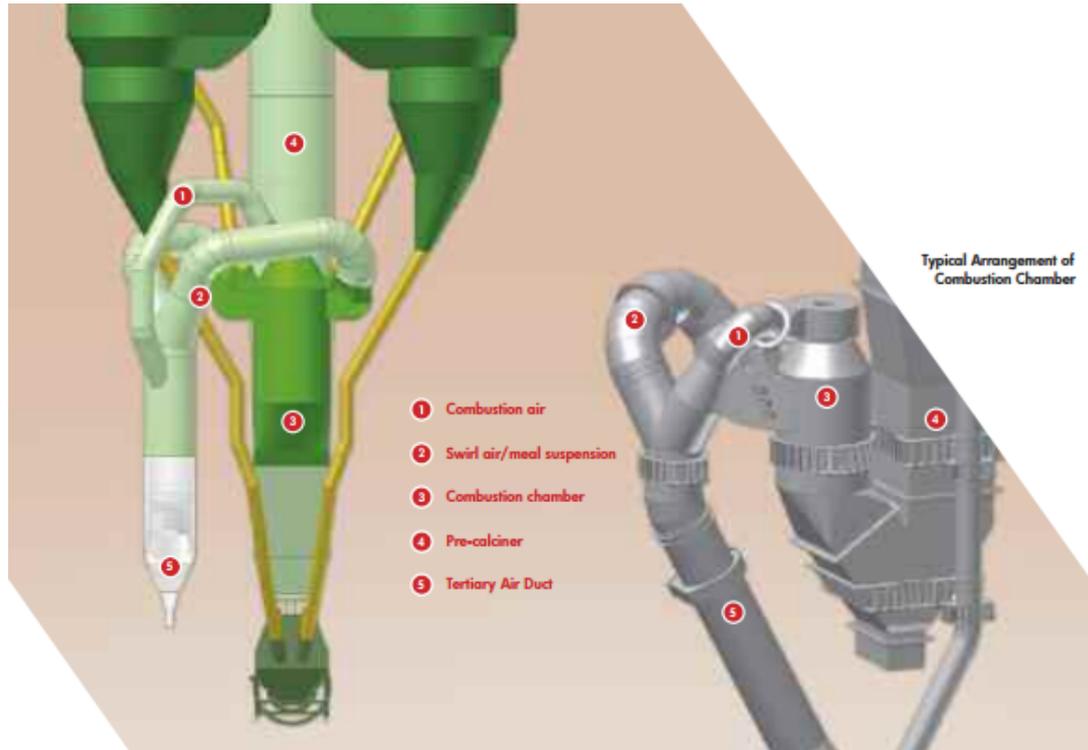


## Great Wall Burning Technology

### Great wall Combustion Chamber

The advantage of the Combustion Chamber is that the ignition takes place in pure air at high temperatures ( $\geq 1,200^{\circ}\text{C}$ ). The downdraft burner, positioned at the top of the burning chamber, can be designed for various fuels (gaseous, liquid, solid).



- Mixture of coarse refuse derived fuel can be fed vertically through the center channel of the burner. Hence, the fuel particles enter the chamber by gravity forces.
- Pulverized fuel is blown into the chamber via an annular gap.
- Liquid fuels are fired with lances at the circumference of the burner
- If required, a startup burner can be integrated.
- The flame shape can be adjusted by setting the swirl air pressure. The outer jacket is protected by a small amount of cooling air.
- The temperature of the combustion chamber can be controlled by the dampers of combustion air and swirl air.

Great -Wall Calciners are designed as suspension tube calciners

to ensure:

1. complete burn-out of the fuel,
2. optimum heat transfer between fuel and raw meal,
3. high calcination rate up to 95 percent.

4. an even distribution of raw meal, fuel and combustion air across the entire great wall

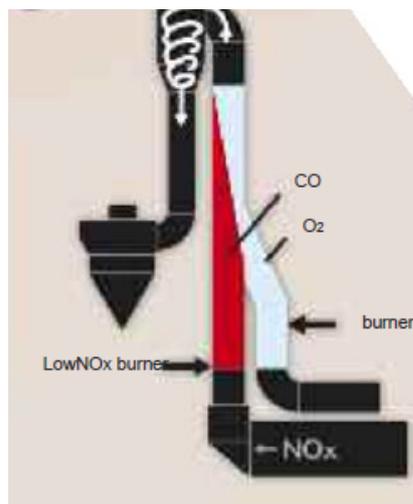
### Great -Wall Calciner System

- A. Modular set-up
- B. Suitable for secondary fuels
- C. Complete burn out
- D. Flexibility
- E. High calcination rate

The standard calciner for oil and gas is the compact swirl chamber. LowNO<sub>x</sub> is the standard calciner for using solid fuels. Both calciners have proved their capabilities of reaching emission limits of worldwide legislation without the use of additives. The reduction of NO<sub>x</sub> emissions in the LowNO<sub>x</sub> calciner is based on the principle of “continuous staged combustion” and reasion level (best available technology )

Meal and fuel are fed into both parallel gas flows. In the LowNO<sub>x</sub> zone, a portion of the fuel is burned with the kiln gases generating a reducing atmosphere zone which lowers theNO<sub>x</sub>content of the kiln waste gases.

### Great wall LowNO<sub>x</sub>



- staged combustion
- low cost NO<sub>x</sub>-reduction without additives (SNCR process)
- high efficiency and flexibility
- >40 references
- BAT “Best Available Technique“
- Emission level: <500mg NO /Nm with gas oil, lignite and most kind of coals.

### Great wall grate cooler technology:

Great wall grate cooler is new energy-saving thermal clinker cooling equipment, using international advanced flow control technology, relying on advanced thermal process to continue ongoing optimization improvements. Compared with the traditional cooler, it can increase production by 20% and reduce heat consumption by more than 10%.

#### State of the art modular concept

The modular concept: The mechanical design of the clinker cooler is clinker cooler is based on modular components. This approach ensures easy adaptation of client-specific needs and requirements. By using this modular approach, assembling and

installing the cooler is very straightforward. This helps to keep down costs and enables easy upgrading. Maintenance aspects reducing maintenance costs have been the most important requirement for the development of the new cooler. The whole concept has been designed with the objective of allowing for a period of at least two years without any maintenance work. Grate plates are no longer wear parts. There are no cast wear parts. Only sealing related parts are to be checked and eventually replaced. Conclusion From the beginning of the design phase to the first installation, it was the outstanding ambition of the specialists at KHD to find new solutions for all of the requirements of a clinker cooler. The result is nothing less than a truly new concept in clinker cooler technology. Clients' requirements, focusing on low maintenance and investment costs as well as sustained high recuperation efficiency and plant availability, are met with the clinker cooler to a hitherto unrivalled degree.

### **Innovative development of Great wall grate cooler technology**

This new cooler combines the best solutions for each of the two fundamental, mutually interacting functions a clinker cooler has to accomplish:

1. Clinker conveying is based on the „walking floor” principle.
2. Aeration is controlled by self-regulating valves.

Advantages: Better than the others:

High heat recuperation:

- Decoupling of wear effects from aeration
- Wear – if any – will not influence aeration and heat transfer
- Self-regulating aeration
- Sudden changes within the clinker layer are compensated automatically
- No more fountains – optimum aeration on the whole grate

Low wear:

- No more perpendicular pushing surfaces that would be subject to wear
- (Almost) no more relative movement between clinker granules and metal parts
- No cast wears parts

Easy maintenance:

- No maintenance during the production year
- No exchange of spare and wear parts for at least two years