ENGINEERING
YOUR SPRAY SOLUTION

VarioCool® SYSTEM
REDUCTION OF AVERAGE EMISSION LEVEL BY 7.5% WITH NEW TWIN-FLUID INJECTION SYSTEM

Industry: Cement plant
Customer: Republic Cement Services, Inc.
Plant: Teresa Plant, Rizal/Philippines
Application: Kiln gas cooling tower revamping

REPUBLIC
A CRH-ABOITIZ COMPANY

INITIAL SITUATION AND PROJECT TASK

The gas cooling tower in the cement plant in Teresa (Philippines) was equipped with a Lechler spillback system. The former injection system was already operating at its limit and would not be able to handle the higher gas flow rates that are linked with the imminent capacity increase.

As a result of the modification from upstream and downstream plant components, the process conditions have changed. Due to the new waste heat recovery, the gas cooling tower inlet temperature is lower. To further increase dust separation, the inlet temperature of the electrostatic precipitator needs to be lowered.

As the evaporative cooler is to remain in place, finer droplets are required to evaporate within the existing evaporation distance. The gas cooling tower should therefore be equipped with a Lechler twin-fluid injection system.

PROCESS DATA (PER DUCT)

	Case 1	Case 2	Case 3
Gas volume flow	297,000 Nm^3/h wet	247,500 Nm^3/h wet	247,500 Nm^3/h wet
Dust	60 g/Nm^3 wet	60 g/Nm^3 wet	60 g/Nm^3 wet
Gas temperature inlet	260 °C	260 °C	300 °C
Gas temperature outlet	120 °C	120 °C	260 °C
Gas velocity	4.4 m/s	3.7 m/s	4.0 m/s
Injected water flow rate	24.6 m^3/h	20.5 m^3/h	5.5 m^3/h
Tower diameter	6,800 mm	6,800 mm	6,800 mm
Evaporation distance	27.0 m	27.0 m	27.0 m
Nozzle type	Twin-fluid *VarioJet*® II-6	Twin-fluid *VarioJet*® II-6	Twin-fluid *VarioJet*® II-6
Spray angle	60°	60°	60°

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LECHLER SOLUTION

Customer-specific *VarioJet*® nozzle lances

- Fast and simple installation and removal of the nozzle lances in or out of the cooling tower thanks to T-profile on nozzle lance and guide rail in mounting tube.
- Frequency of maintenance has been reduced.
- Evaporation works properly, only 0.88% dust humidity at outlet temperature of 120 °C.

VarioCool® valve skid unit with SmartControl software

- Ease of operation due to automatic start-up and changing operating conditions functionality with Lechler SmartControl.
- Option for remote monitoring.

Lechler installation support and training

- Short commissioning period.
- Detailed training of the operating and maintenance personnel during commissioning.

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„With the VarioCool system we achieve a reduction of average dust emission level from 60.2 down to 55.6 mg/Nm³"

Charlito Hayag, Optimization Manager at Republic Cement Services, Inc.

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