



Sludge Dryers

Water Technologies

SIEMENS

Siemens Water Technologies is your central source for all of your dewatering and drying requirements

Thermal drying is a process for the reduction of the volume of wet solid products, by removing the moisture and achieving dry solids concentration over 90%. This process has proven applications in both the environmental field (volume reduction of sludges from wastewater treatment plants) as well as in production processes of industries, such as chemical, pharmaceutical, food processing and minerals processing. In the thermal drying process, the final product is stabilized in a dry granular form that simplifies the storage, delivery, use or disposal.





Applications

Sludge drying produces a final product with uniform characteristics, suitable for use as agricultural soil conditioner in many cases.

Sludges:

- Municipal wastewater treatment
- Anaerobic digestion of bio-waste
- Distilleries
- Breweries
- Slaughterhouses
- Farms
- Tanneries
- Oil mills
- Textile industries
- Chemical/pharmaceutical

Other products:

- Food industries (soybeans, yeasts, starches, etc.)
- Pharmaceutical industry (mycelia, pectines, etc.)
- Chemical industry (hydroxides, acrylic emulsions, polypropylene, polyvinyl chloride, etc.)
- Mining industry (coal, iron and copper dust, carbonates, calcium sulphate, etc.)

Advantages

- Minimal environmental impact
- High energy efficiency of the process
- Final product in a granular form, dust free
- No reduction of organic matter
- Flexible, simple and safe operation
- Short start-up and shutdown times
- Complete automation
- Low operating and maintenance costs

The Technologies

Regardless of the design requirements (type of product to be dried, available energy, evaporation capacity, etc.), Siemens Water Technologies offers a range of technological solutions for any problem, tailoring the project to your needs.



Convective Thermal "triple pass" drum dryer (CTD)

The wet product is dried by an air stream, heated by a heat generator. The process is performed inside an enclosed rotating drum consisting of three coaxial cylinders.

The capacity ranges from 1,000 kg/h to 10,000 kg/h of evaporated water.



ECOFLASH® Thin Layer Dyer

A high speed rotor centrifuges the product on the internal hot wall of a jacketed stator. Inside the jacket a hot medium (steam or diathermic oil) transfers the heat for the drying process.

The capacity ranges from 750 kg/h to 3,000 kg/h of evaporated water.

