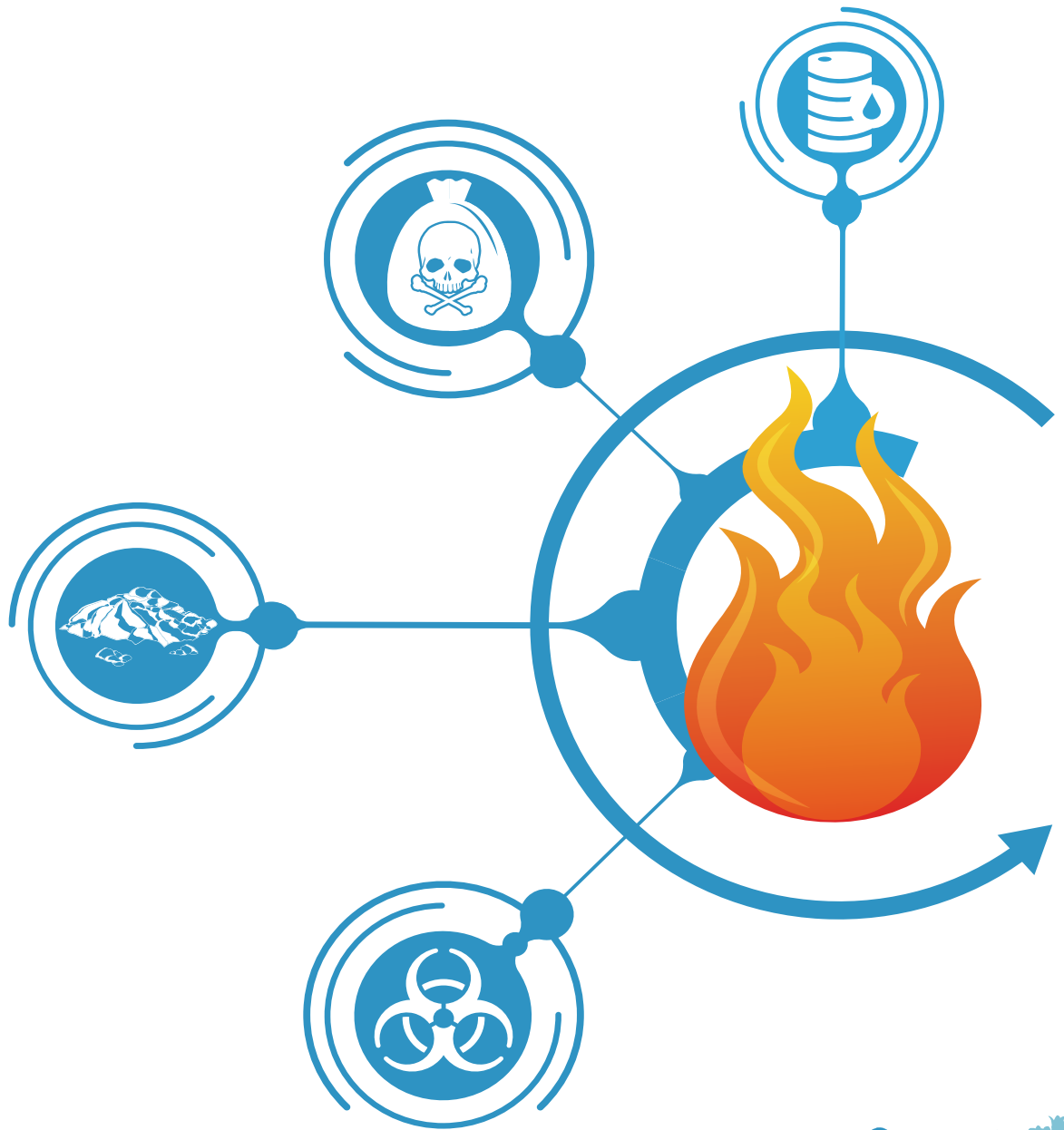


**RASCHKA**

SINCE 1946

Reliable and efficient incineration process technology



**RASCHKA ENGINEERING**

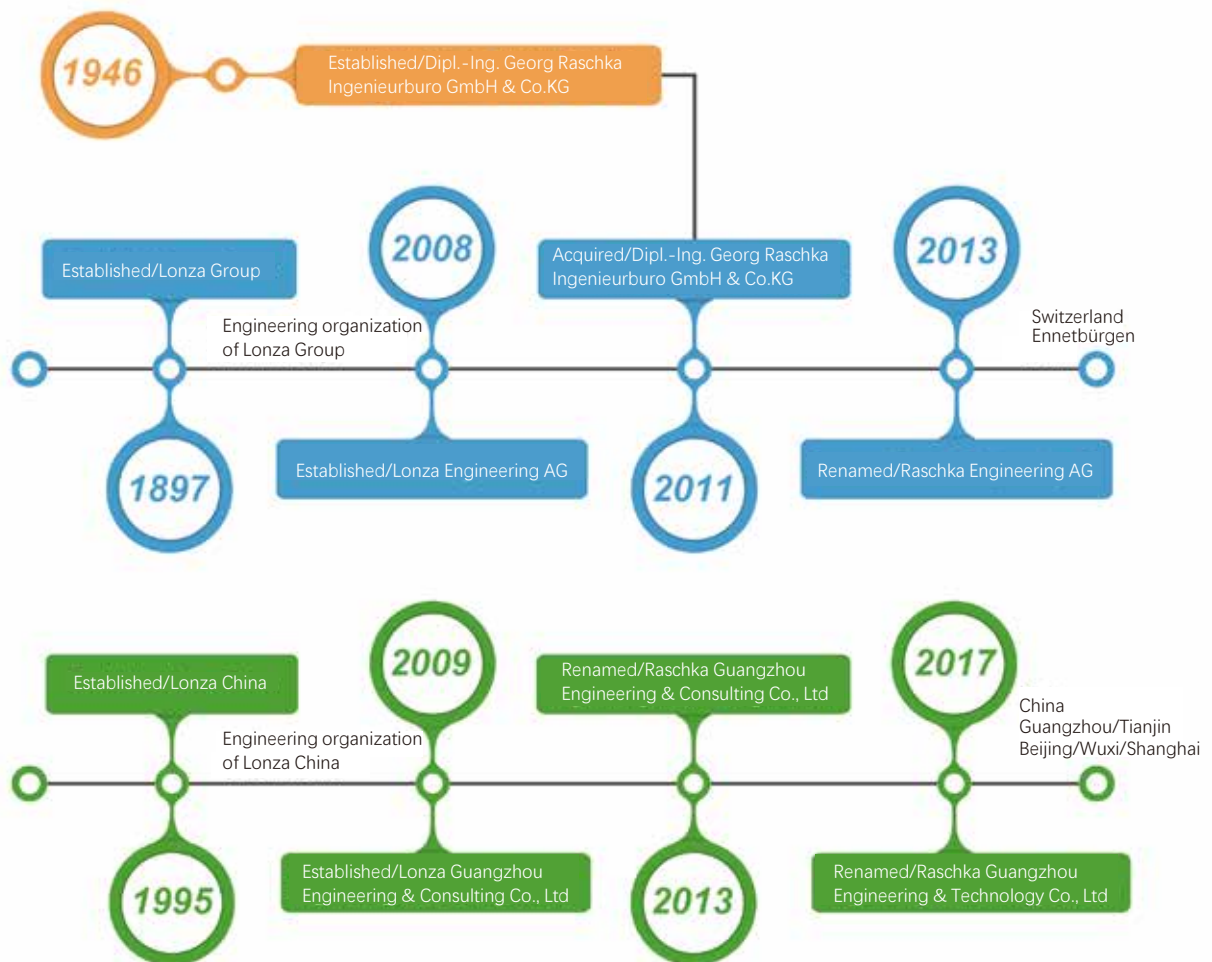
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## About us

### History

● China ● Switzerland ● Germany



### What We Do

Depending on the type of waste, its composition and physical/chemical characteristics, Raschka Engineering provides customized incineration process solutions, which include but are not limited to:

- Sludge drying and incineration systems
- Waste liquid and off-gas incineration systems
- Rotary kiln with secondary combustion chamber systems
- High salt content waste liquid or solid salt incineration systems
- High halogen content waste incineration systems

Raschka Engineering also provides onsite training, technical assistance, facility operation and maintenance support, tailoring to customers' needs.

