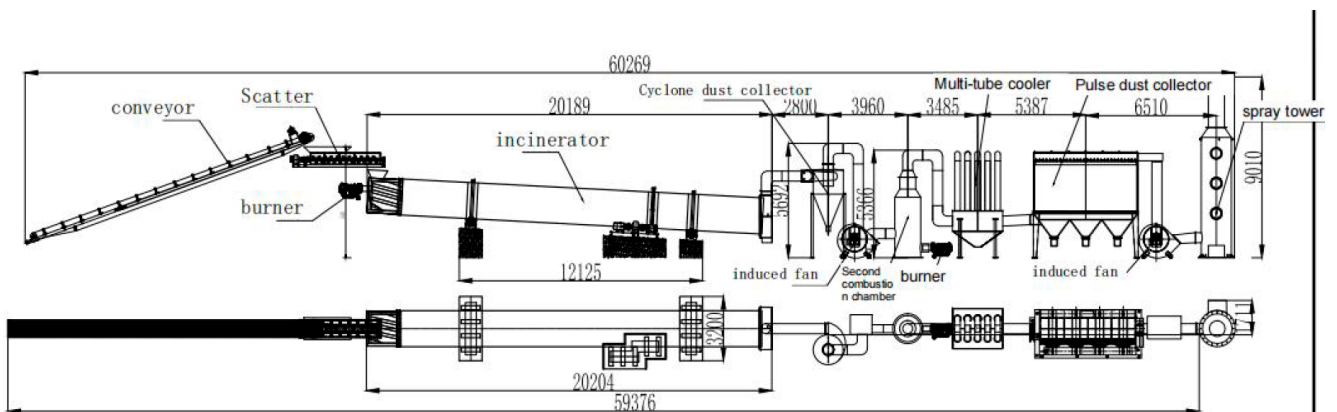


**Thermal cleaning unit by incineration of oil  
sludge, chemical (catalysts) and other waste,  
Model: TOSTU-1820**

# User Manual

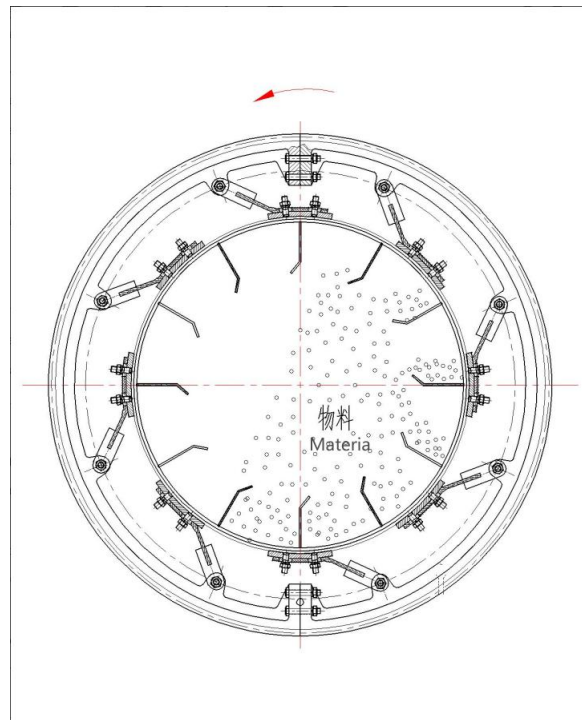


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## 1、 Working principle:

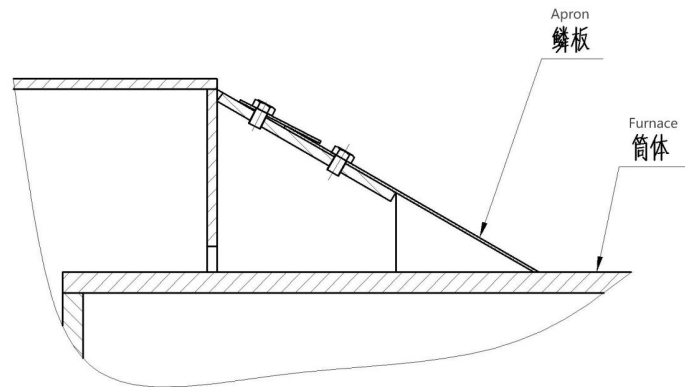
Moisture-laden material is fed into the machine's feed port and pushed in by spiral blades at the feed port. Once inside the cylinder, the lifting plates inside the cylinder, driven by the rotation of the cylinder, disperse the material, allowing the dried material to fully come into contact with the circulating hot air, achieving the desired drying effect. The cylinder is installed at a certain angle, so the dried material, after being lifted, moves toward the lower discharge port.



