The advantage of the Combustion Chamber is that the ignition takes place in pure air at high temperatures (≥ 1,200 °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 (RDF) 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 start up 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.
Burning Technology
PYROCLON® Calciner

The outstanding characteristic of the PYROCLON® Calciner is the intensive mixing of preheated raw meal, fuel and combustion air. Calcination of the raw meal takes place at a temperature of approximately 870°C. In case of ideal mixing, any energy unit additionally brought into the PYROCLON® Calciner will increase the degree of calcination instead of the temperature. During normal operation, the fuel portion burnt in the PYROCLON® Calciner ranges between 50 and 60 percent of the total fuel demand.

KHD Humboldt Wedag PYROCLON® Calcineres are designed as suspension tube calciners to ensure:
• an even distribution of raw meal, fuel and combustion air across the entire PYROCLON® section,
• complete burn-out of the fuel,
• optimum heat transfer between fuel and raw meal,
• high calcination rate up to 95 percent.

The standard calciner for oil and gas is the PYROCLON®-R with PYROTOP® compact swirl chamber. The PYROCLON®-R LowNOx with PYROTOP® 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 NOx emissions in the LowNOx calciner is based on the principle of “continuous staged combustion” and reaches the “BAT” emission level (best available technology).

Meal and fuel are fed into both parallel gas flows. In the LowNOx zone, a portion of the fuel is burned with the kiln gases generating a reducing atmosphere zone which lowers the NOx content of the kiln waste gases.

The reducing gas strand from the LowNOx zone is united with the oxidizing gas strand and later intensely mixed in the PYROTOP® compact swirl chamber. Due to this turbulent mixing, the remaining CO oxidizes to CO2 with the oxygen present in the gas stream.

To achieve a highly efficient thermal utilization for less ignitable fuels, e.g. petcoke or anthracite, the calciner can be easily extended to increase the retention time to more than five seconds.

The use of lumpy secondary fuel or fuels characterized by poor ignitability becomes possi by additional installa -

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