

# Process Control

Industrial<sup>IT</sup> solutions for the cement industry



**ABB**

# ABB: Automation for the Cement Industry

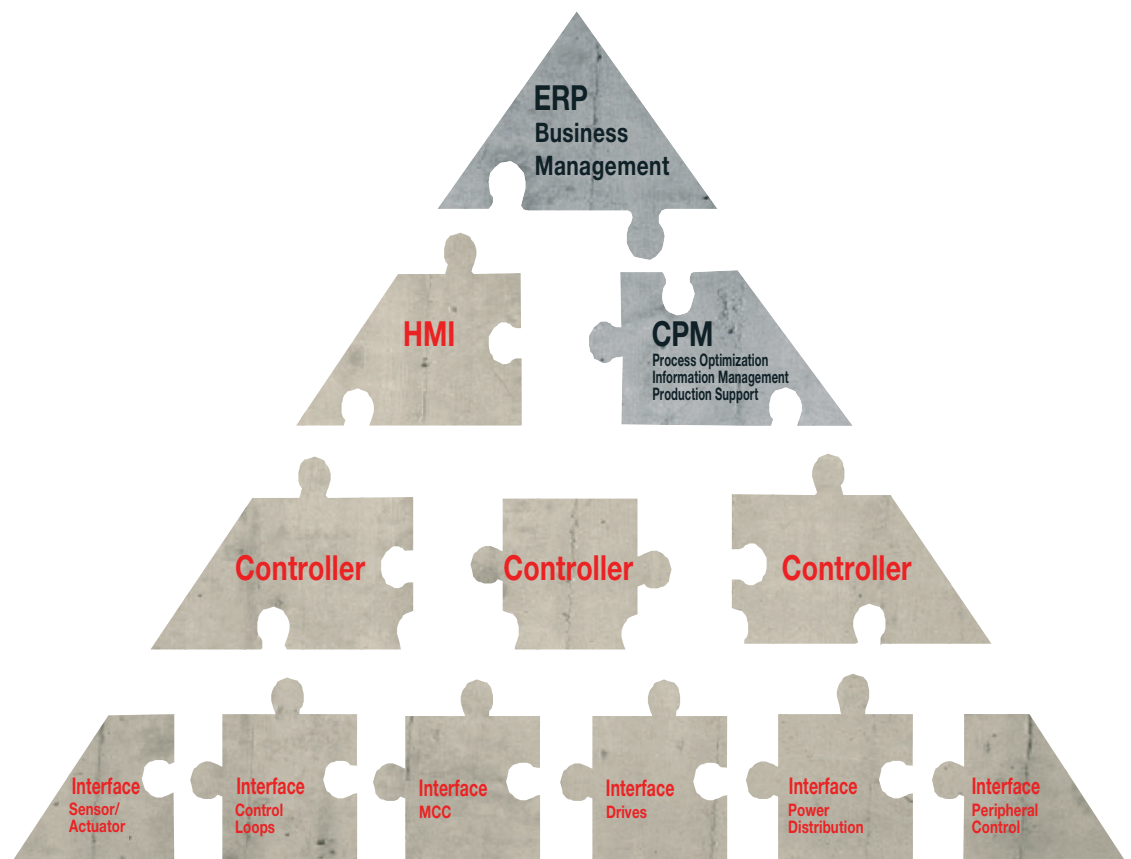
Engineering  
Supply  
Construction  
Management



## Process Control

We ensure results in cement manufacturing through constant attention to time, money and compliance with your project needs. This not

only safeguards but maximizes the return on your investment.





# Industrial<sup>IT</sup> – Integrate your process control



Meet current and future challenges with solutions devised in partnership.

## Your mission...

to efficiently bring high-quality cement products to the market.

## We make the difference to your process

Challenge ABB to bring added value to your process, as this is what drives us to continually improve our Solutions. Our focus is entirely on delivering increased value to your operations.

## Your Challenge

## Our Response

Process Control

ABB provides tailored automation solutions that use real-time data. This process data gathered from all sections of the plant, is used to improve plant operation, protect your machinery, control your process more efficiently and increase product quality.

Asset Data Optimization

With ABB process control systems, reports are created quickly and easily, assisting you in continuous production management to maximize your profits.

Profitability

ABB's latest information technology allows you to monitor and analyze your process constantly, ensuring immediate cost benefits and continuous return on investment.