The cylinder rests on two roller assemblies. A pair of retaining wheels are also installed on the roller assembly near the discharge end to prevent axial movement of the cylinder during rotation.

## 2、 Performance characteristics:

1. Operating parameters can be adjusted according to the properties of the material, ensuring a stable, full-section curtain of material within the dryer drum,



ensuring more efficient heat exchange.

2. The dryer has strong overload resistance, high throughput, and low drying costs.

3. New feeding and discharge mechanisms eliminate drum drying problems such as blockage, discontinuous feeding, uneven feeding, and backflow, reducing the load on the dust removal system.

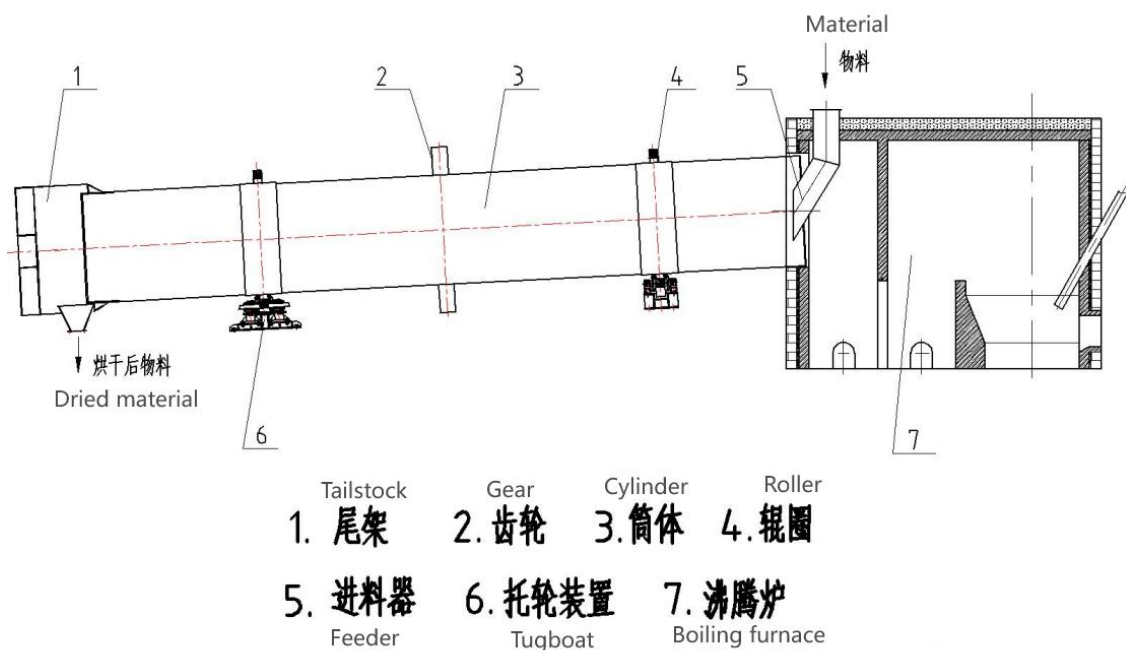
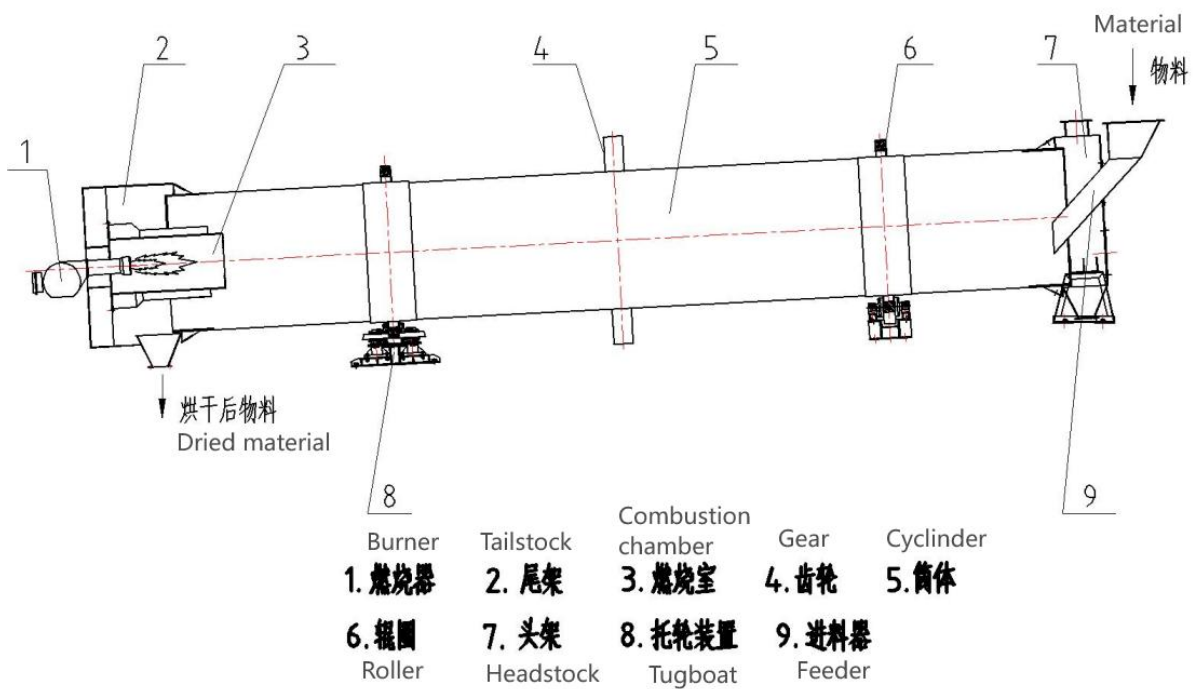
4. The connection between the feeder and discharger and the drum drum utilizes scale plate (or graphite block) seals, providing excellent sealing and significantly reducing heat loss within the drum, thereby directly reducing fuel consumption.

