



## Profile

**Anro is your competent partner for drying applications**

**we offer to our clients:**

- **feasibility studies and process development**
- **operation of plants at clients site**
- **turn-key plants**
- **main components for drying plants from own manufacturing**
- **laboratory and pilot tests**
- **toll drying**

## Sludge Drying

### Anro Process Technology example: sewage sludge drying

In a first step sewage sludge will be dewatered mechanically. Feed to the plant is by means of a slurry pump. The drying process takes place in three stages. After passing the third stage the dry product is discharged and transferred to a storage location.

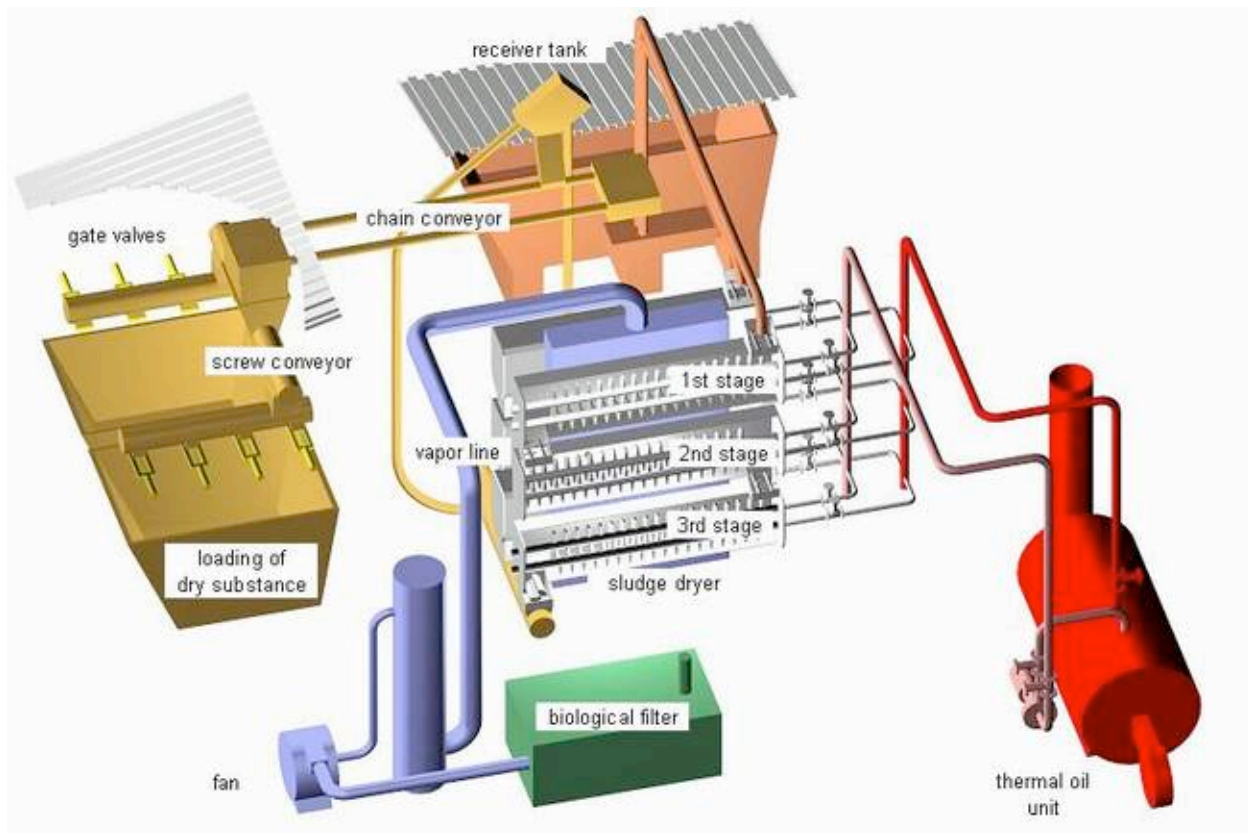
The vapors containing 95% steam are liquefied in a downstream condenser. Condensate is recycled to the feed of the sewage works.

Organic compounds will be decomposed in a biological filter.