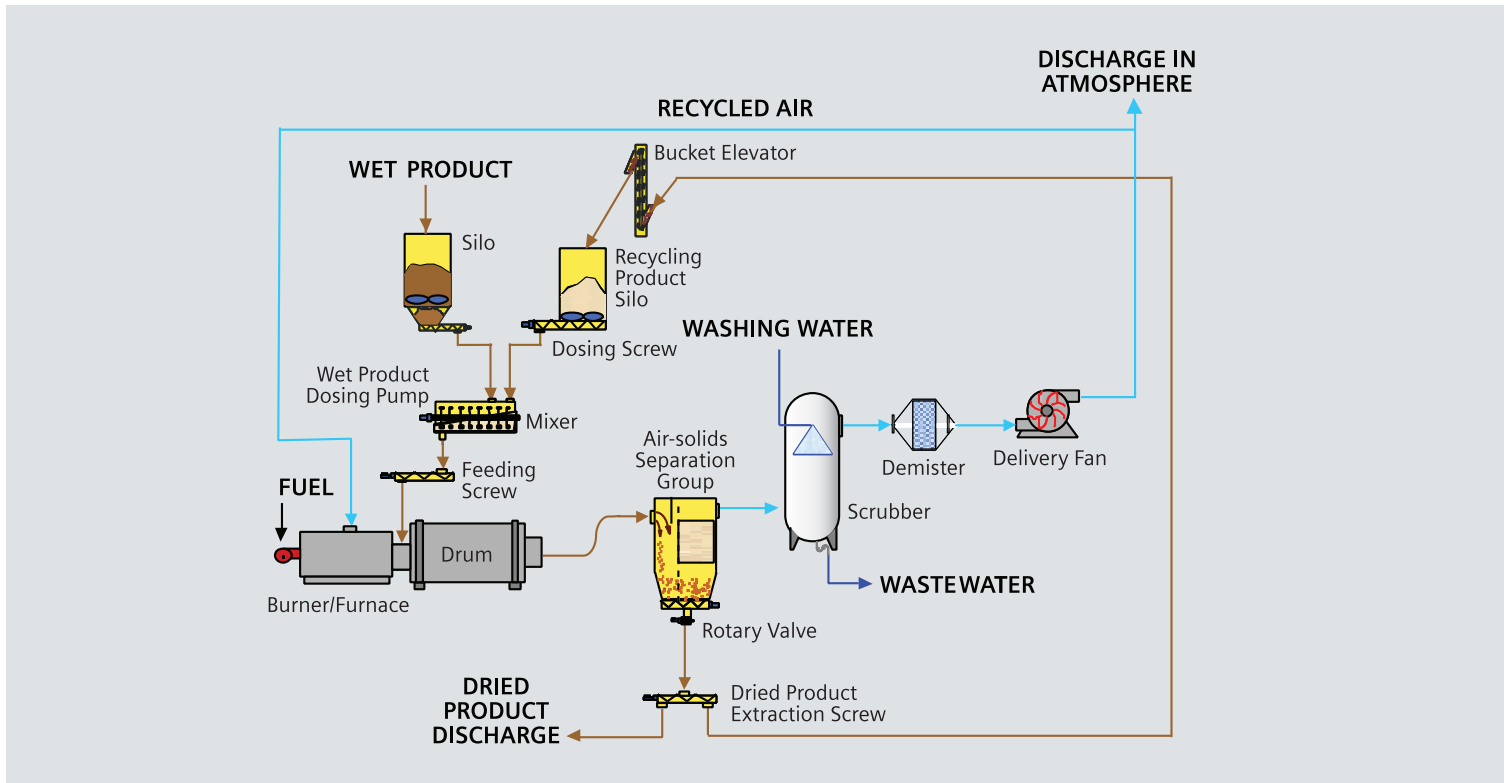


Sludge Belt Dryer (SBD)

The high thermal efficiency belt dryer is particularly suitable for heat recovery from low temperature waste energy sources. The process is flexible and able to face great changes in the inlet product, thanks to the possibility to regulate both the belt speed and the process air temperature.

The capacity ranges from 500 kg/h to 6,000 kg/h of evaporated water.

Convective Thermal Dryer - CTD



The wet product is dried by an air stream, heated by a heat generator. The process is performed inside an enclosed rotating drum consisting of three coaxial cylinders. There are no rotating parts inside the drum with no wearing problems.

The dried product has a homogeneous and granular shape and is recovered in the separation section between product and process air.

