PREHEATER OPTIMIZATION IN THE CEMENT INDUSTRY

PRODUCT: PREHEATER Optimization

ISSUE DATE: March 2006

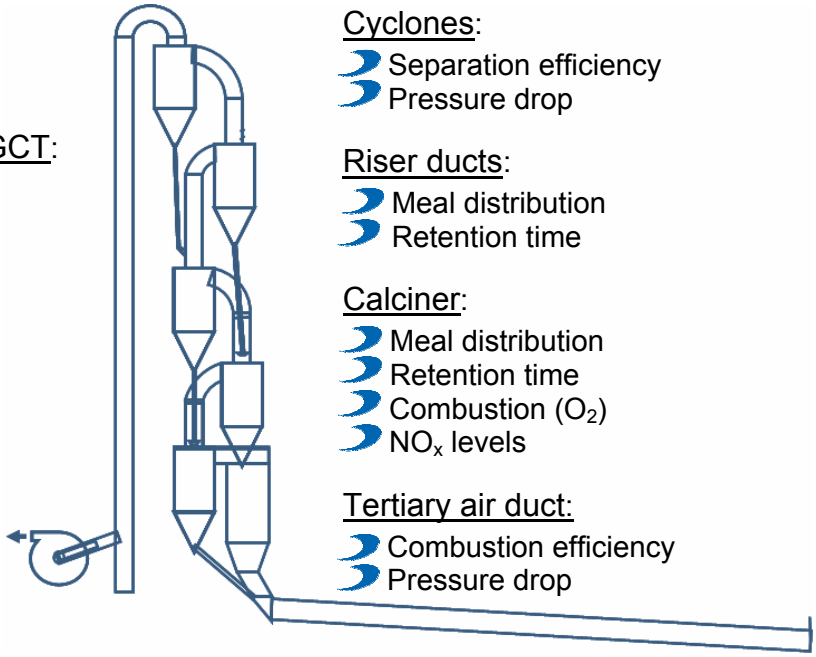
ADVANTAGES of preheater modification

- Improved kiln operation efficiency.
- Reduced production costs.
- Environmental protection.

TARGETS of preheater modification

- Increase of production capacity.
- Reduction of specific heat consumption.
- Reduction of specific power consumption.
- Compliance with more stringent emission regulations.

PREHEATER POSSIBLE „BOTTLE NECKS"



Down comer duct and GCT:
- Pressure drop

ID fan:
- Fan capacity

Cyclones:
- Separation efficiency
- Pressure drop

Riser ducts:
- Meal distribution
- Retention time

Calciner:
- Meal distribution
- Retention time
- Combustion (O_2)
- NO_x levels

Tertiary air duct:
- Combustion efficiency
- Pressure drop

OPTIMIZATION CAN BE ACHIEVED BY:

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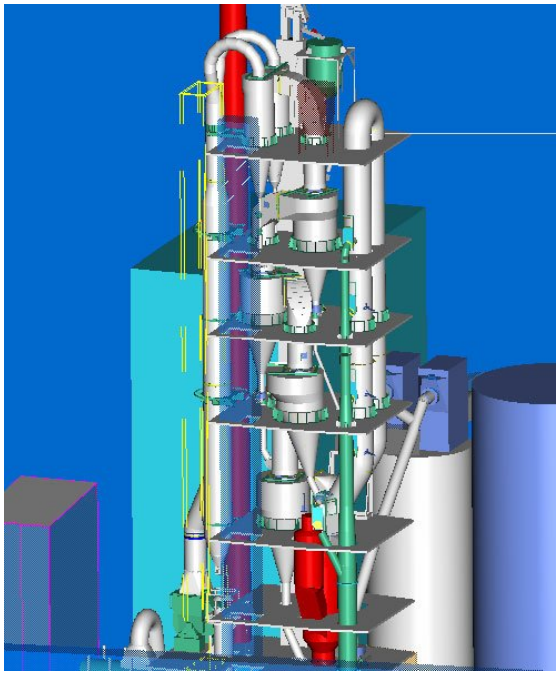

- Replacing or modifying existing top stage cyclones (installing HURRICLON® or HURRIVANE®)
- Installing HURRIVANE® in 2nd stage cyclones
- Modifying existing cyclone geometry, mainly inlet portion and inlet spiral
- Modifying dip tubes in existing cyclones
- Modifying riser ducts
- Modifying or installation of new calciner
- Replacing dispersion/splash boxes
- Modifying flaps (double pendulum)
- Modifying down comer duct (hot gas duct)
- Modifying conditioning tower
- Modifying tertiary air duct
- Modifying kiln inlet chamber

(In most cases only some of above mentioned modifications are necessary to reach the target.)

EXAMPLE OF INSTALLATION

Alhandra plant (kiln 7)

CIMPOR ALHANDRA - PORTUGAL

SITUATION BEFORE:
5 stages preheater with precalciner

Clinker production:	2,900 t/d
Pressure drop of top stage:	17 mbar
Pressure drop of 2nd stage :	12 mbar

INSTALLED:
2 units HURRICLON® HU 3400 CT in top stage
2 units HURRIVANE® Ø2200 mm in 2nd stage

GUARANTEED:

Top & 2nd stage pressure drop (each):	10 mbar
Increase of production:	+200 t/d

REALIZED:

Pressure drop of top stage:	**9.1 mbar**
Pressure drop of 2nd stage:	**9.9 mbar**
Increase of production:	**+347 t/d**
Separation efficiency:	**93%**

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