## References Worldwide



## Our Strengths

- More than 100 RASCHKA-references in Europe and Asia
- Delivering highly reliable and cost-effective system
- Rich experience in system operation and maintenance:
  - 120 t/d sludge drying and incineration system owned by Lonza Group, operational since 1976 with a proven track record
  - 50,000 t/a hazardous waste incineration center (phase 1 & 2 ) owned by Lonza Group, commissioned in 1984 and 1998 respectively, still today represents a major regional hazardous waste treatment facility in south of Switzerland
- Strong commitment to innovation and R&D development with a growing number of patents awarded
- Awards & Honors: Guangdong High-Tech Enterprise Business Award, Guangdong Technologically Advanced SME Business Award, Guangdong Innovative SME Business Award, Guangzhou Pioneer Enterprise Business Award

## Fluidized bed incineration system

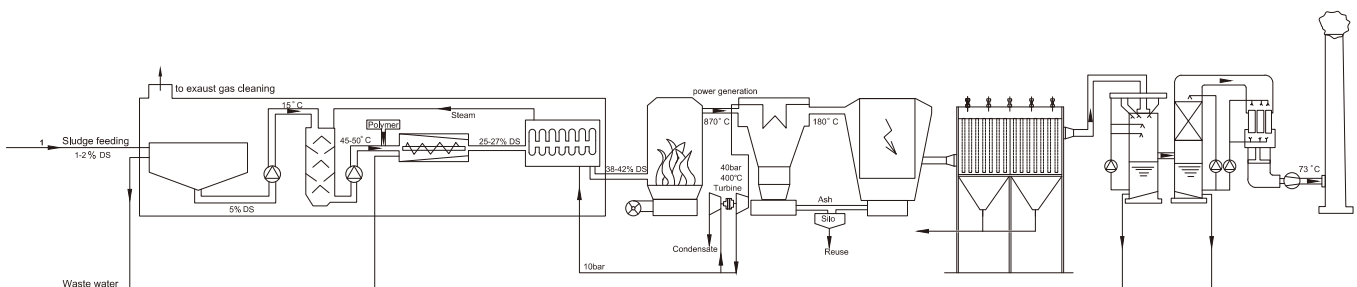


### Chifeng sewage sludge treatment plant

- Start up: 2015
- Location: Inner Mongolia China
- Fuel Capacity: Sewage sludge 1.8 t/h (DM)

The first-ever integrated sludge treatment facility featuring the whole process of sludge dewatering, drying and incineration in China

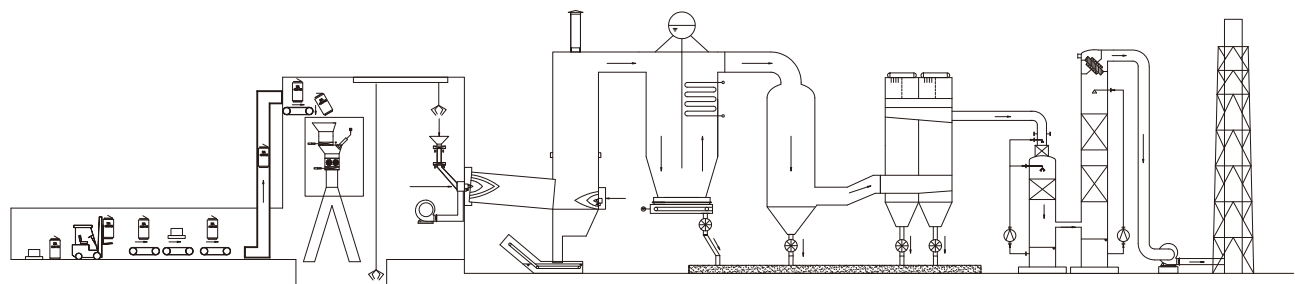
- 70 plus FBI operating experience
- Incineration temperature approx. 870°C
- Suited for incineration of (mixture of) solid, pasty and liquid waste streams
- Auto-thermal incineration even with low heating value
- Delivered the world's largest single-line Fluidized Bed Incinerator for sludge (Throughput: 13.5 t/h (DM) )
- Particularly used for the incineration of:
  - Sludge from communal & industrial waste water treatment plants
  - Waste from chemical industries
  - Waste from pulp & paper industries
  - Inferior coals, low-grade coals
  - Industrial, refinery & coal slurries
  - Bark, wood chips, rice husk and other biomass



