# Safe cleaning with Airchoc®

***Cement manufacturers can employ a number of measures to prevent and eliminate material build-ups and improve the overall flow of material throughout the production process. With an array of cement industry installations under its wing, Standard Industrie International explains how build-ups and blockages can be addressed in various locations in a cement plant, improving both plant productivity and safety.***

Material build-ups in the cement production process often lead to reduced plant productivity and higher cleaning costs, as well as increased safety risks to maintenance staff. Such issues can be avoided by undertaking measures including:

- blockage and build-up removal
- silo and hopper cleaning.

Having developed expertise in both these areas over the past 40 years, Francebased Standard Industrie has helped a number of cement plants across the world improve productivity, reduce cleaning costs and lower safety risks.

**Blockage and build-up removal**

Since filing for the patent 1978, Standard Industrie has sold more than 50,000 of its Airchoc® air cannon systems in 90 countries. The Airchoc® can be applied to various locations in a cement plant,
examples of which are described below.

**Declogging the low level of the cyclone and gooseneck**

A cement plant in Tanzania installed Standard Industrie's Airchoc AC51010 air cannons in its gooseneck and other cyclones to address clogging at the low level of the cyclone and the gooseneck.
These had previously involved manual intervention, which presented a serious safety risk. However, the installation of several Airchoc® systems has since helped address this issue and improved plant safety.

**Cleaning of a large area of the kiln inlet, smoke chamber and riser duct**

A cement plant in Missouri, USA, found that the flow of hot gases rising in the cyclones led to blockages (as the meeting of the colder material with the hot gases resulted in clogging). This modified gas velocity and affected precalcination of the raw meal. To address this issue, the cement producer decided to replace 70 existing guns with Airchoc's air cannons with guillotine insulators to clean part of the kiln inlet, smokebox and riser duct. (see Figure 1)


**Figure 1**

**Preventing snowman formation and free flowing of hot clinker in the cooler**

A cement plant in Pakistan was carrying out a new cooler upgrade, lifting plant capacity from 3400tpd to 3900tpd. To prevent the formation of snowmen and the free flowing of hot clinker into the new cooler, Standard Industrie supplied a complete solution comprising seven airchoc® AC515 air cannons with 200l tanks. These blast air every 20 minutes to clear any build-ups. (see Figure 2)

**Figure 2**

**Wireless benefits**

Recent developments have seen the conversion of Airchoc® hardwired installations to wireless installations.

Benefits include:

- remote controlled operation (see Figure 3)
- each Airchoc® can be isolated for maintenance in complete safety
- 128 Airchoc® can be operated using a single control panel
- the control panel can be installed in a control room and connected to a plc.

  Each remote control is tested in Standard Industrie's workshops and


**Figure 3**

guaranteed for one year. The Airchoc® uses a zigbee communication system that can be compared to a professional wifi, and is a simple and reliable low-consumption protocol. It works with the specific frequency that cannot generate any interference. Moreover, each receiver or Airchoc® holds a mac address, assimilated to its own IP address.

Thanks to the savings made in terms of cabling, cable trays, labour and control panels, the wireless solution is more cost-effective than its wired counterpart.

**Silo and hopper cleaning services**

To reduce the risk of injury to workers during silo clean-out operations, Standard Industrie has developed the Gironet® silo cleaning solution, which accesses silos from the top, eliminating the need for manual intervention (see Figure 4).

A cement plant in South Africa was faced with a considerable build-up in a cement silo, which created ratholing on more than six silos (f6m x 25m height).

To clear out the cement dead stock and improve the silo's capacity, Standard Industrie recommended the use of its pneumatic Gironet®. Fully mechanised and remotely controlled, the Gironet® process ensures safe intervention without the need for operators to be present in the silo.

**Safe cleaning**

The development of wireless air cannons and silo cleaning solutions that can be used without manual intervention at the location where issues occur, has improved safety as well as reduced operational costs. Moreover, preventative action with such tools enables efficient material flow throughout the cement plant, thereby reducing or eliminating costly shutdowns of key equipment and improving plant productivity.

**Figure 4**