Reducing the LCC by means of dedusting filters

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The newly developed Intensiv-Filter ProJet smart® and ProJet mega® completely cover the volume flow range of 2,000 m³/h in operation up to over 3,000,000 m³/h in operation required in the cement and stone/earth industries. With bag lengths up to 12 m, the ProTex filter media generation combined with the latest cleaning technology, and flowside optimization of the filter design, the LCC (Life Cycle Costs) can be reduced by up to 40 %.

The consistent standardization at module level has resulted in an almost unlimited number of different filter versions being available with minimum variance in the individual components. This enables modern and made-to-order dedusting solutions to be conceived and supplied quickly and flexibly for every requirement in the cement industry.

In 2009 and 2010, Intensiv-Filter converted the established bag filter product lines into improved, standardized and modular filter series. These offer lower specific investment costs and, above all, a reduction in the operating costs and thus life cycle costs (LCC) for the filtering installation. For better orientation in the increasingly more complex world of dedusting, the features of modern online and offline bag filters will first be explained and then the technical innovations involved in the ProJet smart® and ProJet mega® product lines will be introduced......

Dust removal order for copper production

Aurubis is the largest copper producer in Europe and the world leader in copper recycling. Each year about 1.1 million tonnes of copper cathodes and from them a variety of copper products are produced.

Intensiv-Filter delivers for the dust removal of a new storage building for slag with various breakers, conveyor and sieve arrangements a row filter of the type CombiJet as well as another filtering installation for the dust removal of an auxiliary hood.

The CombiJet bag filter is laid out for a volume flow of 80,000 m³/h n.c. at room temperature. The newly developed filter media with the name ProTex PES come into operation. With regard to environmental protection ProTex energy savings filter media are the economic alternative to filter media with laminated membrane surface and, besides, substantially more robustly. The bag length amounts to 4.5 m and the filter surface about 1,200 m². The JetBus Controller® controls the online cleaning of six filter chambers. In May 2011 the assembly works start which will be concluded with commissioning in August, 2011.

For the assured compliance of the dust emissions, a second filtering installation of the type ProJet mega® for the dust removal of an auxiliary hood and the separation of SOx is put into operation in November, 2011. The installation replaces a shaker filter which no longer is good enough for the selfobligations of the company to the environmental protection.

The bag filter is equipped with 8-m-long bags and an especially power-saving back-pressure controlled cleaning in online mode. The volume flow is 90,500 m³/h n.c. and the maximum operating temperature 80 °C.

Figures, dates, facts

The increase of energy efficiency up to 20 percent (EU) until 2020 is a tremendous challenge. The Mechanical and plant engineering can contribute to the achievement of the aims considerably. Intensiv-Filter as well has developed technologies on minimising the use of energy. The new energy saving filter media ProTex and the Three E operation (Enhanced Energy Efficiency) can reduce the power demand around up to 40 % and at the same time the CO₂ issues
Intensiv-Filter India provides Bhutan with environmentally friendly dedusting solution

Bhutan, situated at the borders of India and Tibet, is a country of superlatives: The 7,541 m high mountain Gangkhar Puensum is the worldwide highest mountain which was never mounted by a person. 80 percent of the country is above 2,000 metre height. Two thirds of the country is wooded. All economic interests of the country are subordinated to the environmental and nature protection.

Beside the food and wood processing industry the production of cement is significant. A reason for Bhutan and India, to reactivate the project of Dungsam Cement plant that already had been planned in the 1980s and postponed in 2001 again due to security reasons. However, in 2005, Bhutan and India decided to resume the proposed project work. September 9th, 2009, KHD Humboldt Wedag India Private Limited signed the order for the entire project.

The order for the project contained the essential bag filter installations which KHD as prime contractor commissioned to Intensiv-Filter India.

KHD ordered all together six bag filters for different applications and volume flows: kiln / raw mill dedusting, coal mill dedusting, cement mill dedusting and two separator bag filter. The bag filter for kiln / raw mill dedusting is the biggest bag filter with a volume flow of 608,000 m³/h n.c., 8 m bag length and 2,880 bags. The material of the filter media will be glass fibre with PTFE membrane. Due to the explosive dust within the coal mill, an explosion protection concept for the bag filter was also supplied by Intensiv-Filter.

The remaining bag filter installations for the cement mill dedusting are designed for a volume flow of 70,000 m³/h n.c. each and an operating temperature of 115 °C. The two separator bag filters are dimensioned for 160,000 m³/h n.c., 115 °C.

Dust removal rotary kiln

The RHI AG is world market leader for fire-resistant products. 350,000 t Magnesit are diminished in the plant Breitenau, Austria, yearly and are produced as a raw material for the further processing of refractory bricks used in rotary kilns in the cement industry. At temperatures between 1,500 °C and 1,800 °C the raw magnesite is burnt in rotary kilns to sinter magnesia. Currently the dust removal of the exhaust gases is realized with an electrostatic precipitator. Within the scope of the environmentally friendly production and to the decrease of the dust emissions, this filter is exchanged by two bag filter plants of the type Projet mega® from Intensiv-Filter.

The order encloses the dust removal of two rotary kilns with a volume flow of 52,190 m³/h n.c each (normal condition; in case of incidents 70,000 m³/h n.c.). The raw gas reaches the bag filters with 180 °C, in extreme cases with 250 °C. Filter bags with a length of 6 m and a glass fabric material with PTFE membrane come into operation. The energy-efficient cleaning is carried out with low pressure in online mode.

Extent of the project are beside the complete engineering and the filtering installations also the process fans, the pipelines, the dust discharge, the sound protection as well as transport, assembly and commissioning.

Loesche symposium

Intensiv-Filter took the opportunity of the Loesche symposium from Sep 9th to Sep 10th, 2010, to inform the invited guests about the newest technologies of dust removal. The branch used this chance. The new developments of ProTex energy saving filter media and the ProJet smart® filter were met with approval in the personal conversations.