

Advanced Process Control Implementation at Çimentoş İzmir: Achieving Significant Energy Savings in Cement Production

A Case Study on ECS/ProcessExpert® Implementation and Results



Executive Summary

The implementation of FLSmidth's advanced process control software at Çimentoş İzmir has delivered significant energy savings in cement production. The ECS/ProcessExpert® system achieved energy reductions of up to 3.8% in the raw meal mill while simultaneously improving process efficiency and equipment reliability. This case study demonstrates the successful application of artificial intelligence in cement manufacturing, supporting both operational excellence and environmental sustainability goals.

Company Background

Çimentoş, established in İzmir as Turkey's first private cement factory, joined the Cementir Holding group in 2001. Cementir operates across 5 continents and 18 countries, making it one of the world's most significant cement groups.

Çimentoş operates four cement plants in Turkey, located in İzmir, Edirne, Elazığ, and Kars. In line with energy efficiency and digital transformation objectives, the company

decided to implement FLSmith ECS ProcessExpert systems in the grinding and kiln lines at the İzmir facility.

Project Overview

System Implementation

The ECS/ProcessExpert® V8.5 intelligent advanced process control solutions were applied to the plant's two main mill circuits:

- Cement grinding mill
- Raw meal grinding mill

Following successful commissioning of the mill systems, installation of the ECS/ProcessExpert system began on the plant's kiln line.

Advanced Process Control Using Artificial Intelligence



The ECS/ProcessExpert software is specifically designed for the cement industry. Based on artificial intelligence technology and advanced process optimization modeling, ECS/ProcessExpert provides effective solutions for sustainability goals in cement production by increasing efficiency while reducing consumption and

costs.

Performance Results: Exceeding Expectations

The acceptance tests for the ECS/ProcessExpert systems applied to the mills were accepted by Çimentoş İzmir without any exceptions. In fact, performance exceeded the targeted values.

Key Performance Improvements

Energy Consumption Reduction (vs. Manual Operation):

- Cement mill: 3.1% reduction
- Raw meal mill: 3.8% reduction

Production Increase (vs. Manual Operation):

- Cement mill: 2.9% increase

- Raw meal mill: 3.7% increase

Most importantly, these gains were achieved without any compromise in the quality of the cement produced.

Customer Testimonial

"ECS/ProcessExpert really delivered results beyond our expectations! The performance tests clearly demonstrated the benefits that the ProcessExpert system provides compared to the manual system. This change, which also provides great benefits for our operators, allows us to focus on other tasks by removing the question of how we can use the mills more optimally from our minds. Another benefit of this system has been improved equipment reliability."

— Erman Ayca, Process Manager (Çimentaş İzmir and Trakya Factory)

Environmental Benefits

The project is not just a business success. By reducing energy consumption while increasing process efficiency, it also provides concrete sustainability benefits that support both our MissionZero goals and Çimentaş İzmir's environmental objectives.

The energy savings achieved by ECS/ProcessExpert will translate into tons of reduction in CO₂ emissions. The project is a powerful example of how process control and optimization can reduce emissions – a fundamental pillar of the zero-emission cement production goal.

"We aim to be pioneers in issues concerning society and the environment in order to leave a clean nature to our children. Climate change is at the top of our agenda and we think it is vital to reduce greenhouse gas emissions in our operations. The ECS/ProcessExpert control system is an important solution for our environmental improvement goals with the benefits it provides."

— Erman Ayca, Process Manager (İzmir and Trakya Factory) Çimentaş

Partnership and Support

Recognizing the importance of local support for sustainable operational success in advanced process control software, the implementation was carried out jointly by FLSmidth and Pacpro. Ongoing support for the software will be provided locally by Pacpro and the FLSmidth team.

Conclusion

The successful implementation of ECS/ProcessExpert® at Çimentoş İzmir demonstrates the significant potential of advanced process control and artificial intelligence in cement manufacturing.

The project achieved:



- Substantial energy savings (up to 3.8%)
- Increased production efficiency
- Improved equipment reliability
- Enhanced operator effectiveness
- Reduced CO₂ emissions
- Maintained product quality standards

This case study serves as a model for the cement industry, showing how digital transformation and process optimization can simultaneously achieve operational excellence and environmental sustainability goals.

Keywords

#CementProcess #CementIndustry #ProcessOptimisation #CementPlantOptimisation
#AdvancedProcessControl #Digitalisation #Automation #Sustainability
#SustainableProductivity #MissionZero #ManufacturingIntelligence #FLSmidth