

RASCHKA



Raschka FBI Technology

- reliable and efficient incineration process technology

For industrial- and sewage sludge

proven and internationally established and recommended since 1946

Sludge | Wastes from chemical industries | Wastes from paper & pulp industries | Inferior coal, low-grade coal
Industrial, refinery & coal slurries | Biomass, bark | Household waste, mechanical-biological recyclable waste

The RASCHKA FBI technology guarantees

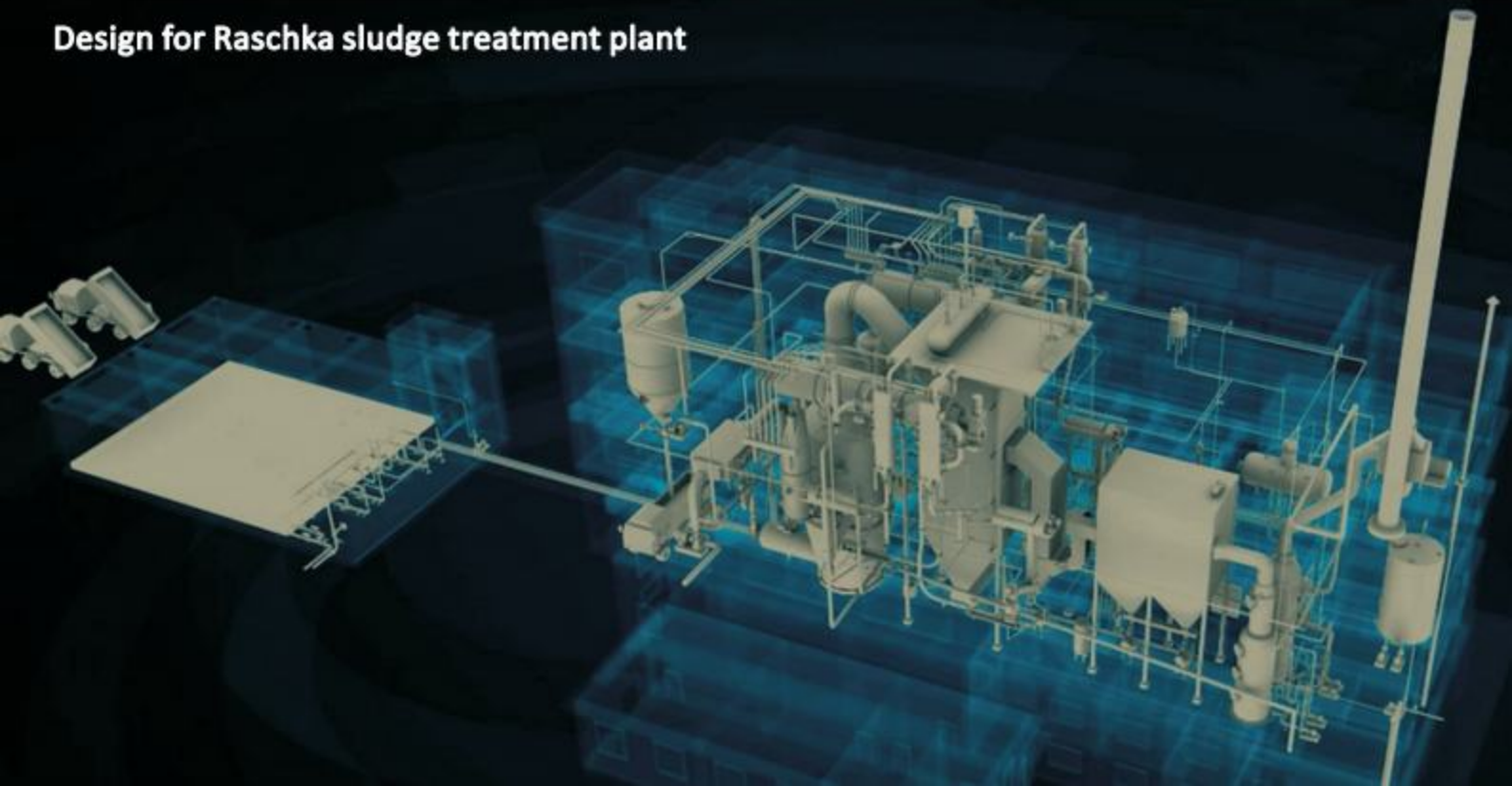
- A perfect combustible treatment and handling
- The total combustion and destruction of all organic pollutant substances in the FBI
- The discharge of the inorganic pollutants as concentrated residues of the flue gas cleaning