Connectivity

Using the Industrial<sup>IT</sup> architecture, ABB is able to interface seamlessly to your automation system with a wide range of products and solutions. These include instrumentation, input/output devices, drives, motors and human machine interfaces (HMIs).

Scalability

If you already have an installed automation base, migration to modern industrial information technology will require a flexible project plan. ABB uses a modular approach, which can be implemented in stages, to satisfy the demand for continuous production, further extensions and budget constraints.

Maintenance Optimization

With ABB solutions, the benefits are improved asset availability, bringing significantly lower production costs, through reduced maintenance, and higher productivity, through a more effective workforce.

# Working together, every **step** of the way

ABB Industrial<sup>IT</sup>  
fully integrates  
plant control, to  
deliver the best  
returns from your  
assets.



**Customer Quote:**  
«We called in ABB  
at our initial brain-  
storming meeting.  
The advice they  
offered ensured  
the project started  
on a track that we  
would not have  
originally gone  
down.  
It was a success».

Your challenge: To find a partner that provides solutions at every stage of your project.

## **We ask, we listen, we propose** **Challenge us on expertise**

With more than 20 years' knowledge of cement manufacture, advice from ABB at the outset of your project can sort out details, clarify structures and provide roadmaps that will ensure the fastest return on your investment, while adding to existing return on assets employed.

## **Innovative thinking, leading-edge design** **Challenge us on design and development**

ABB is experienced in solutions from high-performance electrical distribution through to cost-effective automation and asset optimization. In designing an automation system, ABB takes into account all demands for future growth and potential process changes for regulatory compliance or energy efficiencies, while retaining strengths in proven processes.

ABB saves you the huge costs and risk of development, engineering, installation and commissioning

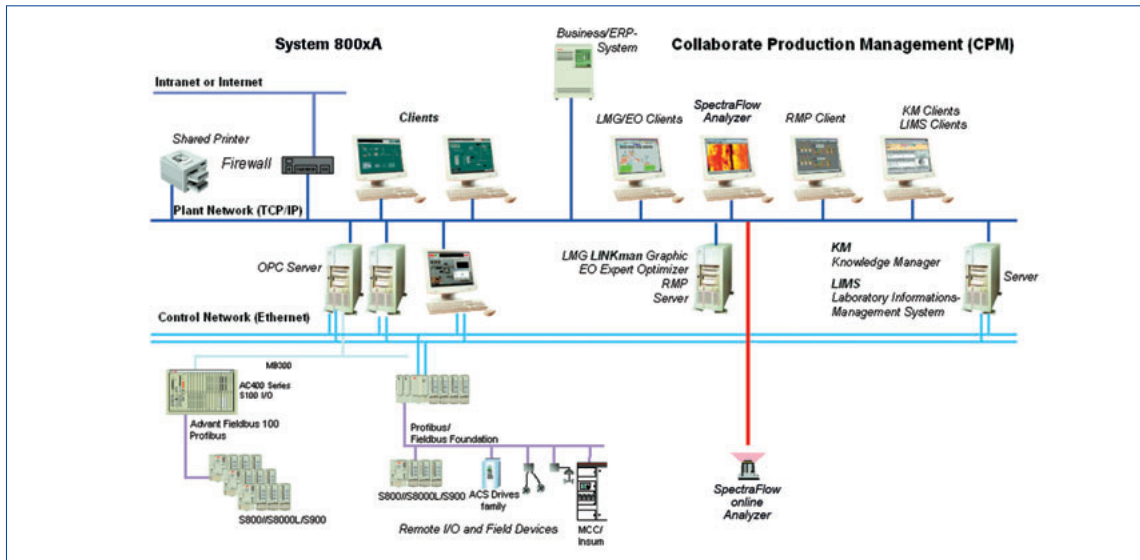
time by re-using best practice from more than 300 green-field and 100-plus modernization installations in the cement industry.

ABB, certified to ISO9001-2000, is continuously improving its quality systems and passing on the benefits to customers.

## **We focus on customers** **Challenge us on procurement and supply**

A single source for all your automation needs can help to speed design, delivery, installation and commissioning and to reduce maintenance costs. Your time spent on finding optimum solutions, products or services is a hidden cost, reducing your added value. ABB's customer-centric approach ensures that a single person acts as the interface for all of your needs – making all products and solutions available through one Account Manager, who knows your business and knows exactly where to find answers fast.