5. This equipment utilizes a countercurrent drying method, with flue gas entering the dryer at the discharge end. This utilizes high-temperature flue gas to achieve a high evaporation intensity.

6. The use of a new burner meets customer needs, allowing diesel and natural gas to be used as fuel, overcoming the limitations of previous fuel options.

### 3、Structural characteristics:

It is mainly composed of feeder, head frame, cylinder, roller ring, gear, supporting roller device, tail frame, combustion chamber (or boiling furnace), burner, fan and other components.



Richard

河南豫顺鑫科技重工有限公司  
Henan Yushunxin Heavy Industry Technology Co., Ltd.

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The roller assembly supports the bobbin's rotation. It has two rollers, each with two roller seats. Near the discharge end, there are two retaining rollers, with an adjustment screw between them. After the bobbin is running, if the gap between the retaining roller and the roller ring exceeds 10 mm, it should be adjusted.

#### **4、Equipment installation and operation:**

##### **(1) Equipment installation:**

In addition to complying with the technical requirements in the drawings, dryer installation must also adhere to the following requirements.

1. Pre-installation Parts Inspection: Before installation, perform a quality inspection on key parts, including the drum, gears, rollers, and transmission components. Any damage or deformation should be repaired as required.

2. Cleaning the Joint Surfaces Before Assembly: First, clean the joint surfaces of the parts to be assembled, especially the roller and gear surfaces. Assembly can proceed only after cleaning.

3. Installation Standards for the Large Gear: First, inspect all joint surfaces for signs of impact. If any are present, clean the mating surfaces between the large gear and the drum. Bolt the two halves together as required, install the large gear on the drum, rotate the drum, and check the radial and axial runout of the large gear until alignment is satisfactory.

4. Installation of the Pinion, Reducer, and Motor: Adjust the meshing clearance between the large and small gears to meet the equipment's specified requirements based

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on the installed large gear. Secure the small gear, reducer, and motor. 5. Check the fit of the chock wheel and roller ring: Check that the chock wheel and roller ring fit properly (ideally, the bottom of the chock wheel should be flush with the outer diameter of the roller ring). If not, adjust the fit using the adjusting bolts on the outside of the roller seat.

6. Rotational direction of the two gears: Rotate with the meshing teeth facing upward. Failure to do so may damage the anchor bolts or the foundation.

