



FILTER BAG SERVICE LIFETIMES EXCEED EXPECTATIONS

In 2001 an EMC filter replaced for the first time two existing electrostatic precipitators used to dedust the raw mill and rotary kiln at the cement plant operated by Perlmöser AG in Mannersdorf/Austria. At the time, this was the largest filter ever installed by Scheuch in the cement sector.

Exactly three years after commissioning of the first EMC filtration plant, the plant operator, the manufacturer of the filter material and the plant manufacturer presented empirical data reflecting their experiences with the plant. These

show that plant availability is 100 % and that costs for electrical and mechanical maintenance amount to 0.1% per annum of the investment amount. With no change in operating conditions, the service lifetime for the filter bags

was expected to reach 5 - 6 years (an improvement of 50 percent).

These expectations were also exceeded. The filter bags did not need replacement until the seventh year after commissioning.

This can be attributed to the special advantages of EMC technology. This technology is based on low pressure, pulse-jet cleaning and operates not only with a low tank pressure but also with a low required volume of compressed air. This system can therefore be designated as a Low Pressure - Low Volume (LPLV) cleaning system. Because of the zero-flow design, the compressed air pulse must only lightly tap the filter medium. The filter cake falls away vertically from the filter medium in agglomerated form instead of being accelerated away from the filter bag. This cleaning system operates so effectively and with such lasting effect that it is possible to operate the filter at a lower differential pressure. As a result of the low tank pressure, the filter bags are cleaned much more gently because the acceleration and deceleration forces operating upon them are significantly smaller. This means that:

The longer service lifetimes for filter bags are achieved through the use of lower cleaning pressures, by avoiding bag recoil on the support cage, and a reduction in the number of cleaning impulses by half, which amounts overall to less mechanical stress on the filter bags.

Recent research presented in the following tables shows that the EMC filtration at Lafarge-Perlmöser AG in Mannersdorf is not an isolated case with respect to the service lifetimes of filter bags.



Service Lifetimes of Filter Bags in Various Plants Equipped with the EMC Cleaning System:

DEDUSTING "CEMENT KILN AND RAW MILLS"					
Customer	Application	Air Volume	Bag Material	Service lifetime of filter bag	Remarks
Schretter & Cie Austria	Kiln and raw mills	158,000 Am ³ /h	P 84	in 6th year	Still with original equipment
Cementos Balboa Spain	Kiln and raw mills	600,000 Am ³ /h	Fibreglass with membrane	in 5th year	Still with original equipment
Lafarge Le Teil France	Kiln and raw mills	2 x 175,00 Am ³ /h	Fibreglass with membrane	in 6th year	Still with original equipment

DEDUSTING "CLINKER COOLER"					
Customer	Application	Air Volume	Bag Material	Service lifetime of filter bag	Remarks
Tudela Veguin La Robla / Spain	Clinker cooler	246,000 Am ³ /h	PE 550	in 6th year	Still with original equipment
Cementos Balboa Spain	Clinker cooler	340,000 Am ³ /h	Nomex	in 6th year	Still with original equipment
Holcim Rohoznik Slovakia	Clinker cooler	276,500 Am ³ /h	PE 550	in 6th year	Still with original equipment

DEDUSTING "CEMENT MILL AND SIFTER"					
Customer	Application	Air Volume	Bag Material	Service lifetime of filter bag	Remarks
SPZ Solnhofen Germany	Sifter	76,000 Am ³ /h	PES / PES 550	in 6th year	Still with original equipment
HOLCIM Merone Italy	Vertical roller mills	385,000 Am ³ /h	PE 600	in 5th year	Still with original equipment
Atlantico Cement Bilbao / Spain	Vertical roller mills	391,000 Am ³ /h	PE / PAN 600	in 4th year	Still with original equipment

The EMC-Patent

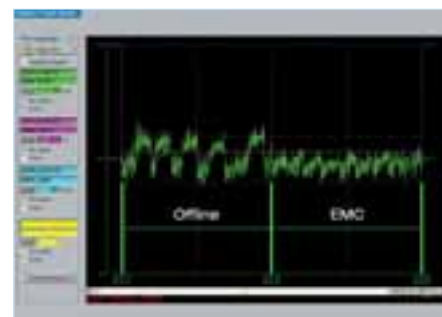
In the EMC cleaning system (EMC: Energy-Minimizing-Concept), individual modules are switched on and off in a diametrically opposed manner. The module pulled from the gas stream is regenerated in a zero-flow state. Because of the diametrically opposed switching process, the active filter surface area remains constant and as a result, the filter differential pressure also remains approximately constant.

The operating principle is precisely described in Scheuch's Austria and European patents for the EMC cleaning system: "In order to reduce pressure fluctuations in the filter and to provide efficient cleaning with pulsations of compressed air in the low pressure range, i.e. from

approximately 0.8 to 3 bars, the filter is divided into several filter modules respectively comprising at least one filter element. At least two filter modules are arranged in a filter housing or a filter chamber. The filter modules are cleaned alternately [...] and a control device is provided for the shut-off elements, whereby when the filter modules which are to be cleaned are changed, the shut-off element of the cleaned filter modules is open and the shut off element is closed in a diametrically opposed manner for the filter module to be cleaned. As a result, any pressure fluctuations in the filter are minimized."

Only the EMC cleaning system is able to combine the positive characteristics of online and offline cleaning systems without disadvantages. Pressure fluctuations found in offline

cleaning systems are extensively minimized through the diametrically opposed switching of the individual modules and the essentially constant distribution of the differential pressure is assured for the entire operating time.



Comparison of the filter differential pressures during EMC operation and offline operation