## Rotary kiln & secondary combustion chamber system



- Applicable to a wide variety of waste types
- Used for solid, liquid & gaseous waste incineration
- Widely used in hazardous waste treatment center and chemical producers
- Achieving complete combustion via incineration process at 1'100°C and above
- High efficiency SNCR process
- High-level operational reliability and efficiency
- High availability with annual operating hours >7'200h, easy access for maintenance
- Cost-effective operation in line with low carbon, green growth



Pre-treatment

Incineration

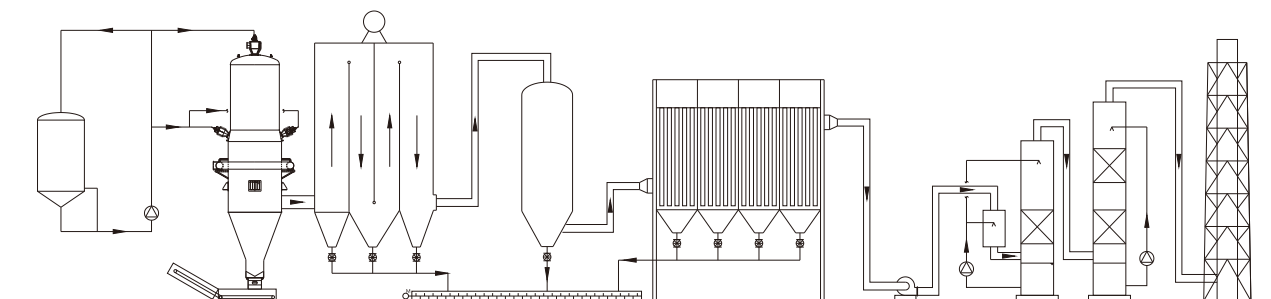
Energy  
recovery

Flue gas cleaning

## Static combustion chamber system



- Used for liquid & gaseous waste incineration
- Achieving complete combustion via incineration process at 1'100°C and above
- High-level operational reliability and efficiency
- Highly automated operation
- Widely used in hazardous waste treatment center and chemical producers
- High availability with annual operating hours >8'000h, easy access for maintenance
- Cost-effective operation in line with low carbon, green growth



Pre-treatment

Incineration

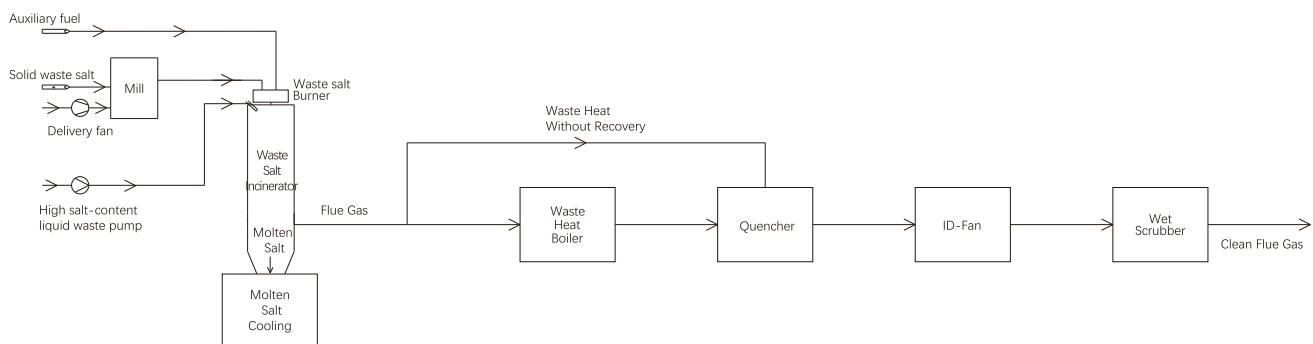
Energy recovery

Flue gas cleaning

## Solid waste salt continuous incineration system



- Milling waste salt to less than 150 microns prior to incineration
- Achieving complete combustion of organic compounds within 0.5 second
- Supporting incineration of salty liquid and solid waste salt simultaneously
- Using waste liquid for fuel combustion to maximize cost efficiency
- Recovering heat from steam boiler
- Recovering industrial-grade salt with TOC<30 ppm
- Meeting emission standards for flue gas treatment
- Achieving zero liquid discharge from wastewater treatment



