S2E
sludge2energy
by HUBER & WTE

Innovative
Sludge Utilisation Concepts

WORLDWIDE

Thermal waste utilisation plant in Zwentendorf, Austria

Thermal waste utilisation plant MSZ3, Moscow, Russia

Vienna's main wastewater treatment plant, Austria

WWTP Czajka-Warsaw, Poland

Digesters on WWTP Czajka-Warsaw, Poland

Thermal waste utilisation plant in Zwentendorf, Austria

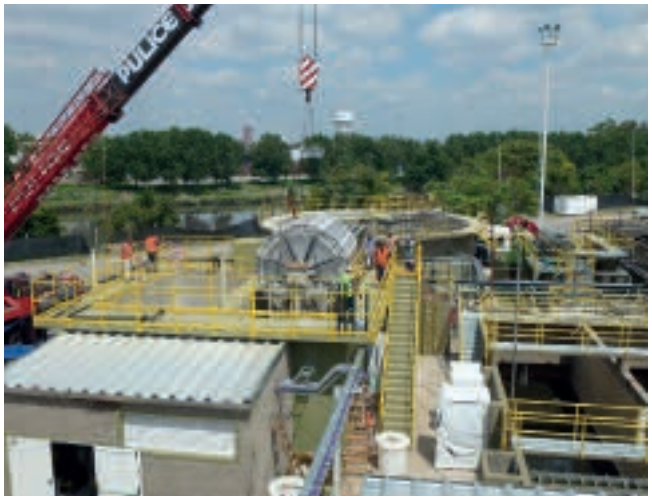
REFERENCES

HUBER sewage sludge drying plant in Shenzhen, China

HUBER Belt Screen EscaMax® installed on WWTP Lynetten, Denmark

HUBER Belt Dryer on WWTP Straubing

HUBER ROTAMAT® Screw Press RoS 3Q for sludge dewatering



Installation of a HUBER VRM® Bioreactor unit on a WWTP

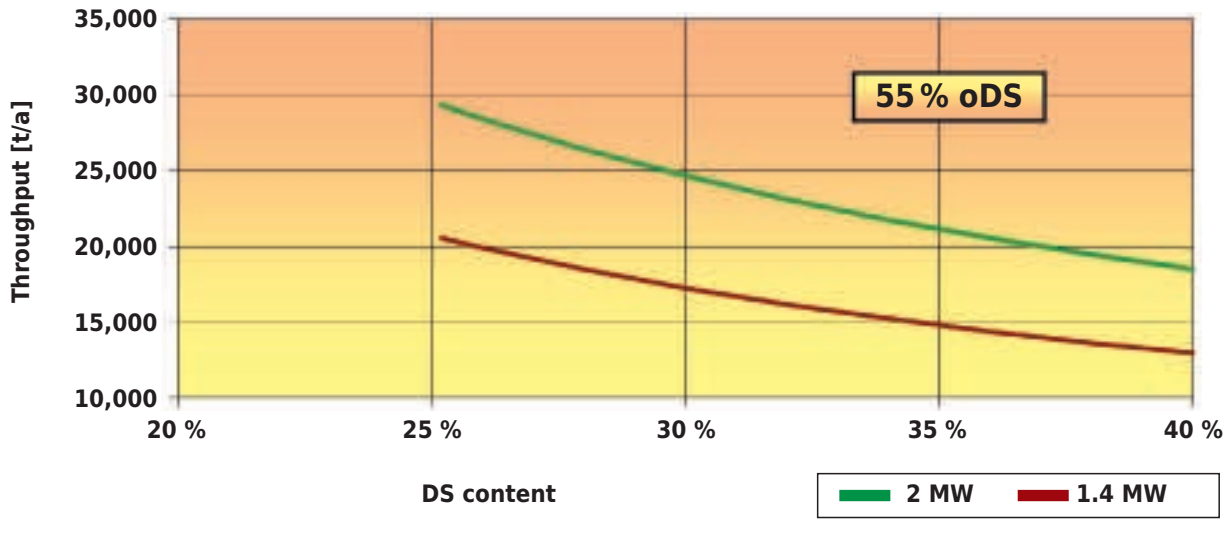
sludge2energy plant on WWTP Straubing

Technical description

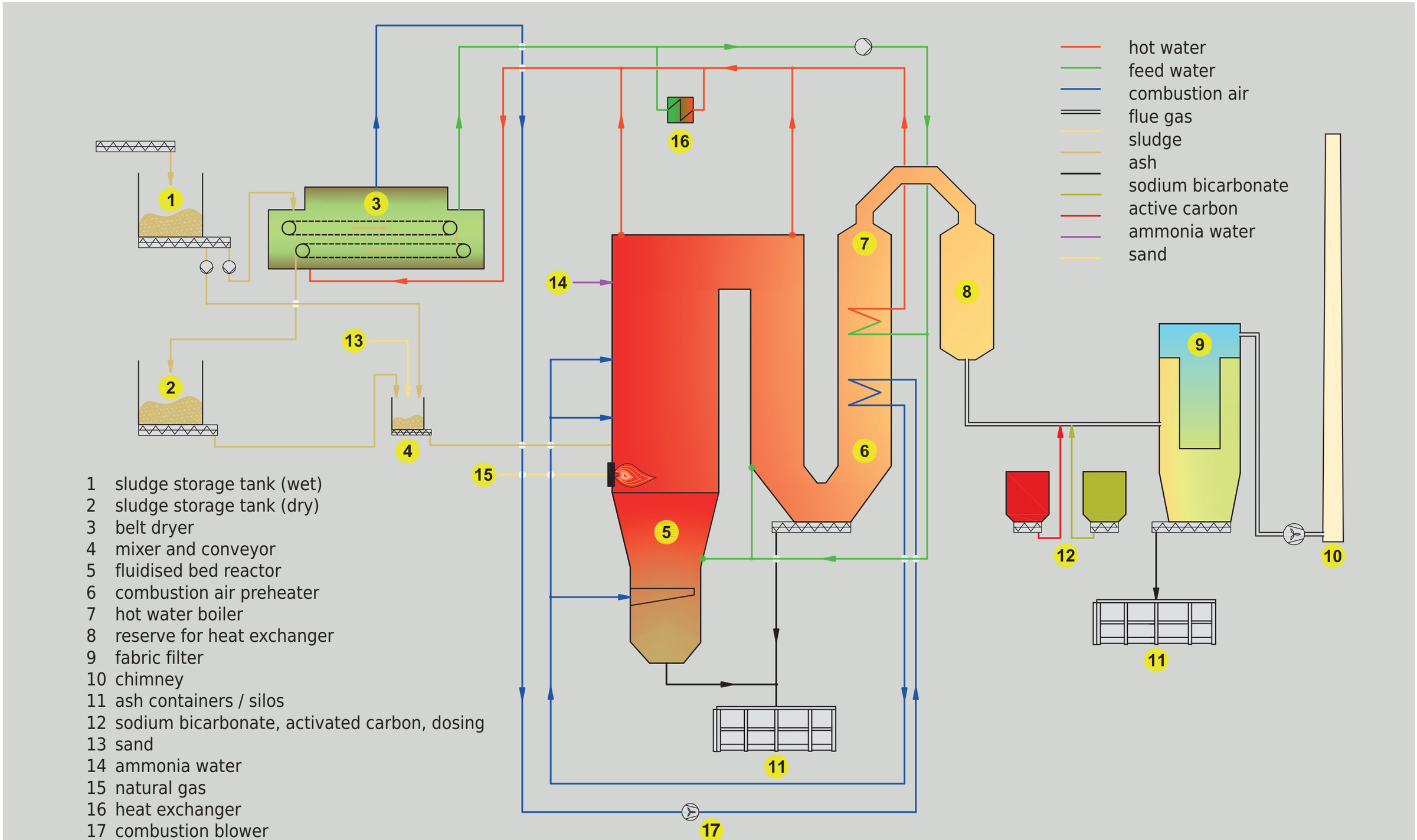
- Sludge tank (1) for sewage sludge storage (compensation of production variations)
- Wet sludge delivery by thick material pumps
- Belt dryer (3) with pelletiser and heat supply from combustion
- Condensation of dryer vapours, introduction of vapours/air into the fluidised bed furnace (5) as combustion air
- Intermediate storage (2) of dried sewage sludge
- Mixing (4) of dried and dewatered sewage sludge and grit (13), feeding of fluidised bed furnace (5) after milling and pneumatic input
- Fluidised bed furnace (5) with open perforated plate bottom to remove disturbing material and control grit quality in the fluidised bed
- Boiler with two radiation strings and one or two convection strings with heat exchanger bundles (5,6,7)
- Heat utilisation for flue gas for combustion air preheating (6) and hot water boiler (7) for heat supply to the belt dryer (and optionally external consumers)
- The combustion air pre-warmed with hot water in the belt dryer (3) is compressed by the combustion air blower (17) and pre-heated in the air pre-heater (6) before injection into the fluidised bed.
- The combustion air can be injected at three levels. Also recirculated flue gas can be used to have a constant control of the combustion process.
- Ammonia water is injected (14) in the combustion chamber according to the Selective Non Catalytic Reduction (SNCR) method as first stage of flue gas cleaning for denitrification.
- Dry scrubber (12) as second flue gas cleaning step with sodium bicarbonate for dechlorination and desulfurisation as well as activated carbon to bind dioxins and heavy metals (e.g. Hg).
- Fabric filter (9) for removal of dust and sorbents from the flue gas
- Measurement station for the control of all legal emission limits
- Filter ash discharge is separate from combustion bed and boiler ash and stored in different containers (11).