The fluidized bed incineration of sewage sludge is state of the art and the best proven method of sludge disposal.

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Design for Raschka sludge treatment plant



Raschka Technology

- ♻️ **More than 60 years of experience**
- ♻️ **Planning and construction of fluidized bed incinerators for:**
 - Energy generation
 - Energy utilization
 - Environmentally friendly thermal recovery and disposal
- ♻️ **More than 100 references in Europe and Asia**
- ♻️ **Fuel materials: liquid, pasty and solid potential recyclable materials, residuals and wastes, especially**
 - Sludge
 - Wastes from chemical industries
 - Wastes from paper and pulp industries
 - Inferior coal, low-grade coal
 - Industrial, refinery and coal slurries
 - Biomass, bark
 - Household waste, mechanical-biological recyclable waste

Raschka Engineering history

Dipl.-Ing. Georg Raschka Ingenieurbüro GmbH&Co.KG:

Founded in 1946 by Dipl.-Ing. Georg Raschka, Heidelberg, Germany

Acquired by Lonza Engineering AG in Feb 2011

Lonza Engineering AG:

Used to be part of engineering organization of Lonza Group Ltd

Registration as independent company on Aug. 6th, 2008 in Basel, Switzerland

Renamed as Raschka Engineering AG on Apr. 8th, 2013 in Basel, Switzerland

Lonza Guangzhou Engineering & Consulting Co., Ltd:

Used to be engineering organization of Lonza China

Registered as 100% subsidiary of Lonza Engineering AG on Jan. 23rd, 2009 in Guangzhou, China

