition. Even the stickiest sludge converts into an easy-to-handle hard granule product. The **VADEB®** dryer in combination with back mixing guarantees a flexible operation for mixtures of sewage sludge from different imported sludges. The heat treatment while drying is compliant with the EPA 503 standard.

Vandenbroek International is continuing its search for sustainable solutions for wastewater sludge, such as the best possible use of heating value of the dried sludge combined with the production of useful immobilised end residues, or the use of dried sludge granules as a supplementary fuel for power generation. All **VADEB®** technology is well-suited to the individual capacities of regional sewage treatment plants. In terms of technology, **VADEB®** creates the best thermal efficiency for your drying system.



VANDENBROEK International

www.vadeb.com

when drying is part of your business

VADEB® sludge dryers are suitable for all kinds of municipal and industrial sludges:

- Primary and secondary sewage sludges
- (Un) digested sludge
- Paper sludge
- Metal sludge
- Digestate

VADEB® sewage sludge dryers are available in capacities from 600 up to 30,000 L/H water evaporation per drying unit. To meet our customers' requirements in terms of operational flexibility VADEB® has different design options for optimum drying efficiency.

VADEB® DDD

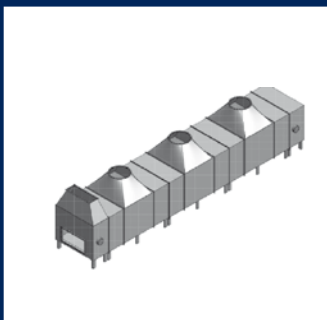
With the **Direct Drying Drum** system the product is **directly heated**, i.e. the hot air flows directly into the rotating drum. The air is heated in a furnace, burning fossil or biofuels, or comes direct as flue gas from a gas engine or turbine. The DDD system is very flexible in terms of permissible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



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