7. Check the tightness of the fastening parts: Before the trial run, check all connecting bolts for looseness. Tighten and reinforce if necessary, and ensure regular inspections.

8. Install the gear cover, ensuring a consistent distance from the gear edge.

9. After all the above work is completed, perform a secondary grouting operation. Grouting requirements should comply with the relevant civil engineering design specifications. Installation review and commissioning related to grouting should be performed simultaneously to ensure the quality of the dryer installation.

(Note: If the material has different wetness levels, the user can use a speed-controlled motor to adjust the drum speed to maintain product quality.)

## (2) Equipment operation:

After the dryer is installed, it must be tested with no load and full load, and can only be put into normal production when everything is confirmed to be normal. The user unit shall formulate an operation, maintenance and repair system based on the

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specific situation of the factory to ensure the normal use of the equipment.

The following points should be observed during equipment operation:

1. Check that the voltage meets the machine's requirements;
2. Check that the roller's rotation direction is correct;
3. Start the drum first, and only start production when it is operating normally. Start with a small amount and then gradually increase the amount until it reaches normal operation;
4. Prevent hard debris from entering the gear teeth, causing unnecessary production stoppages and losses;
5. Regularly check for loose fasteners and lubrication areas for lack of oil;
6. Pay attention to safety during production and implement safety measures;
7. During extended downtime, be sure to clean the drum thoroughly, remove any debris around it, and install rain protection equipment.
8. Startup Sequence:
  - a. Start the dryer and allow it to operate normally.
  - b. Feed a small amount of material and gradually increase the flow to normal.
9. If shutdown is required, first stop feeding material, then shut down the dryer.

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## 5、Equipment maintenance and care:

1. The drying efficiency of a dryer depends largely on the energy level of the combustion chamber or heat source. Therefore, during dryer operation, special attention must be paid to the combustion chamber, blower, and dust removal equipment.

2. One hour before starting the dryer, ignite the furnace and inspect all ancillary equipment, including the dryer's transmission and support components. Ensure they are in good working order, functioning properly, and are reliably lubricated before operation:

a. Before ignition, inspect the burner, feeder, combustion chamber, dust removal equipment, blower, regulating valve, etc.;

b. Before starting the dryer, inspect the fuel, tools, transmission and support components, and lubricate all bearings and friction surfaces.

c. The dryer startup procedure is to first start the dryer's transmission motor, then the wet material transport equipment, and finally the dry material transport equipment, ensuring a continuous and uniform operation.

3. During dryer operation, regularly check the temperature of all bearings. The temperature rise must not exceed 45 ° C. Gears must operate smoothly, and the transmission, support, and drum rotation should be free of noticeable impact or vibration. Regular equipment inspection, maintenance, and servicing should also be performed. This includes:

a. All bolts and fasteners must be secure;

b. Regularly check the contact between the rollers, retaining rollers, and support

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rollers;

c. All parts must be properly lubricated according to the table below.

Lubrication Points	Lubricant Material	Lubrication Time and Cycle
Motor	Sodium-calcium grease	6 months
Reducer bearings	Calcium-based grease	6 months
Reducer gears	10 # oil	Change every 3 months
Transmission bearings	Calcium-based grease	2 times/shift
Support bearings	Sodium-calcium grease	6 months
Gear bearings	Sodium-calcium grease	6 months

## 6、Troubleshooting:

1. The moisture content of the dried material exceeds the specified value. To correct this, control the dryer's production capacity and increase the heat supply.

2. The roller ring swings relative to the drum. This is caused by a lack of clamping on the sides of the roller ring's concave joint. To correct this, use a spacer to ensure even and proper clamping between the roller ring and the concave joint.

3. The meshing clearance between the large and small gears increases. This is caused by: a. Wear of the supporting roller; b. Wear of the retaining wheel; c. Wear of the small gear. To correct this, turn or replace the rollers according to the wear. Alternatively, install the rollers in reverse or replace them in pairs.

4. Drum vibration is caused by: a. Damage to the connection between the pulley assembly and the base. To correct this, adjust the fastening points to ensure they are in

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the correct position. b. Wear on the sides of the roller ring. To correct this, turn or replace the rollers according to the wear severity.