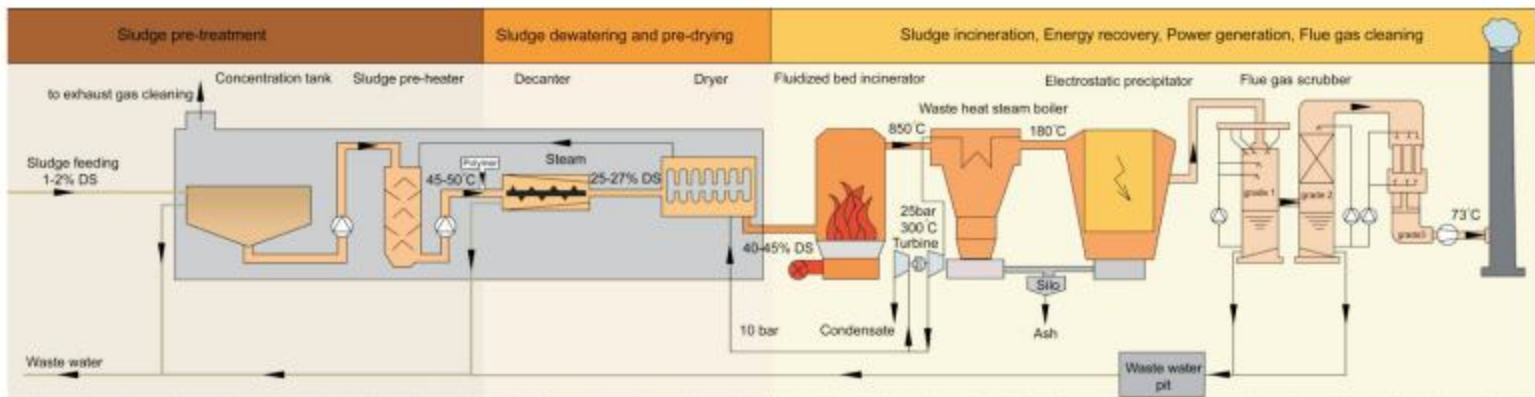
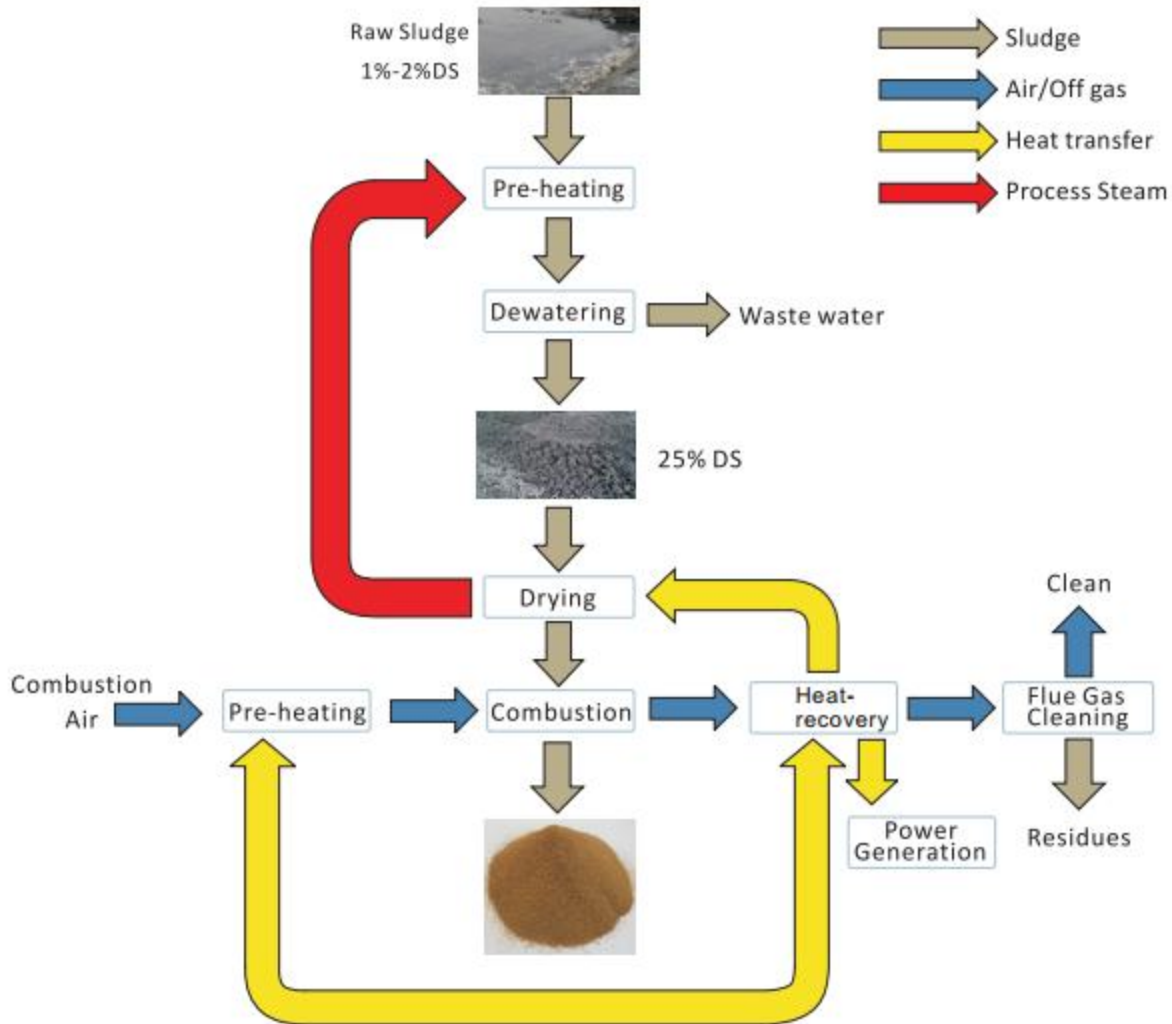
Renamed as Raschka Guangzhou Engineering & Consulting Co., Ltd in Jun. 2013

