

Φ3560 Rotary kiln

Instruction Manual

Anhui Cemine Machinery Co.,Ltd.

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I. Technical performance

Inner diameter and length of rotary kiln barrel

Inner diameter Φ : 3.5m, length: 60m

Slope: 3.5%

Support bar: 3 span

Design output: 20-26t/h

Rotational speed: Normal (0.392-3.92r/min)

Main gearing

Motor type: ZSN4-315-2

Motor output power: 250kw 440V

Motor rotational speed: 100-1000r/min

Speed reducer type: ZSY560-31.5-VI

Auxiliary devices

Auxiliary motor type: Y200L2-6

Auxiliary motor power: 22kw

Total weight of rotary kiln: (including the weight of such metals as motor and speed reducer) 310.26t

II. Brife introduction of structure and operational principle

This rotary kiln is a new type of dry process rotary kiln whose barrel is made of rolled steel plates. With an inner diameter of 3.5m and a length of 60m, the barrel is inside mounted with firebricks. At an angle of 3.5% with the horizontal line, it is supported by three belting leathers on three supporting devices, with a big ring gear fixed at the centre of the barrel. The turn of the barrel is made through motor---speed reducer---pinion as well as the teeth joining of gearwheel and pinion.

Materials enter the end of the rotary kiln---the high part of the barrel---and go into the kiln through the tremie pipe. Because of the slant of the barrel and the slow turn, the materials turn around a circle on one hand and move toward the lower end on the other hand, being burnt into clinker by disintegrating, burning, cooling and other process engineering, let out through the lower end of the barrel and go into the cooling machine.

The fuel is sprayed into the kiln by the spray coal device of the kiln head. The exhaust gas after burn is blowed out by air-exhausting machine of the kiln end and go into the atmosphere through the chimney after heat exchange with materials.

Compared with common rotary kilns, this klin has such features on the

structure:

1. The whole kiln has only three supports, with a rather large diameter between each one, which greatly reduces the weight of the device and the manufacturing of components, and more easily ensures that the contacting surface of supporting wheel and rotary kiln is parallel with the axis of the barrel when installing.

2. The wheel band of the barrel adopts a rectangle structure, so that makes the manufacture convenient. On the other hand, the rectangular wheel band is more durable than that of box section shape within the run time. The distance between wheel band and barrel wear plate is different according to the extent of heat expansion. The wheel band will bind closely on the barrel, which gets heated and expanded when the kiln runs, thus enforcing its rigidity.

Spray coal device has an electric removable unit, which could make coal pipe move forward or back. By using handle wheel we could adjust the pistol of spray pipe to swing 1 degree upward, downward, leftward or rightward, so that it can meet the demand under different situations.

III. Installation requirement

1. Basic line

Measure the length of every part and section first, then consider the distance between connecting points and correct drawings accordingly.

Draw basic lines: Firstly, draw the horizontal reference line on the basic profile (commonly 1 meter higher than the ground), which is used as the standard height and original position of the device; Secondly, set up transversal and longitudinal central guide boards (4 ones each support) and reference points (1 each support) on the profile. The standard height deviation of boards and points could be no more than $\pm 0.5\text{mm}$; Thirdly, with centre point of the central guide boards on kiln head and end as the standard, find out the centre point of every central guide board. The allowable deviation should be no more than 0.5mm ; Finally, draw the transverse central distance (begin from the profile with blocking-wheels to two ends) according to the size on the corrected drawings. The allowable deviation of transverse central distance between two adjacent profiles should be no more than 6mm .

2. Installation of support device

(1) The installed base should meet the following requirements:

The allowable deviation of longitudinal centerline of the base no more than 0.5mm

The allowable deviation of central distance between two adjacent bases no more than $\pm 1.5\text{mm}$

The allowable deviation of central distance between the first and the last base no more than $\pm 6\text{mm}$

The allowable deviation of standard base height of two adjacent spans no more than 0.5mm

The allowable deviation of standard base height of the first and the last span no more than 2mm .

The allowable deviation of manufacturing surface inclination of the base no more than 0.05mm/m.

(2). When supporting wheels and bearings have been set up, the distance from the longitudinal centerline of the base to that of either supporting wheel should be the same and the allowed deviation could be no more than 0.05mm; The surface inclination of each supporting wheel should be the same and the allowed deviation could be no more than 0.05mm/m; The centre link of top surfaces of two supporting wheels at the same span should be horizontal and the allowed deviation could be no more than 0.05m/m; The standard height of top surface centre of each span should be the same as that of base surface centre of each span on the corrected drawings. The allowed deviation of two adjacent spans should be no more than 0.5mm. That of the first and the last span no more than 2mm.

3. Installation and welding of the barrel.

(1). The abutting joint of each part and section should be cleared of flash, burrs, paint, rust and other dirt before abutting. Any uneven place should be dealt with ahead of time.

(2). Check both of the abutting joints of each section of the barrel. The allowed deviation of the circumference should be no more than 5mm and that of ovality less than 4mm.

(3). Measure the inner diameter of wheel bands and the outer diameter of wear plates of each span. Calculate the distance between them and see if it meets the requirement.

(4). Weld some abutting plates (12-16 ones each joint) before welding barrels and set up some connecting bolts on them. Insert 8 to 12 thin wear plates which are suitable for adding a thickness of 2 to 3mm and make the distance around the abutting joint even. The abutting plates and the barrel should attach each other closely. Make the joint straight and tighten connecting bolts.

(5). Check the axis of the barrel. The radial movement or displacement of the barrel should be no more than 5mm at barrel head and end, no more than 2mm at ring gears and no more than 8mm at other places.

(6). When welding the barrel, we could seal the inside by hand and adopt automatic or manual welding for the outside. If automatic welding is adopted, a welding wire of about 0.8A is needed. If the other is adopted, the quality of the welding rod used should equal to that of JBT4251.

Make sure the welding rod is 100 percent dry. Keep the rod under a temperature of 180-250°C for 2 hours before using. Do not weld in rainy, windy or snowy days. Take some measures when the welding is done in a low temperature (under 3°C). The groove should be kept warm after the welding. Do not begin welding until the sunset if the barrel is exposed under the sun and the barrel becomes curved because of a sharp difference of temperature on its two sides. The points of quenching of arc could not overlap each other.