

## **De-dusting the cement industry**

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### ***Introduction - Mapei once again presents innovative technologies for the Cement Industry***

In 2012 the worldwide cement production is estimated to have reached 3,6 billion tons [1] and is bound to maintain steady growth numbers in the upcoming years. The cement industry is clearly taking its place in the new “global economy” scenario where political and physical borders are vanishing and internationalization is pushing companies to maximise efficiencies in order to be able to be competitive and guarantee the sustainability of the business. However, as for many multinational industries, the focus on a local approach remains extremely important; cement plants have to adapt to local legislation and norms, while a good and transparent relationship with the local communities and the local plant personnel are vital for the mere existence and operational continuity of cement manufacturing units.

Dust emissions are often one of the critical points in cement plants, therewith becoming an issue that has to be managed in order to assure the long-term continuity of the cement manufacturing process. Even though dust management has always been a very important topic for the cement industry, with huge investments in the best available filter systems and similar technologies over the past decades, dust-related problems can never be avoided completely due to the characteristics of the manufacturing process and the final product itself.

Recently, Mapei introduced a completely new line of products branded “D-Dust”, dedicated to control dust emissions in the cement industry. These products are specially designed to immobilize dust deposits and dust puffs, which are well known to cause a variety of problems related to the environment, machine efficiency and health & safety . High performance products and excellent quality can be assured thanks to Mapei’s 90 years of experience in the field of polymer-based technologies [2].

### ***Dust – What is the problem all about?***

From a general point of view, complications caused by dust come from two main sources:

- Surface Dust Deposits
- Continuous Dust Puffs

A dust deposit is a layer of fine material in powder form on a surface, coming from the cement manufacturing- and/or handling process or from sources outside the cement plant (sand storms etc.), creating problems when factors like wind or heavy traffic blow the material back up in the air. Dust deposits can typically be found on roads, buildings, rooftops or machinery. Stockpiles can be considered under this category as well.

Continuous dust puffs, on the other end, are related to the (almost) continuous dust emission from the cement- and clinker manufacturing process. For example, puffs can be found in places where material is falling freely from one conveyor belt to another or when there are leaks in pneumatic transport systems.

The main problems caused by dust deposits and dust puffs can be summarized as follows:

- Relationship with the local community
- Internal Health & Safety discussions
- Machine maintenance and down-time issues

The relationship with the surrounding community is often a critical point for cement manufacturers. A cement plant often has to deal with dust-like materials polluting the surrounding areas, which cause high levels of discomfort and might even put at risk the wellbeing of people living there. Reducing dust pollution to a minimum certainly moderates significantly the environmental impact of a cement plant, thus decreasing possible resistance of local communities and making life better and easier for both parties.

Looking inside the premises, we have to deal with internal Health & Safety discussions as well. Dust is an important H&S subject in cement plants and even though a lot has been done to reduce dust formation, emission and dispersion, a cement unit is rarely completely dust free. This creates possible long-term H&S risks for the people working in the plant. For example, problems may occur if people inhale dust particles, when particles are blown into people's eyes or when dust creates slippery surfaces. Moreover, poor visibility due to windblown dust particles is another issue that has to be taken care of.

Another issue of utmost importance is related to the cement plant machinery. A lot of machines with moving and rotating parts are used during the cement manufacturing process and the reduction of the downtime of those machines is high on the priority list. By improving machine performance and reducing failure frequency, operational costs can be optimized. Dust control is mandatory in these cases because the lower the amounts of dust, the higher the machine performance and life-time, generating significant savings in maintenance costs and downtime.

### ***The D-Dust Solution – Mapei tackles the problem!***

In order to provide the cement industry once again with innovative solutions, Mapei recently developed new polymer-based technologies to tackle dust-related issues in the cement industry. In fact, the products of the new D-Dust series have been specifically designed to reduce environmental pollution, H&S risks and machine downtimes by suppressing and blocking dust particles and avoiding they become airborne again.

In order to do so, Mapei used its knowledge and the best available polymer technologies to create solutions based on filming-, coating- and immobilizing principles. By applying a "film" or "coating" on surface dust deposits, for example, particles are immobilized without being blown back into the air again. In case of continuous dust puffs on the other hand, our technology is based on the capacity to agglomerate particles and make them heavier in order to make sure they deposit and do not disperse in the air.

All the polymers and other raw materials used and therefore all products of this product line have been carefully selected in order to be economically sustainable, practical in use, ecologically compatible, invisible, subtle, durable and resistant. Moreover, the D-Dust technology is totally neutral in terms of odor, color and interaction with the material it covers (the compounds do not interfere with the chemical characteristics of the material or the final product it is used in). For example clinker properties and cement quality parameters are not affected at all.

### ***Mapei D-Dust Products***

At present, Mapei offers four different products:

- D-Dust 10 – a rigid filming agent for flat surfaces and stock piles;
- D-Dust 15 – an elastic filming agent for stock piles and coarse materials;
- D-Dust 100 – consolidation agent for surface dust deposits;
- D-Dust 20 – capturing technology for the incorporation of dust particles in water drops in case of continuous dust puff generation.

[1] Cembureau Key Facts & Figures, available on-line at (last access June 2014):  
[http://www.cembureau.eu/sites/default/files/category\\_pictures/World%20production%202012.pdf](http://www.cembureau.eu/sites/default/files/category_pictures/World%20production%202012.pdf)

[2] Vinavil Industrial Polymers is part of Mapei Group: [www.vinavil.com](http://www.vinavil.com)