Locations:

Liestal, Switzerland

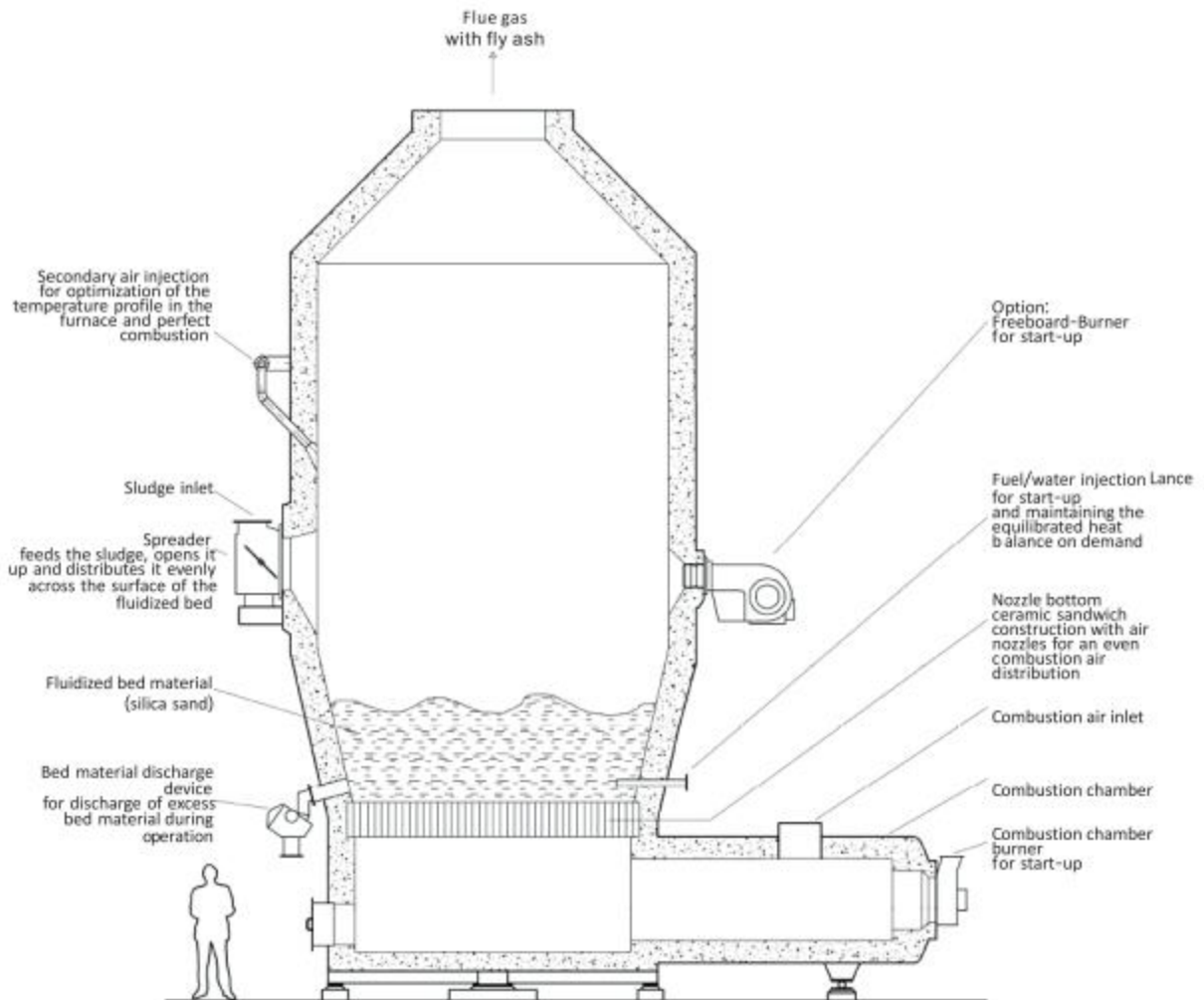
Guangzhou, Wuxi and Zhangjiagang, China

Sludge Treatment (Raschka Process)