## 7、Wearing parts:

1. Gear
2. Support roller
3. Bearing
4. Eight-hole washer

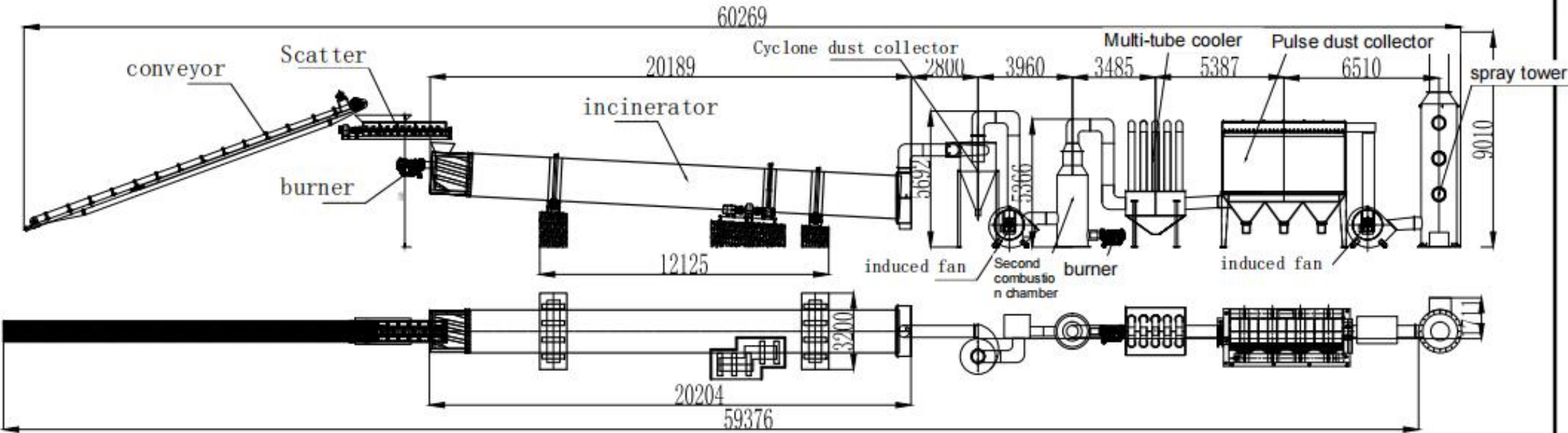
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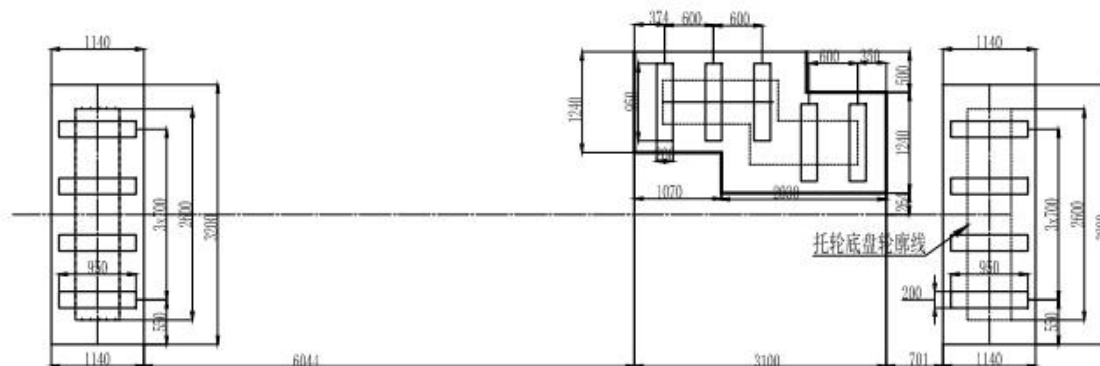
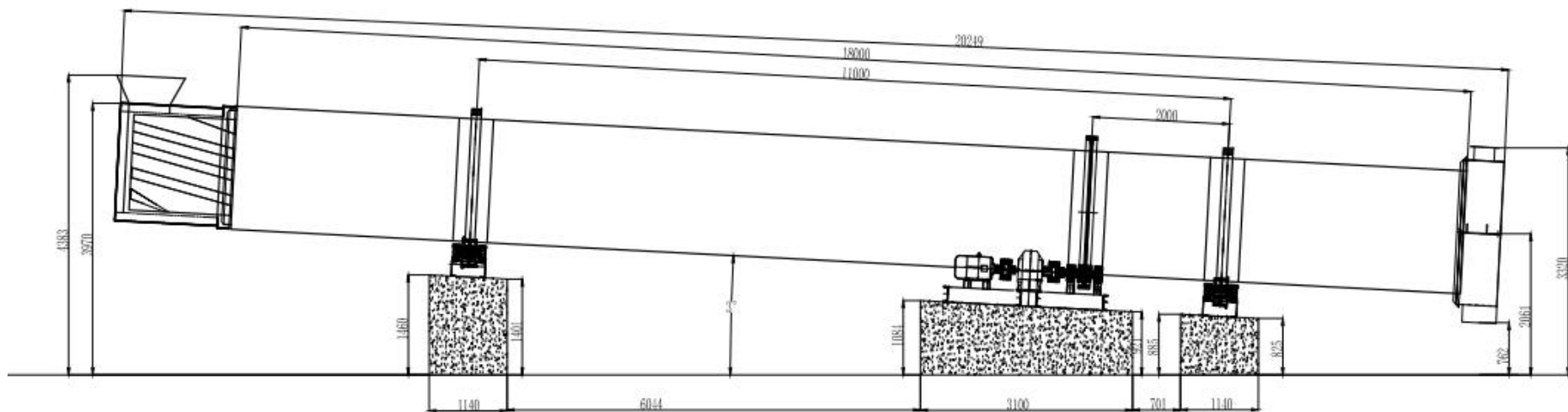
## **8.The TOSTU-1820 is suitable for treatment of:**