# Add value with ABB's Industrial<sup>IT</sup> solutions



The flexible solution that makes ABB different.

## Technology driven, focused solutions

### Challenge us on product offerings

ABB offers a comprehensive portfolio of automation-based products and systems, covering instrumentation, field devices, drives, motors, expert systems, Human Machine Interfaces and much more.

- All ABB products and systems are designed for maximum uptime and minimum maintenance.
- ABB documentation delivers clarity that enables savings in time and money.
- ABB products evolve in a structured and focused path, to enhance and future-proof your process.

Tailored software applications, transparent automation solutions and a resolute product release policy: all are essential from your supplier, to bring increased value to your business.

Comprehensive overviews and details of product hardware, software and automation technology are available on our website **[www.abb.com](http://www.abb.com)**

For further details of cement industry applications, go to our website at **[www.abb.com/cement](http://www.abb.com/cement)**

**ABB's Industrial<sup>IT</sup> Process Portal provides you with solutions for fully integrated process control systems.**

# Capitalize on field-proven solutions

Passing on a wealth  
of experience.



## Efficient installation and commissioning Count on ABB experience

The most professionally designed process control application can be almost worthless, unless the installation and commissioning is in experienced hands.

With ABB's professional engineering and commissioning team, excellent project management and well-proven installation techniques, we ensure that your plant is operational in the shortest time and within the specified budget.

Installation and commissioning is always planned in fine detail and locally-based ABB expertise ensures a quick response to any unforeseen issues.

In ABB, you can rely on a partner, which is able to provide the widest possible range of services, experience and expertise.

## Maximize personnel efficiency Depend on ABB training

ABB training programs are highly effective, with an optimized mix of theory and practical, hands-on exercises. The ABB University offers well over one hundred different training courses, covering all of our automation products and application solutions. Complementing standard courses, ABB University also offers customized training to meet specific needs.

More than 30 courses are specially tailored for cement industry customers.

Product training and Industrial<sup>IT</sup> courses include, for example:

- Cement Process Technology
- Overview Industrial<sup>IT</sup> 800xA System and Minerals Library
- Industrial<sup>IT</sup> 800xA Applications for Minerals - Configuration and Operation
- Industrial<sup>IT</sup> 800xA Applications for Minerals - Control Engineering with PDA tool and Control Builder
- Industrial<sup>IT</sup> 800xA System - Hardware and Troubleshooting
- Industrial<sup>IT</sup> 800xA System - Basic Configuration
- Industrial<sup>IT</sup> 800xA System for Advant Master - Configuration
- Optimization
  - Expert Optimizer Technology (2 programs)
- Information Management
  - Knowledge Manager (5 programs)
- Online Measurement Solutions
  - SpectraFlow analyzer and Laboratory Information Management System
- Connectivity Solutions
  - ECS Production Planning Connector

Visit ABB's training homepage for the latest courses at [www.abb.ch/abbuniversity](http://www.abb.ch/abbuniversity)



# Improve with Collaborative Production Management



ABB offers optimization solutions to bring you maximum efficiency.

## Optimization and Information Management Integrated Process Control

Collaborative Production Management (CPM) solutions integrate all manufacturing systems, providing the real-time visibility, execution, tracking, reporting, and optimization of manufacturing processes. This results in decreasing costs through better production scheduling, execution and management, and increases revenues through improved customer service and product quality, increasing profits and enhancing shareholder value.

With ABB's automation solutions, the process control, instrumentation, optimization functions and business information systems are integrated as one.

ABB's **SpectraFlow** is the first online analyzer to provide safe, reliable, accurate elemental analysis without the need for special operating licenses or handling hazardous materials. The cross-belt analyzer can be installed without changing the existing belt structure, provides low total cost of ownership and contributes to an effective reduction in CO<sub>2</sub> emissions.

The award winning **Expert Optimizer** is based upon the pedigree of proven successes of the well-known and highly regarded LINKman optimization system. It combines rule based control with modern tools like Neural Networks, Fuzzy Control and Model Predictive Control (MPC) incorporating

model based state estimation in the moving horizon approach

Feed quality problems are dealt with by combining Expert Optimizer with the **Raw Mix Preparation** solution, which achieves the goal of minimizing feed chemistry fluctuations at the lowest possible cost.