Pre-treatment

Incineration

Energy recovery

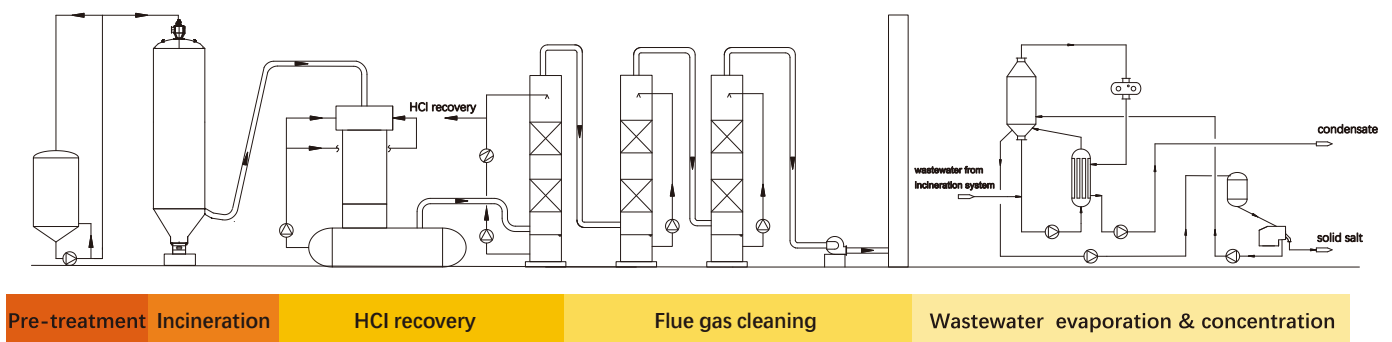
Flue gas cleaning



## High halogen concentrated waste incineration system



- Developing a refractory formulation suited to incineration of high halogen content waste with a proven track record
- Meeting emission standards for flue gas treatment by maintaining a longer residence time for flue gas ( $RT \geq 3s$ ) in a flame zone with temperature above  $1'200^{\circ}C$
- Recovering hydrochloric acid from flue gas treatment
- Reducing NO<sub>x</sub> emissions to below  $100mg/Nm^3$  via patented low nitrogen combustion technology and wet scrubbing de-NO<sub>x</sub> process
- Achieving zero liquid discharge from wastewater treatment

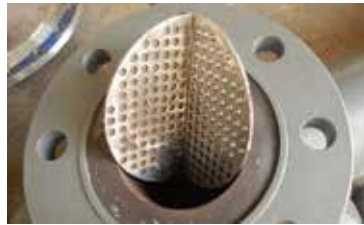


Pre-treatment   Incineration   HCl recovery   Flue gas cleaning   Wastewater evaporation & concentration