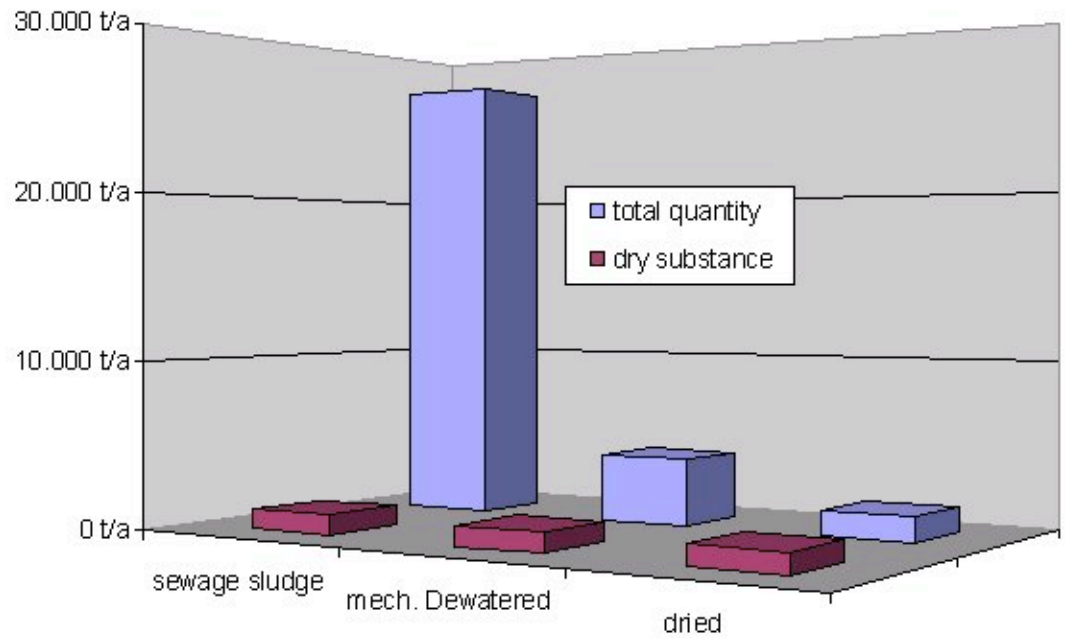
The dryer modules are heated by a thermal oil unit. The vessel can be heated either by natural gas, sludge gas or fuel oil.

Dryer plant and hot oil unit are placed in a drain tray for protection of the environment.

### process scheme of a sewage slurry drying plant:



## Sewage Sludge Drying



### Characteristic of ANRO Drying Process

#### operation

- continuous process
- option for heat recovery
- easy overcoming of glue phase
- gentle drying - partly or complete
- no backmixing with dry product
- fast start and shutdown of the plant
- option for intermediate shutdown (e.g. during weekends)

#### environment

- no annoyance by odor
- efficient heat transfer
- no significant dust formation
- no special precautions against fire
- independent from weather conditions
- hygienic dry sludge

#### costs

- low manpower requirement
- simple and rough technique, high availability
- little area demand (< 100 sqft per module)
- option for saving of flocculating agent

## Standard Dryers

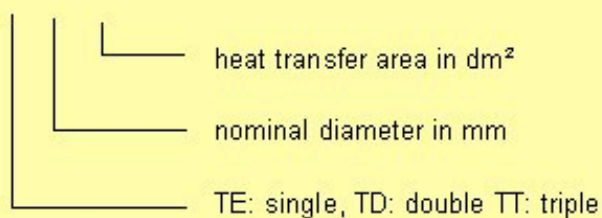
type	area <b>A</b> (m <sup>2</sup> )	height <b>H</b> (mm)	diameter <b>di</b> (mm)	length <b>L</b> (mm)
TE 80-63	0.63	250	84	700
TE 130-175	1.75	400	135	1,300
TE 260-580	5.80	660	266	2,000
TE 350-1050	10.50	1,035	350	3,000
TE 500-2200	22.00	1,250	510	4,200
TD 80-125	1.25	500	84	700
TD 130-350	3.50	800	135	1,300
TD 260-1160	11.60	1,320	266	2,000
TD 350-2100	21.00	2,070	350	3,000
TD 500-4400	44.00	2,500	510	4,200
TT 80-180	1.80	750	84	700
TT 130-530	5.30	1,200	135	1,300
TT 260-1740	17.40	1,980	266	2,000
TT 350-3150	31.50	3,105	350	3,000
TT 500-6500	65.00	3,750	510	4,200

comment:

Dryer types TE are containing one twin screw, types TD and TT are modules with two or three screw dryers - on top of each other.

The first number behind the type indicates the diameter, the number behind the hyphen indicates the heat transfer area of the screw dryer.

TE 130-175





## Applications

### **ANRO-Plants are used for the following Applications:**

sewage and sewage treatment

- sewage sludge drying in municipal sewage plants
- sewage sludge drying in industrial sewage plants
- sludge drying in pulp and paper industry
- iron sludge from water treatment

anorganic chemistry

- metall sludge drying
- metal hydroxide sludge
- glass sludge
- alkali sludge
- anorganic residue
- recycling of anorganic products

organic chemistry and  
polymer-chemistry

- drying of organic intermeiates
- drying of polymers
- removal of monomers
- removal of solvents

varnish- and clourant-chemistry

- water removal from varnish sludge
- solvent removal from varnish- and colorant sludge

metal and ceramic working industry

- metall- and glass-grinding sludge
- lapping sludge

- finish sludge
- aluminium oxide sludge
- silicon sludge from microchip production
- drying of galvanic sludge