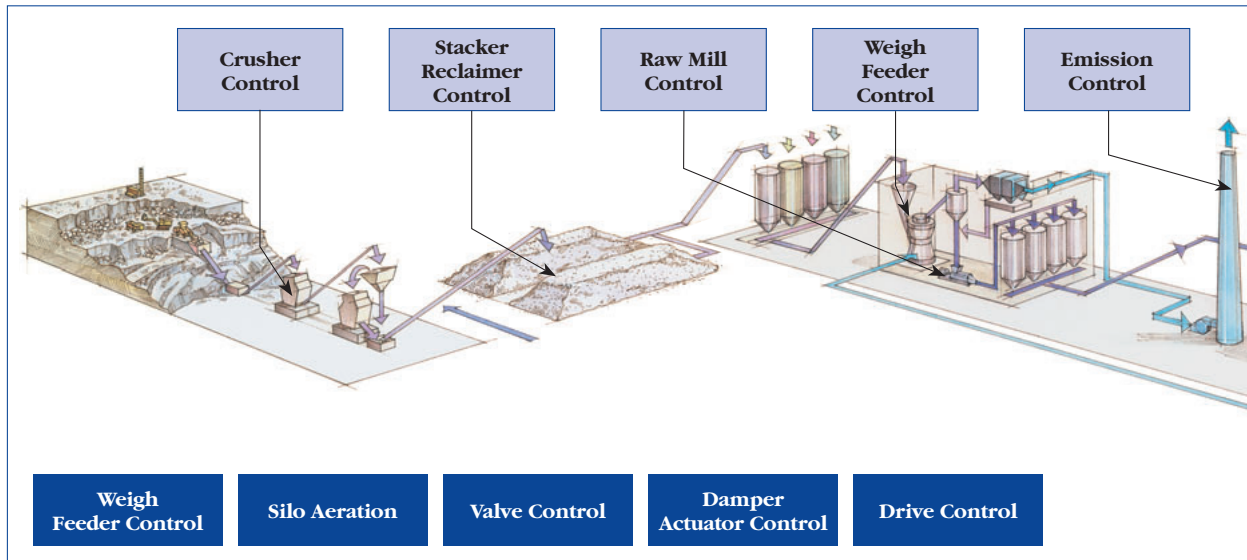
ABB's **Knowledge Manager** provides the solutions and advanced tools needed to facilitate the collection, organization and distribution of combined production, quality and energy information throughout a plant's organization, via web-based reports, trends, and graphs. The complimentary **Laboratory Information Management System (LIMS)** module ensures optimization of tasks like sample management, with fast and transparent integration of quality information with the process and production information.

Total Cost of Ownership (TCO) for integration of ERP and plant systems is reduced using ABB's Industrial<sup>IT</sup> ECS **Enterprise Connectivity Solutions**. For example, a company with 20 production sites may need at least 50 interfaces to SAP components. With ECS, only one standard interface to SAP is required.

Visit ABB's CPM homepage for the latest solutions at [www.abb.com/cpm](http://www.abb.com/cpm)

# Profit from ABB's knowledge and experience

ABB's new  
Industrial<sup>IT</sup> –  
scalable automation  
technology that  
grows with your  
business.



## Modular, flexible solutions based on ABB's Industrial<sup>IT</sup> technology

Scalable automation solutions provide easy entry to benefit from next-generation automation products.

A small, basic system can be rapidly extended into a fully integrated and optimized automation solution, to deliver even greater value.

Existing ABB customers have access to a range of migration plans, designed to modernize existing plants in structured steps.

Non-ABB systems are easily upgraded to a leading-edge automation solution, using value-adding solutions from a comprehensive solution and product suite.

Customers who want to switch to added-value ABB solutions can easily migrate to modern, integrated process automation, thanks to ABB's standardized product ranges that can be tailored to their needs. Communication protocols such as OPC, Profibus, Foundation Fieldbus and Modbus bring easy, economical interfacing with a wide range of third-party products.

Extensive software libraries cover many cement-based applications to bring easily maintained, tailored solutions. With ABB Aspect/Object-based

architecture, representing your process plant in a structured manner, a huge amount of information can be assigned to every real object.