Sludge incineration process key advantages

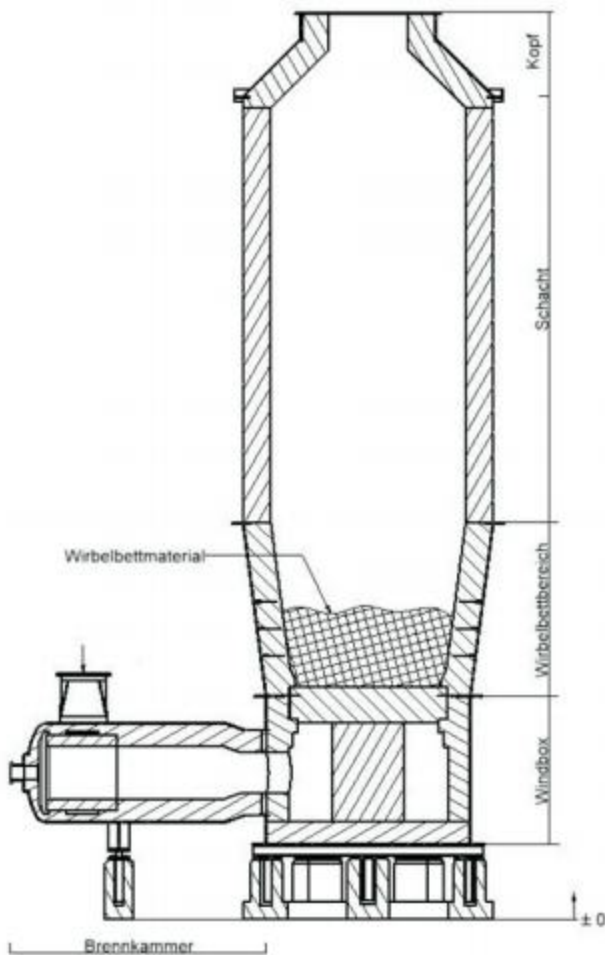
- All organic substances are combusted completely due to a long retention time in the FBI at approximately 870°C.
- RASCHKA FBI can maintain an auto thermic incineration with no additional fuel assuming the organic content in the sludge is sufficiently high.
- The energy set free by incineration process is recovered in the waste heat steam boiler and used for sludge pre-drying, power generation and other heating purposes.
- Reliable and long lasting operation with minimum maintenance.
- Advanced control system enables an optimized process which leads to minimum operation cost.
- Specific energy consumption is low due to the use of high efficient fans and pumps.
- RASCHKA experience and the use of the advanced control system enable a polymer optimized operation.