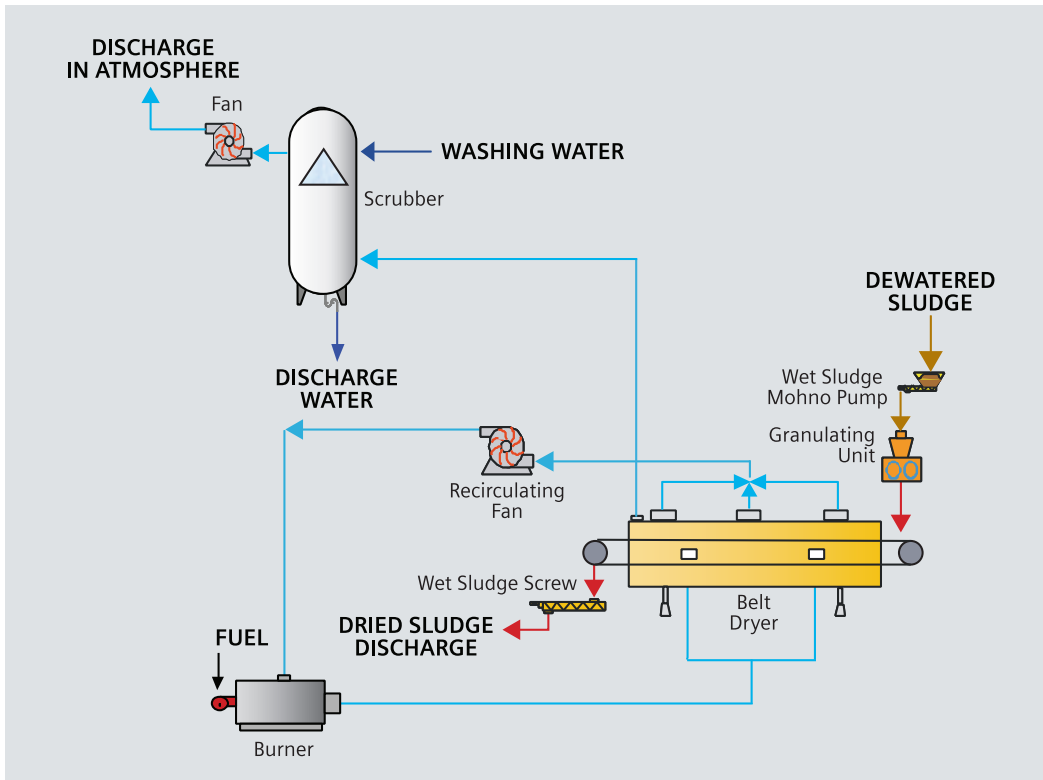
Convective thermal drying can reduce the thermal requirement to less than 800 kcal/kg of evaporated water.

Different plant configurations are available according to the specific project conditions:

- Total recycling of the process air, heated in an air/air heat exchanger arranged in series with the heat generator
- Heat recovery from cogeneration plants or other energy sources
- Reduction in the requirement of washing and condensation water by use of a close water circuit
- Exhaust gas deodorization by a combination of thermal, biological or chemical treatment

Model	Evaporation capacity	
	(kg/hr of water)	(lbs/hr of water)
CTD 1000	1,000	2,200
CTD 2000	2,000	4,400
CTD 3000	3,000	6,600
CTD 4000	4,000	8,800
CTD 5000	5,000	11,000
CTD 6000	6,000	13,200
CTD 7000	7,000	15,400
CTD 8000	8,000	17,600
CTD 9000	9,000	19,800
CTD 10000	10,000	22,000