ABB offers a wide range of solutions for the cement industry. Building on long experience, we use Industrial<sup>IT</sup> technology and customize process control solutions to meet your exact needs.

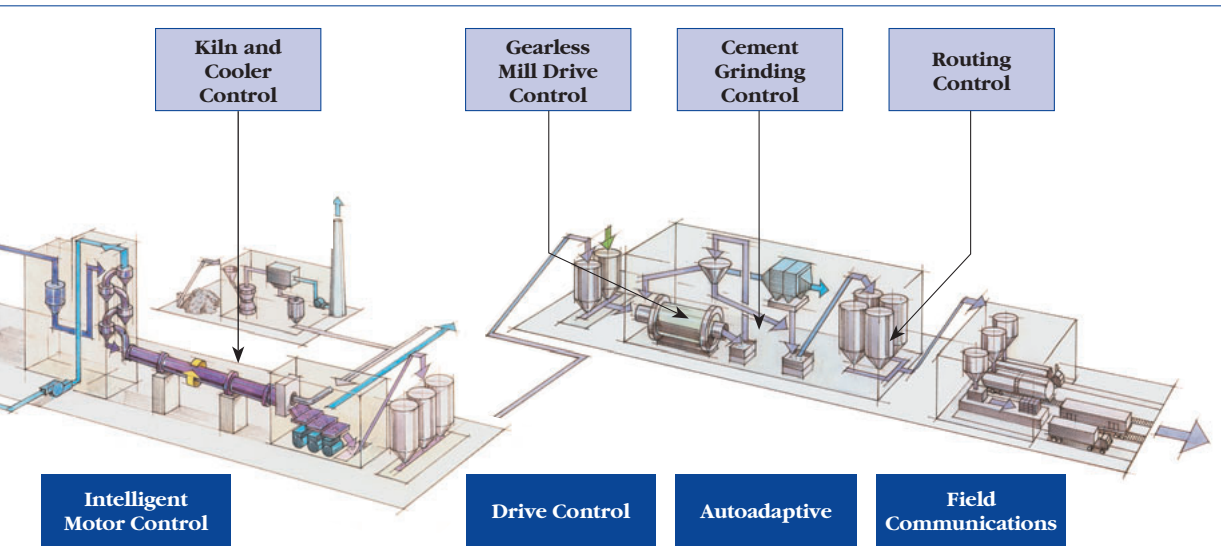
Standard control modules are tailored and integrated to ensure ease of operation and simple maintenance.

Process control applications are implemented with function-oriented software modules specifically developed for cement applications, using IEC 61131-3 programming languages. Pre-defined communication between the Process Controller and Operator Interface significantly reduces the engineering time.

ABB is constantly developing new control modules for solutions to customer needs. The following shows the breadth of standardized control modules available.



# Solutions covering the entire cement production process



What Industrial<sup>IT</sup> offers you: high-performance products, combining to deliver a high-value.

## Weigh feeder control

The Weighing Belt Feeder Proportioning function forms an interface between the operator or the Raw Mill Proportioning Solution and Belt Weighing feeders. This control module supports:

- Total feed setpoint (t/h)
- Operator menu for the actual % of each selected feeder
- Indication of actual individual feed rates
- Supervision of operator values and maximum feeder capacity
- Supervision of the total setpoint (100%)
- Pre-selection of the start-up for the feeder drives

## Silo aeration

Used to control the silo aeration valves, with the operator simply defining the operation cycle. Activation of the valves is sequenced automatically and continuously for the pre-defined period.

## Valve control

This module drives a solenoid valve unit, with limit switches if required, and may be used in a drive group or as a single unit. Two different configurable fault signals are available, with an interlock chain to prevent equipment damage.

## Damper actuator control

Control of a motorized discrete actuator, with local operation in a drive group or as a single unit. Used in combination with a pulse control module to control a motorized actuator, by taking account of the actuator positioning and the motor torque.

## Drive control

A module for control of uni- and bi-directional drives, with local operation in a drive group or as a single unit. Equipped with switchgear supervision, speed, pressure and flow control, with an interlock chain to protect devices from damage.

## Intelligent motor control

This module includes the same functionality as the Drive Control module, but communicates over a bus system (Fieldbus, Ethernet). Enables a wide range of data parameters to be accessed simply from an intelligent switchgear module.

