

Case Study **Co-processing Waste Materials in Cement Production**

Emissions Monitoring and Reporting (EMR)

Experience at Holcim

BACKGROUND

The Holcim company is one of the leading producers of cement worldwide. Cement production requires considerable amounts of fossil energy to fire the kilns.

According to its environmental policy, Holcim strives to conserve non-renewable resources such as raw materials and fossil fuels.

Relative to cement production, this means use of waste-derived raw materials and fuels. Holcim has started this approach in the early 1980s and today has the highest alternative fuel rate of all cement producers. It has acquired leading edge know-how in alternative fuels preparation (pre-processing) and co-processing.)

In many industrialized countries alternative fuel schemes (including other industries besides cement) contribute importantly to resource conservation. They also contribute considerably to national waste management schemes. Since the cement industry is one of the early industries developing in a national economy, it can thus function of the fuel mix, even if it includes waste-derived materials and, of course, if some expertise is used.

To prove this and to demonstrate the stable quality of cement kiln exhaust gases, but also to the emissions from its plants, Holcim decided to develop and to implement the Holcim EMR program from 2004 in all its cement plants.

HOLCIM'S EMR PROGRAM

Basically it was decided that the program would include the relevant emission components defined in the EU Waste Incineration Directive (EU 76/2000/EC).

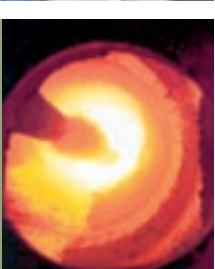
The components – dust, SO₂, NO_x, VOC, often also NH₃ and HCl, as well as O₂ and H₂O (for data evaluation purposes) – are measured continuously with most up-to-date equipment from three selected main suppliers.

The components NH₃, HCl, benzene, PCDD/DF and 12 heavy metals are measured at least once a year by acknowledged (whenever possible) measuring institutes (test houses).

The quality of the continuous measurements is assured by the cooperation of the Holcim companies with the main equipment suppliers in the sectors of maintenance and personnel training.

Holcim's central technical services support the program by constantly updated documentation (EMR manual and 13 guidelines) as well as by ongoing consultancy for the Group plants.

Once a year the respective spot data and yearly averages from the continuous measurements are reported to corporate level in a standardized way by means of the Plant Environmental Profile (PEP) questionnaire.





A measuring team working on a main stack in South Africa

BEST PRACTICE/LESSONS LEARNED

The continuous emission monitoring (CEM) equipment has reached a high technical level of accuracy and reliability. In order to achieve this standard, permanent availability of the equipment (exceeding 90%) must be ensured. This requires systematic maintenance work and, most importantly, the availability of appropriate fuels, spare parts and trained personnel both at the supplier and the cement plant end. With regard to the once a year measurements, the recommendation has been to select a performance test house and then to stick to it, profiting from the test house's progress on the learning curve for even more reliable data.

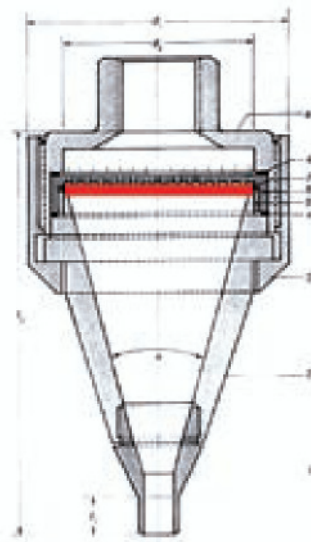


Continuous emission monitoring equipment in place

FURTHER DEVELOPMENT

At the end of 2005, 90% of the Holcim stacks earmarked for EMR, had been equipped with respective equipment and 90% also supplied, in most cases, complete and reasonable, data from spot measurements.

New production lines will incorporate the entire EMR infrastructure including e.g. a well designed measuring platform on the main stack from the very beginning. Newly acquired plants are given three to four years to live up to Holcim's EMR program.



Measuring head with plane filter for low dust emission rates

REFERENCES
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