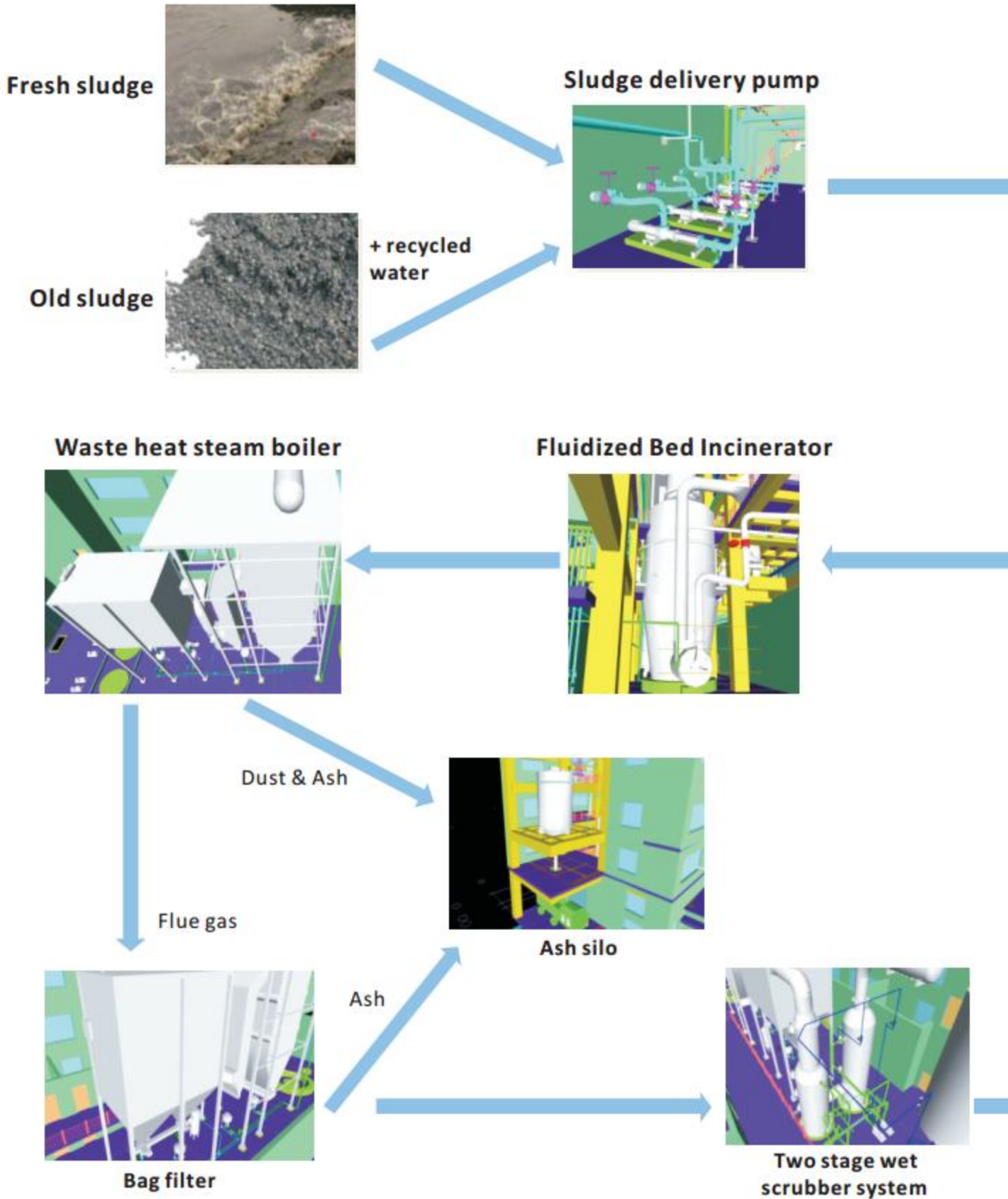
FBI function and characteristics



- Nozzle bottom: ceramic sandwich construction, alternatively steel bottom or nozzle system permeable for foreign matters, air nozzles of special design to ensure even and exact air distribution.
- Discharging of bed material and foreign matters during the operation of the incinerator.
- Special design injection lances system for the injection of natural gas and/or fuel oil during start-up.
- Feeding of sludge and other combustible into the incinerator by means of the RASCHKA-spreader, which serves for an even distribution over the entire cross section of the fluidized bed.
- Injection of secondary air for controlled staged combustion.
- Extreme long retention times and low flow velocity in the freeboard, thus enabling excellent and complete combustion.
- No thermal NOx due to advanced Raschka technology.