Sludge Belt Dryer - SBD



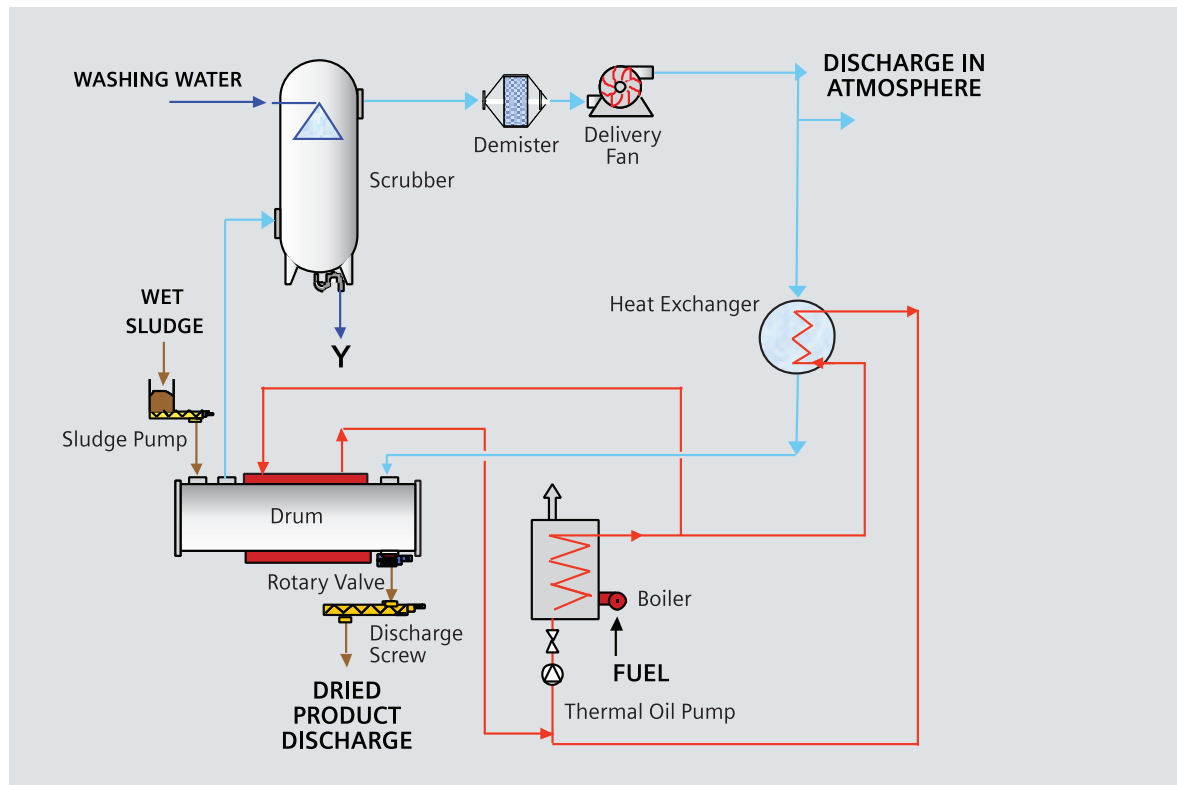
The sludge belt dryer is a convective dryer. Evaporation takes place when the biosolids come in contact with the heated air. The sludge is uniformly distributed on the entire belt width to cause uniform evaporation. The heat requirement is around 800 kcal/kg of evaporated water. The dryer is available in one or two belt systems. The belt speed is adjustable to provide varying residence times.

Main advantages:

- Low emissions
- Granular final product
- Low dust
- Low thermal requirement with possible heat recovery from low temperature waste energy sources
- Single or multiple belts dryer

Model	Evaporation capacity	
	(kg/hr of water)	(lbs/hr of water)
SBD 500	500	1,100
SBD 1000	1,000	2,200
SBD 2000	2,000	4,400
SBD 3000	3,000	6,600
SBD 4000	4,000	8,800
SBD 5000	5,000	11,000
SBD 6000	6,000	13,200

ECOFLASH® Thin Layer Dryer



The dryer consists of a horizontal cylindrical stator, with a thermal jacket. The thermal medium can be diathermic oil or saturated steam. Inside the stator a cylindrical coaxial rotor operates at a peripheral speed of 30 m/s.

The rotor is equipped with blades with adjustable pitch.

The wet sludge is fed into the dryer by a dosing unit and centrifuged by the rotor on the stator hot wall with a thin layer of 3-5 mm.

The blades of the rotor move the biosolids through the process in a dynamic action, creating an energy efficient evaporation

process. A counter current limited air flowrate moves the evaporated water away and, at the same time, cools the dried product.

All the heat necessary for the drying process is transferred by conduction through the stator hot wall.

The heat requirement is less than 800 kcal/kg of evaporated water. The drying process is single passage, continuous without recycle.

The dried product is granular, free flowing and dust free.

Model	Evaporation capacity	
	(kg/hr of water)	(lbs/hr of water)
EF 11/50	750	1,650
EF 13/60	1,000	2,200
EF 14.5/80	1,500	3,300
EF 14.5/100	2,000	4,400
EF 18/110	2,500	5,500
EF 19/110	3,000	6,600



ISO 9001:2000 - Cert. n° 0630

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The information provided in this brochure contains merely general descriptions or characteristics of performance which in actual case of use do not always apply as described or which may change as a result of further development of the products. An obligation to provide the respective characteristics shall only exist if expressly agreed in the terms of contract.

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