# Heavy Duty Inertial Filter helped Yamama Cement Company to Improve IAQ

## CASE STUDY - INDUSTRY

## Customer Profile

- Location: Kingdom of Saudi Arabia
- It is the oldest cement company that produces Portland cement and salt-resistant cement.
- The current daily production of clinker is (18600) tons or more than (21800) tons of cement.
- One of the best contractors offered AAF solution to Yamama Cement.

Cement manufacturing involves several processes. The raw materials like limestone, coal, gypsum, fly ash, slag and other materials are transported, grounded, weighed, burnt and calcined. These processes use air for moving/burning the materials. After the purpose is accomplished, the air is to be removed from the circuit. The major pollutants from cement production are methane, fume, dust, nitrogen oxide, which can harm the environment and are also harmful to human and plant health, through respiration.

## Filtration Situation

Yamama Cement was setting up a new administrative building beside its project site in Riyadh. They were aware of the harmful effects of cement dust particles and sandstorms on the indoor air quality of the building and were concerned about it as the building is near to the cement project site.

The company was using a competitor's Sand trap louver as an inertial filter to trap sand particles of size 10µ and above. The filter efficiency provided was 30-35% while trapping 10µ and above particles.

Because of this reason, the lifecycle of pre-filters used in AHU lasted for 2 to 3 weeks and caused the heating of cooling coils, harming the working of the entire AHU.

Yamama requires high-efficiency inertial filter for their administrative building to trap sand particles, dust released from the adjacent cement factory, to improve the lifecycle of pre-filters and to enhance the entire efficiency of AHU. Hence, the customer approached AAF for industrial-grade air filtration solution which can withstand harsh environments and improve indoor air quality.

## AAF International Solutions

AAF team along with their partner visited the project site and recommended heavy duty inertial filter S-Trap with Bleed Air Fan to be installed before AHU as it is highly efficient in removing coarse dust and sand particles. It also obtains a high-arrestance of 93% at the low-pressure drop.

S-Trap increases the life of the next stage of filters and increases replacement time of primary and secondary filters in the AHU and it also helps in maintaining cooling coil heat transfer performance. It also helps in enhancing the IAQ.

To maintain the efficiency of cooling coils, AAF suggested installing two pre-filter S-Traps before the supply air fan in case of pre-filter and final filter within AHU. These should be placed before the cooling coil. Particle deposition would be minimal in this case. This action will enhance the heat absorption of the cooling coil and hence the efficiency of the cooling coil will be maintained. Hence, the overall efficiency of the AHU will be maintained.


Fig. S-Trap

## Results

Based on the design plan, the customer was convinced of the solution and upgraded to AAF bolt-on prefilter S-Trap for Air Handling Units upon the order in June 2019.

Since the installation of S-Trap on all AHUs' performed as planned, reaching and maintaining the required efficiency level, the customer was satisfied. The customer was happy with the persistent technical support of AAF International throughout the sales cycle.

AAF addresses the business challenges in a changing market which is propelled by increased consumer awareness and rising air pollution.
whereas AAF's inertial filter S-Trap has an efficiency of 93% for particles of 10µ and above.

AAF India Pvt Ltd, 117&118, Bommasandra Jigani Link Road, Anekal Taluk, Bangalore 560 105 marketing@aafindia.net I +91 80 2 7839903

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