

Südzucker AG

Significant savings through
optimizing the plant's energy

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Customer

Südzucker AG, Europe's largest sugar producer

Location

Zeitz (Saxony-Anhaltina)

Realization / contract period

05.2014 – 08.2015 / until 2021

Scope of supplies and services:

- Measurement and detailed analysis to evaluate the potential savings
- Delivery, assembly and commissioning of a new converter-optimized motor with a frequency converter for the secondary fan in the energy control center
- Implemented by Energy Performance Contracting, financed by Siemens Financial Services. No input of equity capital by Südzucker. Investment costs amortized by savings on energy costs (pay as you save).

The challenge

Producing sugar requires large quantities of energy. That is why Südzucker, Europe's largest sugar producer, places priority on maximizing energy efficiency in its 29 sugar factories and two refineries. This enables the company not only to reduce its costs but also to run more sustainably and make a contribution toward protecting the climate.

This also applies to its Zeitz site in Saxony-Anhaltina. 200 000 metric tons of sugar leave the production plant each year, and it works round the clock from the middle of September to the beginning of January. Each kilowatt hour saved in the plant reduces costs noticeably and avoids unnecessary CO₂ emissions.

Together with Siemens, Südzucker wanted to identify potential savings in the production of sugar, and reliably evaluate the achievable savings. At the same time they inquired about innovative financing.

The investments should finance themselves from the energy cost savings achieved – without restricting the cash flow and without involving traditional bank financing.



New speed-controlled SIMOTICS FD motor on the secondary fan

Sustainable and innovative – CO₂ reduced by 680 metric tons per year

The solution

Siemens was able to offer Südzucker a complete package of state-of-the-art technology and an innovative financing model. A new SIMOTICS FD motor and speed control via a frequency converter would significantly reduce energy costs. And financing through Siemens Financial Services would enable the investments to be made without the input of equity or third-party capital. According to the plan, the efficient technology should be self-financing.

SFS financed the investment costs through Energy Performance Contracting (Capex). The customer pays a monthly fee corresponding to part of the energy cost savings, that covers not only the investment costs but also a maintenance contract. At the end of the contract period, the customer can buy the installed equipment from Siemens, and continue saving energy and thus costs.

At the beginning of the project, Siemens experts examined the potential savings that a number of drive applications could achieve in Zeitz. The first forecast found a potential saving of 30 percent at the secondary fan in the energy control center, which corresponds to more than 700 MWh per year.

Detailed analyses, including measurements of the volume of air and the pressure relations in the secondary fan in Zeitz later exceeded even the first estimates. They gave a potential saving of 38.5 percent, and thus a reduction of more than 900 MWh per year.



The basis of the technical implementation is a converter-optimized SIMOTICS FD motor on the secondary fan; a SINAMICS G150 frequency converter adjusts the speed of the fan to output the volume of air currently required in the plant. This means that the previous control element, the mechanical inlet vane control, can remain permanently open, which contributes significantly toward reducing the energy consumption. All the supplies and services came from a single source - Siemens - which led to fewer interfaces and simplified project coordination.

The benefits

After the energy-efficient technology had been installed in the secondary ventilation in Zeitz, the forecast savings were achieved in full. The energy requirement of the plant fell from 2 406 MWh to 1 475 MWh per annum, which corresponds to a reduction of 38.7 percent. The electricity requirement of Südzucker thus fell by more than 77 500 kWh per month or 930 MWh per year.

After deduction of the contracting installment, Südzucker has had an annual saving of over €5000 since the contract began.

After the transition of the system into the ownership of Südzucker in 2021, the company will benefit to the full amount of the lower energy consumption. Target reached! The energy saving of around 930 000 kWh is sufficient to supply some 275 private households for a whole year, and corresponds to reducing CO₂ emissions by 680 metric tons per year. This means that the sustainability target was also achieved.

Dr. Markus Lorenz, manager of the Südzucker plants in Brottewitz and Zeitz, said, "With EnPC, Siemens has enabled us to optimize the energy use of our plant. Each year, we save over 900 MWh of electrical energy, which supports the activities for improving the sustainability of Südzucker AG."



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