## Loop control

PID module for closed loop control, with the following options:

- Auto tuning of control parameters
- Use of two external references, such as setpoints from Optimization or Autopilot
- Use of calculated input signal as Measured Value
- Validation of connected I/O signals
- Automatic balancing of the output value in cases of measurement value error, hardware and I/O errors
- Event logging for control mode changes and signal errors
- Support for pulsed outputs, in combination with a Pulse Control module

## Field communications

All device modules will support process connectivity through conventional, local or distributed I/O systems, using current Fieldbus standards and serial asynchronous communication conductors.

All modules are equipped with a simulation mode for testing purposes.

# Optimize your assets

ABB provides  
industry-focused  
professional  
services.



## Customer care – ABB is never far away Performance Management

ABB's technology and application experts work side-by-side with your plant personnel to develop solutions that are directly linked to business objectives and the critical capabilities required to support them.

The Services Performance Management team provides a range of value-enhancing services including process optimization consultancy, upgrading CPM systems, on-site workshops, site audits and more. All dedicated to accelerating your return on investment by reducing cost and increasing asset effectiveness.

## SupportLine

Switzerland

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ABB SolutionsBank homepage:

<http://solutionsbank.abb.com>

Available 24 hours per day,  
365 days per year.

## Service

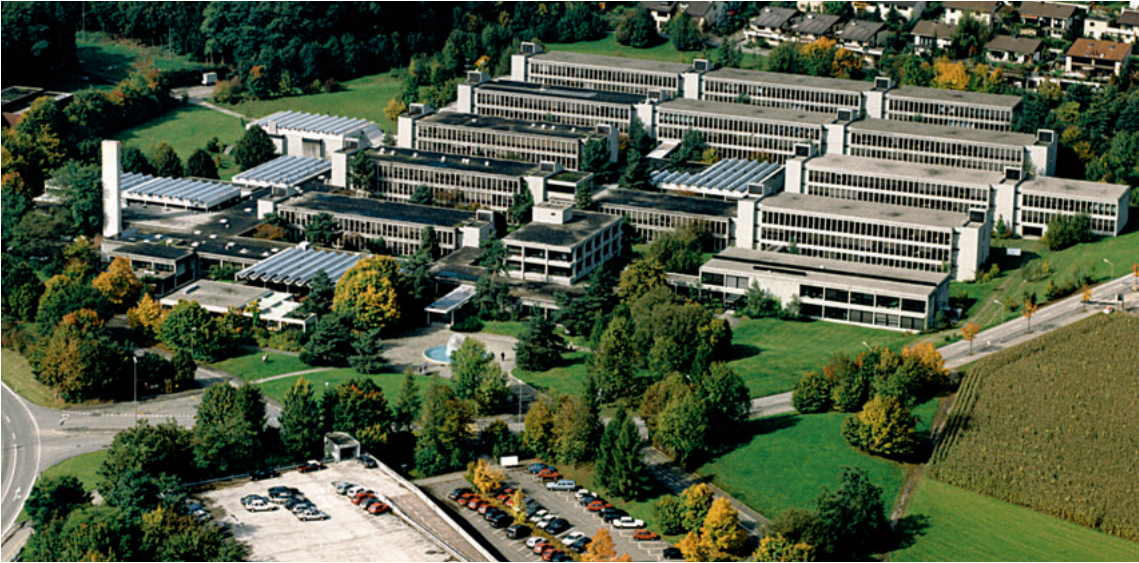
An ABB Service Contract agreement is tailored to compliment your in-house expertise and provide the additional capabilities needed to maintain site asset performance at the required level.

## SupportLine

At any time of the day, throughout the year, SupportLine lets you reach centrally located system specialists and development engineers from ABB, for technical assistance. Included is free access to the case tracking tool allowing you to follow the resolution progress.



## **Commitment** to the cement industry



Center  
of Excellence,  
based in  
Switzerland.

ABB is committed to the cement industry. Since 1975, ABB's dedicated Center of Excellence in Switzerland has continually developed standards for the cement industry.

During the last 20 years, ABB has delivered successful process control systems for more than 500 minerals and mining installations worldwide. More than 300 of these applications are in the cement

industry, with some 100 representing modernized automation systems.

ABB is a leading global supplier of process control systems to the cement industry. Its engineering departments, with their industry-specific validation procedures, ensure consistently high quality in automation technologies.



# Contact us, and try our solutions.



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