Throughput depending on DS content of dewatered sewage sludge with an oDS content of 55%

(Values can differ depending on the heat value of organics.)



Flow diagram of thermal sewage sludge utilisation sludge2energy



1 sludge storage tank (wet)
2 sludge storage tank (dry)
3 belt dryer
4 mixer and conveyor
5 fluidised bed reactor
6 combustion air preheater
7 hot water boiler
8 reserve for heat exchanger
9 fabric filter
10 chimney
11 ash containers / silos
12 sodium bicarbonate, activated carbon, dosing
13 sand
14 ammonia water
15 natural gas
16 heat exchanger
17 combustion blower

Overview of benefits

- Combined drying and thermal utilisation of sewage sludge in a fluidised bed furnace
- Modular design for throughputs from 4,000 to 7,000 t DS/a as single-line system, applicable for 200,000 up to 300,000 PE sewage treatment plants
- Auto-thermal (self-sustaining) combustion and drying, no external thermal energy required
- Low invest and operational costs due to the optimised concept of thermal drying and utilisation in a compact design
- Optimal sewage sludge quantity and mass reduction
- Minimised sewage sludge transport costs
- Long-term cost and disposal reliability
- Production of recycling material that can be reused for the most part (e.g. by construction industry)
- Dry flue gas cleaning process without the need for water and without generation of wastewater
- Low pollutant emissions, significantly below legal limits (e.g. BImSch, TA Luft)
- Minimum space requirement
- Availability: 8,000 h/a
- Fully automatic operation 24 h/d, 7 d/week
- High flexibility of sewage sludge utilisation
- Production of phosphorus-rich sewage sludge ash, therefore optional phosphorus recycling

sludge2energy GmbH portfolio of services

sludge2energy GmbH offers competent support in all project phases, tailored to the specific requirements and requests of its customers:

- Concept development and feasibility
- Engineering support
- Turnkey supply, installation and commissioning of the complete plant
- Operation support
- Operation
- Financing
- After-sales service

HUBER TECHNOLOGY
WASTE WATER Solutions

Huber SE is a family-owned, worldwide active company in the field of water, wastewater and sludge treatment. More than 900 employees worldwide develop and manufacture products, manage projects and work on system solutions for municipalities and industries.

HUBER supports its customers in about 60 countries around the world through subsidiaries, offices or representatives by providing know-how and innovative products for water, wastewater and sludge treatment.

To ensure the customer's long-term benefit, the HUBER Global Service guarantees the problem-free and reliable operation of the customer's plants through close cooperation with the local HUBER representations around the world.

wte
EVN Gruppe

WTE Group provides designing, construction, financing and operation of engineering plants for wastewater disposal, water supply, energy production and thermal waste utilisation. As one of the leading full-range suppliers in Europe WTE possess unique know-how. They use their expertise to develop future-proof solutions which set the international standards in terms of energy efficiency, consumption of resources and investment costs. Through the effective combination of the elements water and energy they achieve their goal to build efficiently operating yet environment-friendly plants.

We utilise all energy sources in the process chain to ensure the energy self-sufficient operation and environmental sustainability of our plants. Furthermore, our plants produce excess energy which can be fed to the power network.

We feel committed to a sustainable approach and have executed almost 100 sustainable projects in 16 countries, for the benefit of our customers and the environment.

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