

Filter bag filled with benefits

Saudi Arabia-based Eastern Province Cement Co aims to produce high quality products at the lowest possible costs from its 3.8Mta cement plant near Damman. However, filter bag issues in the cement mill baghouse had been interfering with this mission until the installation of new filter media helped reduce energy consumption and increase output.

■ by **WL GORE and Associates, USA**

Eastern Province Cement Co (EPCCO)'s existing polyester bags used in the cement mill baghouse of its Al Khursaniyah plant near Damman were struggling to maintain optimal differential pressure for more than a few months and were wearing out completely within 18 months.

"Our filter bags were creating problems for us," explains Subair Naduthodi Mannil, EPCCO's developments and technical support manager. "When the differential pressure in the baghouse reaches 18mbar, we have to shut down the cement mill, which has obvious impacts on our productivity. These bags would get close to that tripping point within a few months. It was a big problem."

Having previously used GORE filter bags in the kiln baghouse when the plant was first started, EPCCO knew the high quality that GORE could offer. Moreover, it had heard about the new GORE® LOW DRAG Filter Bags and wanted to explore the potential benefits for its cement mill baghouse.

"From talking with the team at GORE, it seemed that the company's new filter bags would solve our problems," says Mr Naduthodi Mannil. "Moreover, they were willing to guarantee three-year bag life, which in itself was a big improvement on the performance of our existing bags."

High productivity, low drag

The GORE LOW DRAG Filter Bags are a

Eastern Province Cement Co boosts productivity using advanced filter bag technology



proven solution to reduce differential pressure (DP), lower energy consumption and enable increased cement production. The difference is in the membrane material, which is specially designed to let air through and keep particulates out – which is why WL GORE is able to offer such long guarantees for bag life.

The membrane traps dust on the surface of the filter bag. This dust is easily removed when the bags are cleaned using pulses of air, ensuring that no particulates can enter the filter structure, which is where EPCCO's old filter bags were having problems. As soon as dust permeates the filter fabric, the passage of air is reduced and the whole system has to work much

harder, which leads to higher fan energy consumption, more frequent cleaning and reduced bag life.

"It's a relatively new technology but we already have a number of successful installations around the world that prove it works. The difference it can make to a cement manufacturer's bottom line is undeniable," highlights Biju Philip of WL GORE.

Impact of greater efficiency

The most significant benefits of the specialist bag design are the reduced energy costs, longer bag life and the potential to increase throughput through the baghouse, thanks to the greater efficiency of the filter bags. These advantages equate to a swift return on investment.

"The upfront cost of the bags is higher than others on the market," says Mr Naduthodi Mannil. "But when we saw the total cost of ownership calculation, which includes the costs of the bags, installation, energy costs and all the savings potential, we were convinced that we would see a return on investment within a year. Now that the bags are in place, this calculation stands."

Table 1: summary of filter bag performance improvement

Parameter	Previous bag (conventional polyester)	GORE LOW DRAG (membrane polyester)	Change (%)
Differential pressure (mBar)	15.75	10.76	-31.68
Pulse pressure (mBar)	6	4.5	-25.00
Air flow (m ³ /h)	228,914	244,196	+6.68
Production (tph)	138.43	145	+4.75
Filter drag (mmWc/m/min)	117	76	-35.04
Impulse time (ms)	50	120	

The installation of the new bags resulted in an immediate improvement in dust suppression



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“We are using less energy and achieving our emission reduction targets, but most importantly, we have been able to increase productivity.”

Subair Naduthodi Mannil,
EPCCO

From EPCCO’s standpoint, the success of these filter bags has proven that the cement producer has made a good investment – one that it may also be looking to replicate in other baghouses across the 3.8Mta plant.

“We are happy with the performance and we are looking at other opportunities where the GORE LOW DRAG Filter Bags could positively impact our plant,” says Mr Naduthodi Mannil. ■

Instant results

Installation of the new bags took place in March 2022. Differential pressure (ΔP) dropped by 20 per cent straight away, showing that the new filter media were working much better than the old polyester bags. In the months since the new filter bags have been in place, energy consumption is down by 2-3 per cent and production is up by four per cent.

“Obviously, we are pleased with the performance of the new LOW DRAG Filter Bags,” says Mr Naduthodi Mannil. “We are using less energy and achieving our emissions reduction targets, but most importantly, we have been able to increase productivity. That is significant for us, as our previous filter bags were an obstacle to productivity, not an aid. In a competitive market, it is important to be able to maintain market share.”

With a three-year warranty, the new filter bags still have a lot of life left in them and the increased stability of the baghouse and reduced maintenance requirement has also been a benefit to the plant.

Onwards and upwards

Thoughts are now turning to optimising the baghouse. “After installation, we partner with our customers to help them get the most out of our products,” explains Mr Philip. “This is not an additional service – it is part of the package when you buy filter bags with us because we have a lot of experience to share and we want everyone to see exceptional performance.

“We regularly receive updates from EPCCO and we look at these figures to see

how they could tweak operations to, for example, reduce the pulse point to save more energy. We can do this remotely, but we like to visit the site and ensure we have a good overview of the process.”

The success of the filter bags has resulted in EPCCO looking to expand the use of the advanced bag filter technology across the plant



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