

Case note

ACS 2000 reduces energy consumption by more than 20 percent at cement plant



Cementir Italia, Spoleto plant

Substantial energy savings and elimination of stress on the equipment have resulted from replacing soft starter and damper control for a process fan with a variable speed drive from ABB, at Cementir Italia's Spoleto plant. Other benefits gained by the grey cement manufacturer include optimization of the grinding process and less wear on mechanical parts.

With the ABB drive, the fan's air flow is regulated by directly reducing the speed of the fan motor. Previously, the air flow was controlled by opening and closing a damper, while the fan motor ran constantly at full speed.

Highlights

- Energy savings greater than 20 percent
- Direct connection to the power supply (without transformer)
- High reliability
- Reduced maintenance costs
- Simple and quick installation and start-up
- Wide speed range

New, but already a proven success

Cementir is a multinational company with over 3,800 employees, two research centers, 20 cement and 110 concrete production plants in 13 countries.

Experts at the company's central technical department benchmarked possible drive solutions on process fans. They concluded that the ideal solution for Cementir is ABB's medium voltage AC drive ACS 2000 (250 – 1,600 kW, 4.0 – 6.9 kV). Despite the drive being new to the market, it already boasts impressive references in cement production and refineries across Switzerland and Germany.

The customer was influenced by the ACS 2000's technical specifications and installation requirements: it does not require a transformer to connect to the power supply; it minimizes harmonic distortion to the power supply; it does not require medium voltage power factor correction; and it is compact and lightweight. All of which makes it an ideal solution for a variety of motor-driven applications.

In addition, DriveMonitor™ was purchased by Cementir for monitoring, controlling and remote diagnostics via a wall-mounted PC connected to the telephone line.

Benefits

Energy savings

Energy savings were measured by comparing the power consumption before and after the ACS 2000 was installed on the fan, using identical process conditions.

With the drive installed, the average monthly energy consumption was 105 MWh lower compared to damper control. Based on 7,000 operating hours per year, the ABB drive reduces the energy consumption by 1,260 MWh per annum, representing a 21 percent saving. With electricity priced at €0.0818/kWh, this represents a cost reduction of approximately €100,000. The energy saving is 2 kWh per ton of cement produced (assuming an average hourly output of 90 tons).

Higher productivity and uptime

Additional benefits are the increase of the air flow beyond the previously permitted limit and a gradual soft start that removes the limitation on the number of consecutive start-ups.

Without this soft start feature, the plant was forced to close the raw material grinding plant each time the fan needed to start up, to avoid damage to the high voltage transformer. Also, due to the high initial load, more than two consecutive start-ups within one hour were prevented by the protection system.

With the installation of the ACS 2000, both of these constraints are removed.

Easy to install

ABB offers significant additional advantages. The ACS 2000 uses much of the technology employed in ABB low voltage drives, integrating and operating with the same control panel and using the same methods of communication and diagnostics. It does not require the motor and cables to be changed, and is therefore a perfect fit for installations into existing environments.



Key data of ACS 2000 product family

Inverter type	Multilevel voltage source inverter (VSI)
Converter cooling	Air cooling
Power range	250 – 1,600 kW
Output voltage	4.0 – 6.9 kV
Maximum output frequency	75 Hz
Converter efficiency	Typically 97.5%
Power factor	Unity
Type of motor	Induction motor

For more information please contact:

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