Typical Process of a sludge treatment plant

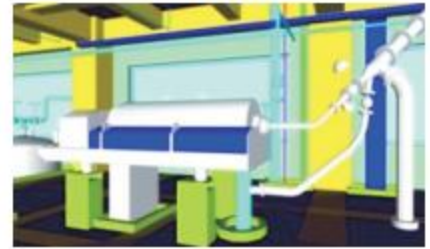


Sludge pre-heater

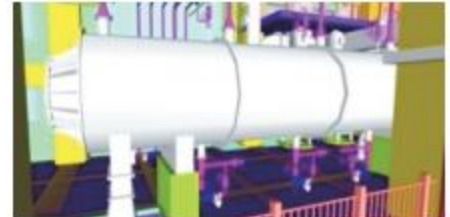


Addition of
polymer

Centrifuge



**Sludge buffer
& feeding system**



Sludge Pre-dryer

Sludge evenly fed
into the FBI by the
RASCHKA spreader



High efficiency fan



Discharged into the
atmosphere

Extract from Reference List

Plant	Sludge Incineration Plant
Customer	Lonza Group
Start up	Visp, Switzerland 1976
Fuel	Sewage sludge from municipal waste water treatment plants
Fuel capacity	Sludge: 5 t/h (20% DS)
Incineration conditions	850-900°C
Steam parameters	3 t/h
Steam generation	10 barg
Flue gas cleaning	Acc.to German 17.BImSchV/European Regulations
Flue gas volume	12'000 m _n ³ /h



Plant	Fluidized bed incineration plant Lünen
Customer	Innovatherm GmbH Lünen Germany
Start up	1997
Fuel	Coal conditioned sewage sludge from municipal waste water treatment plants, other waste materials
Fuel capacity	15 t/h dry solids
Incineration conditions	Acc. to German 17. BImSchV / European regulations
Steam parameters	40 bar 400°C superheated
Steam generation	41 t/h
Flue gas cleaning	Electrostatic precipitator, flue gas scrubbing system (effluent free)
Flue gas volume	93'000 m _n ³ /h



Plant	München Klärwerk Gut Grosslappen Fluidized bed incineration plants # 1 + 2
Customer	City of Munich Munich, Germany
Start up	1997
Fuel	Sewage sludge from municipal waste water treatment plant
Fuel capacity	3 t/h dry solids each
Incineration conditions	Acc. to German 17. BImSchV / European regulations
Steam parameters	40 bar 400°C superheated
Steam generation	8 t/h
Flue gas cleaning	Electrostatic precipitator, flue gas scrubbing system
Flue gas volume	18'000 m _n ³ /h



Plant	Fluidized bed multi waste incineration plant
Customer	Tongliao, Inner Mongolia, China Tongliao Meihua Bio-Tech Co., Ltd
Start up	November 2011
Fuel	Sludge from waste water treatment plant, waste coal, waste liquid
Fuel capacity	Sludge: 3'125 kg/h (25% DS) Waste liquid: 8'330 kg/h
Incineration conditions	GB18484-2001 GB16297-1996
Steam parameters	12 bar saturated
Steam generation	20 t/h
Flue gas cleaning	Quench, bag filter, flue gas scrubbing system
Flue gas volume	47'000 m _n ³ /h



Plant	Karlsruhe Klärwerk Neureut Fluidized bed incineration plant # 2
Customer	City of Karlsruhe Karlsruhe, Germany
Start up	1991
Fuel	Sewage sludge and residues from municipal waste water treatment plants
Fuel capacity	2 t/h dry solids
Incineration conditions	Acc. to German 17. BImSchV / European regulations
Steam parameters	40 bar 400°C superheated
Steam generation	8 t/h
Flue gas cleaning	Electrostatic precipitator, flue gas scrubbing system
Flue gas volume	18'000 m _n ³ /h



Plant	Norske Skog Cheongwon Mill Cheongwon, Korea Fluidized bed incineration plant
Customer	Samsung Engineering (general contractor) Seoul, Korea
Start up	1996
Fuel	Paper sludge, rejects and refuse from paper factory
Fuel capacity	5.6 t/h dry solids
Incineration conditions	Acc. to German 17. BImSchV / European regulations
Steam parameters	10 bar saturated
Steam generation	20 t/h
Flue gas cleaning	Electrostatic precipitator, flue gas scrubbing system
Flue gas volume	45'000 m _n ³ /h



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