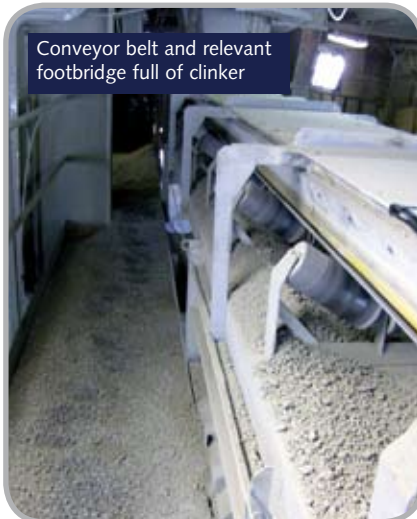


Importance of a clean plant

by Sibia srl, Italy

The cement manufacturing process frequently causes spillages of dust and other materials along the transport, transformation and storage lines. Sibia explains why it is important to keep a cement plant clean and offers its advice on the most efficient ways to do so.



Spillages occur in a cement plant spite of the new adopted technologies and the efforts to maintain and renovate plant machinery. The spilt materials consist of raw materials, additives, fossil fuels, ash and cement itself. In a medium-sized cement plant the estimated average spillage is approximately 15tpd, representing considerable expense for companies in terms of:

- reduced production
- inefficient and non-continuous machinery service
- increased risks of accidents and diseases.

These problems are mainly due to the complexity of the cement manufacturing process, to the wide variety of materials used and last but not least to the dimensions of the plant.

The legal aspect concerning the industrial emissions into the atmosphere must also be taken into account. In this respect the Directive 2008/1/EC states that all manufacturing sites – both new and already existing – must comply with the following:

1. use all appropriate pollution-prevention measures, namely the best available techniques (which produce the least waste, use less hazardous substances, enable the

substances generated to be recovered and recycled, etc)

2. prevent all large-scale pollution
3. prevent, recycle or dispose of waste in the least polluting way possible
4. use energy efficiently
5. ensure accident prevention and damage limitation
6. return sites to their original state when the activity is completed.

In addition to the above, the main cement manufacturers also adopt the ISO 14000 certification that manages the control process and the environmental impact. It provides a framework for the development of an environmental management system and the supporting audit programme.

Nowadays keeping the work environment dust-free and clean is an indispensable reality in every step of the manufacturing and distribution process.

The main reasons to clean a cement plant are:

- recovery of the spread product
- keeping the production line clean and efficient, greatly reducing maintenance costs and extending life of machinery
- reducing risks of breakdowns
- higher safety of the operators by reducing the ratio of accidents and



lowering the risk of dust-related diseases

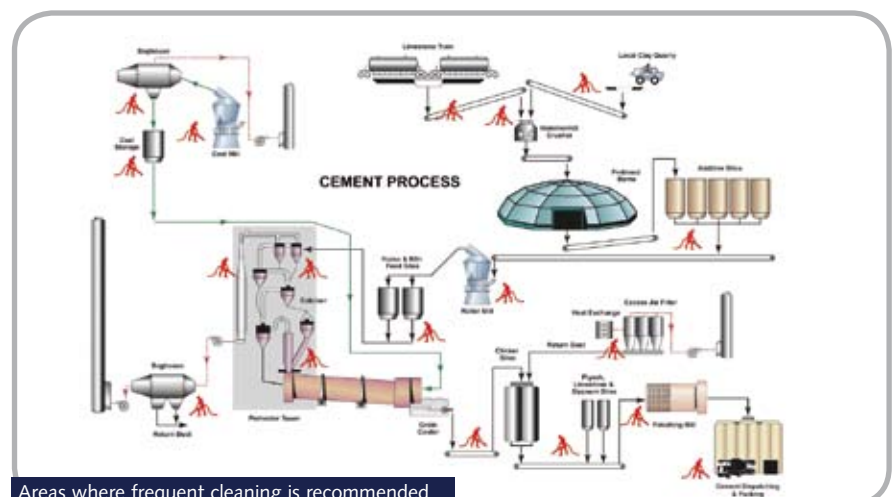
- better environment quality and health
- higher quality of the final product without contamination.

The best way to keep any plant clean is certainly having sealed conveyor lines, a good de-dusting system and of course an efficient industrial vacuum cleaning system.