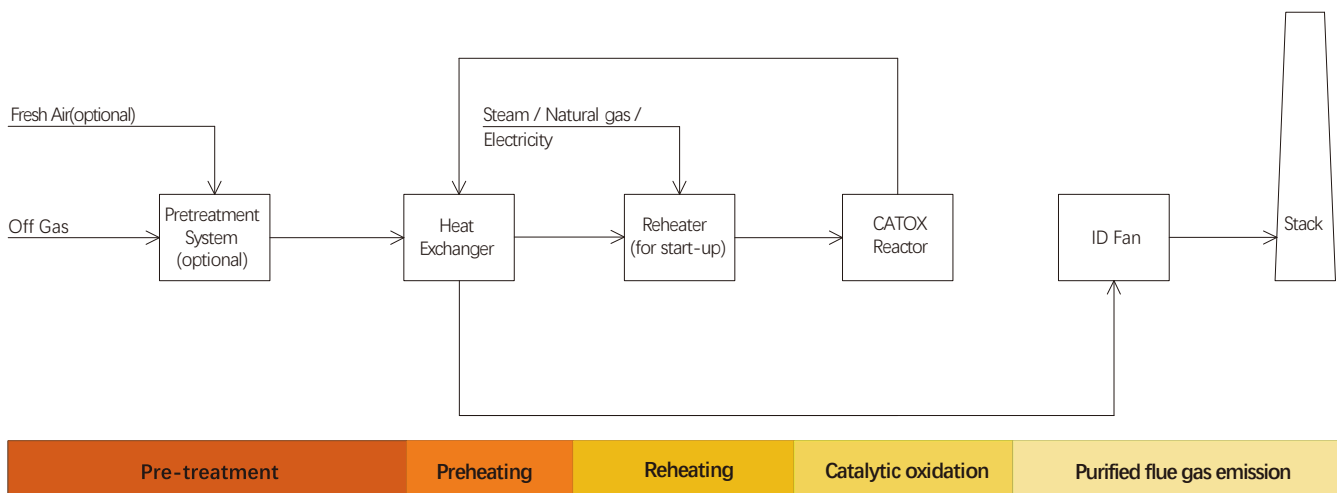
## Catalytic oxidizer system

### Catalytic oxidizer unit at Shaanxi Yanchang facility

- Year of Startup: 2012
- Location: Yulin City, Shaanxi Province, China
- Capacity: 126kg/h (hydrogen mixture off gas)



- Using catalyst reduces activation energy, accelerates oxidation at lower temperature and maintains self-sustaining combustion with low or moderate VOC's concentration, thus minimizing fuel consumption
- Treating off gas without an open flame ensures safe and reliable operation
- Less rotating equipment is required and continuous steady-state operating conditions are maintained, thus lowering equipment maintenance and lower cost
- No thermal NOx is generated, producing no secondary pollutants
- Highly automated system achieving autonomous operation
- The oxidation of VOC's takes place at much lower temperature compared to conventional thermal oxidizer, and for the thermal resistance requirement of the equipment is lower
- Compact and highly integrated designs allows for skid-mounted installation
- Catalytic oxidizer unit is widely applied in the treatment of VOC's in off gas, odor gas, and nitrogen seal gas



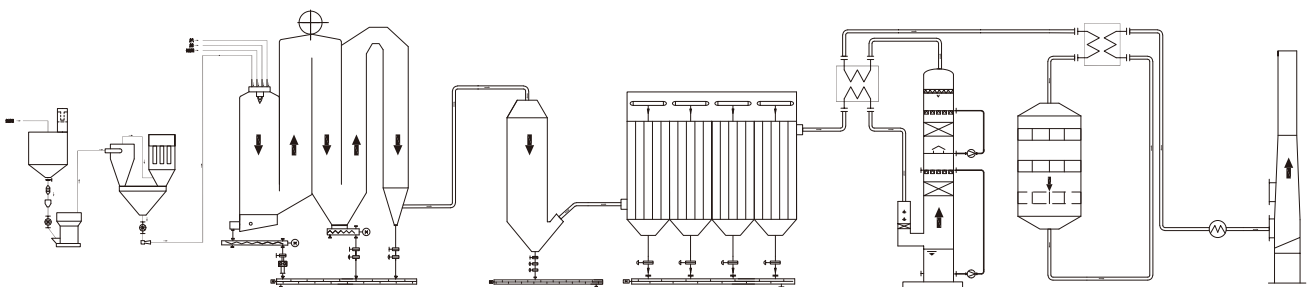
## Integrated incineration boiler

### Wanhua Chemical (Fujian) Isocyanate CO., LTD Waste-to-Energy (WtE) Unit

- Year of Startup: 2022
- Location: Fujian, China
- Capacity: Solid tar & waste liquid 22'000 t/a + off-gas 170'000'000Nm<sup>3</sup>/a



- Suited for incineration of waste liquid and off gas with high calorific value generated by petrochemical industries
- Co-disposal of solid tar, powdered activated carbon and high salinity wastewater
- Maximization of energy recovery and achieving high thermal efficiency while complying with national regulations and emission standards
- Less facility area required thanks to compact design, less material consumption and investment input as compared to conventional incineration system
- Achieving low NO<sub>x</sub> combustion and lowering NO<sub>x</sub> emission as compared to flue gas recirculation system



Pre-treatment

Integrated Incineration Boiler

Flue gas treatment system

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