1. Oil sludge, drilling mud waste, drilling fluid, oily water; sand and/or soil and/or clay mixed with oil sludge and drill cuttings, oil based fluid, liquid water based mud (WBM) waste containing chemicals, thick water based mud (WBM) waste containing chemicals, sand mixed with alkaline water and all other waste items, excluding the waste classified as: Class 1 - Extremely Hazardous Waste;
2. Spent synthesis catalysts included in the process of neutralization (preliminary crushing of large-fraction waste and waste in granules at the molecular level for intensive combustion);
3. Spent activated carbon contaminated with oil products and other pollutants; contaminated carbon, oil and other filters; waste mineral and other oils, including motor, hydraulic, compressor, turbine, cutting and other oils and diesel fuel waste, as well as waste diesel fuel, other spent catalysts, sorbents, filter materials and fibers, waste synthetic and semi-synthetic oils;
4. Residues of waste and sewage water, organic waste (pre-grinding), sawdust and wood shavings and all other waste, with the exception of waste related to "Class 1 - Extremely hazardous waste";
5. Spent synthesis catalysts, chemical reagents and other materials used in various chemical industries, representing waste: synthesis of gasoline, urea, natural gas, carbon dioxide (CO<sub>2</sub>), argon, nitrogen, ammonia and the like, as well as those used in the production of acids, alkalis, solvents and other materials.

**Note: Waste with corrosive and acidic properties is neutralized prior to processing using chemical reaction using appropriate methods.**

## The drawing of TOSTU-1820





## Power consumption

Conveyor 5.5kw\*2

Induced draft fan 30kw\*1+37kw\*1

Double-axis scattering machine 22kw\*1

Water pump 4kw\*1

Dryer 22kw\*1

Total consumption: 126kw

## Gas Cleaning and Emission Standards

### ① Heat Exchange and Cooling

The flue gas is first cooled to below 60°C via an air- or water-cooled heat exchanger to prevent subsequent volatilization of the scrubbing solution and to recover some of the excess heat.

### ④ Physical Adsorption (Dust Removal/Odor Removal/Deep Purification)

The flue gas finally enters a physical adsorption tower, which contains at least two independent adsorption units and is filled with:

Lower layer: Pall rings (for water removal and uniform airflow distribution)

Middle layer: Zeolite molecular sieve (for water removal and partial NO<sub>x</sub> removal)

Upper layer: Activated carbon (for removal of residual organic matter, odor, and trace heavy metals)

### ⑤ Emission Targets

After the above treatment, typical emissions can reach:

NO<sub>x</sub> ≤ 135 mg/m<sup>3</sup>

SO<sub>x</sub> ≤ 35–48 mg/m<sup>3</sup>

Dust ≤ 9 mg/m<sup>3</sup>

Richard