Industrial vacuum cleaners are being used in nearly every step of the production process.

Benefits of vacuum cleaners

- Reduction of the cleaning time. In comparison with the manual cleaning time, the time is reduced by more than four times.



- Reduction of the number of operators used for cleaning.
- Dust free air. When cleaned manually, a lot of dust is dispersed into the air. Vacuum cleaners remove the product and the dispersed dust efficiently at the same time
- All the vacuumed product is transferred into a container that can be easily transported and emptied into the appointed discharge point.
- With the help of specific nozzles the time of the collection and transfer of huge quantities of material is very short. As an example, by using a 90kW vacuum unit and tools DN 100 it is possible to recover approximately 25t of cement in one hour.

Fixed installations

In a multiple floor environment and large plants it is generally recommended to use fixed cleaning systems equipped with inlets connected near the collection points of the material.

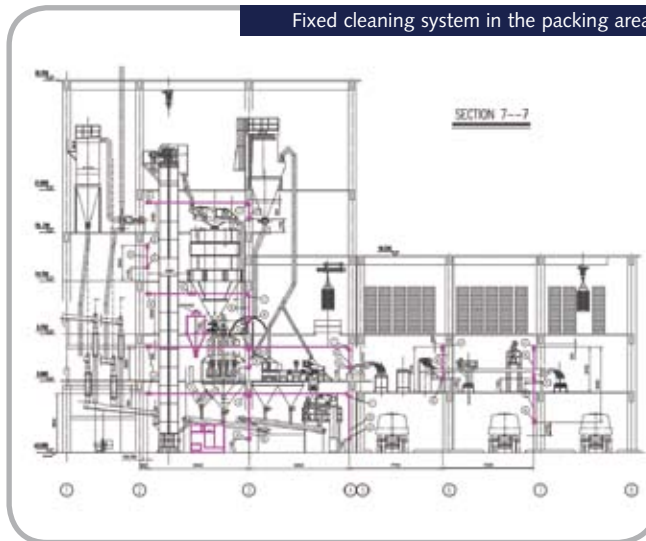
There are several advantages highlighting easy access, practical operation and considerable savings.

- The vacuum inlets are located near the areas to be cleaned.
- Easy to clean even areas that are usually difficult to reach (ie multiple levels with very little space available, tunnels under conveyor belts, bucket elevators, etc).
- All the collected material is transported by the system: little effort of operators required.
- All the vacuumed material is collected in one container with large capacity with easy transport.

For packing operations where it is difficult to avoid dust spillage, a fixed vacuum installation with continuous discharge is usually necessary. The dust is collected and inserted back into the packaging process with a considerable economic advantage.

To complete the vacuum systems in a cement plant for safety reasons it is advisable to install ATEX vacuum units in those areas where explosive atmosphere conditions are frequently present such as in the coal area.

The ATEX Directive 94/9/EU was adopted by the European Union



Fixed cleaning system in the packing area



Vacuum unit and cleaning pipeline in the coal area (3D ATEX version)

in order to align the technical and legal requirements in the member countries for products intended for use in potentially explosive atmospheres.

Truck & trailer-mounted units

Powerful and versatile, this range permits suction of all types of material: gravel and debris up to 60mm in diameter or the



Vacuum trailer ready for discharge (Lafarge, Austria)

finest of dusts inclined to clog, sludge and liquids.

Their large collection tanks can be emptied by gravity (hydraulic pistons open the back door and lift the tank) or by an integrated blowing system blows back the vacuumed material into the appointed storage silos.

Installation may be done with fixed truck bed or swap systems such as mobile bodies or hydraulic arms and at times using lorries already in the clients' possession. The same vehicle can be used for different purposes.

All the diesel versions have independent auxiliary engines permitting a considerable reduction of fuel consumption while functioning. All versions are available also with an electric engine.

Sabilia is specialised in the production and design of industrial vacuum cleaning machinery. The company have been trading in heavy-duty industrial cleaning machinery and undertaking tailor-made projects and installation services for more than 60 years.

The company works closely with its customers to ensure that its products meet their needs. Furthermore, new products are consistently being developed and improved upon, addressing specific clients requirements.

With one heavy-duty industrial vacuum cleaning system on-site, both capital equipment and employees are safer and cleaner.



Vacuum truck with 10m³ tank. Suction performance = 16m³/h of cement (Holcim, Italy)