

SmartAutomation

AI and digital twins for industrial operations

SmartAutomation is AI DIGIMARKET's proposed industrial software platform for giving factory teams a connected view of production, equipment and performance. It combines plant data, process models and AI to help customers understand operations, test improvements and introduce validated automation.

The first industry focus is cement manufacturing. Steel manufacturing is the next planned expansion, followed by other industries where a repeatable use case and validated process model can be established.

Touch based process control across devices

Authorized operators will monitor and control supported processes from a mobile phone app, laptop or large area control room touchscreen. Routine operation uses on-screen controls without physical knobs, buttons or dials. Independent emergency and protective controls remain where the plant safety design requires them.

Customer need	Proposed SmartAutomation response
Understand plant performance	Connect production, energy, equipment and quality information in one operational workspace.
Anticipate problems	Identify anomalous conditions and provide supporting trends for operator investigation.
Evaluate improvements	Use a calibrated process model to compare operating scenarios within its validated range.
Manage execution	Track recommendations, approvals, maintenance actions and measured outcomes.

Who the product serves

Plant owners and general managers gain performance visibility. Production and process engineers investigate operating tradeoffs. Maintenance teams track equipment condition. Energy and quality teams connect their measurements to production decisions.

A focused entry point

Start with one cement grinding circuit. Connect the available process, power and laboratory data; establish an operating baseline; validate the twin; and test operator recommendations against agreed quality and throughput constraints.

Product status: proposed platform and development roadmap. Modules, integrations and performance targets are defined per engagement. No production deployment or quantified saving is claimed in this brochure.

SmartAutomation for cement

From process data to actionable operating insight

The cement edition will connect selected manufacturing systems and build process-specific models around customer priorities. Initial coverage will be deliberately narrow, with additional plant areas introduced after validation.

Proposed core capabilities

- Plant connectivity: Integrate approved historian, PLC, DCS or SCADA data, together with energy meters, laboratory results and maintenance records where interfaces are available.
- Operational digital twin: Represent equipment relationships, operating states and process behavior using engineering knowledge and calibrated data-driven models.
- Production and energy visibility: Track throughput, specific electricity consumption, operating variability and stoppages with clear data-quality indicators.
- Quality assistance: Relate process conditions to laboratory results and support quality predictions where sufficient representative data exists.
- Equipment condition monitoring: Flag unusual vibration, temperature or load behavior for maintenance review when suitable sensors and history are available.
- Operator and management workflows: Present recommendations, record decisions and produce shift and management reports.

First use case for a grinding circuit

An engineer investigates a rise in electricity per tonne. SmartAutomation checks data quality, compares similar operating periods and uses the validated twin to test permitted adjustments. The operator reviews the recommendation and its expected tradeoffs before an approved change is made. The system then compares actual outcomes with the prediction.

Define success before the pilot

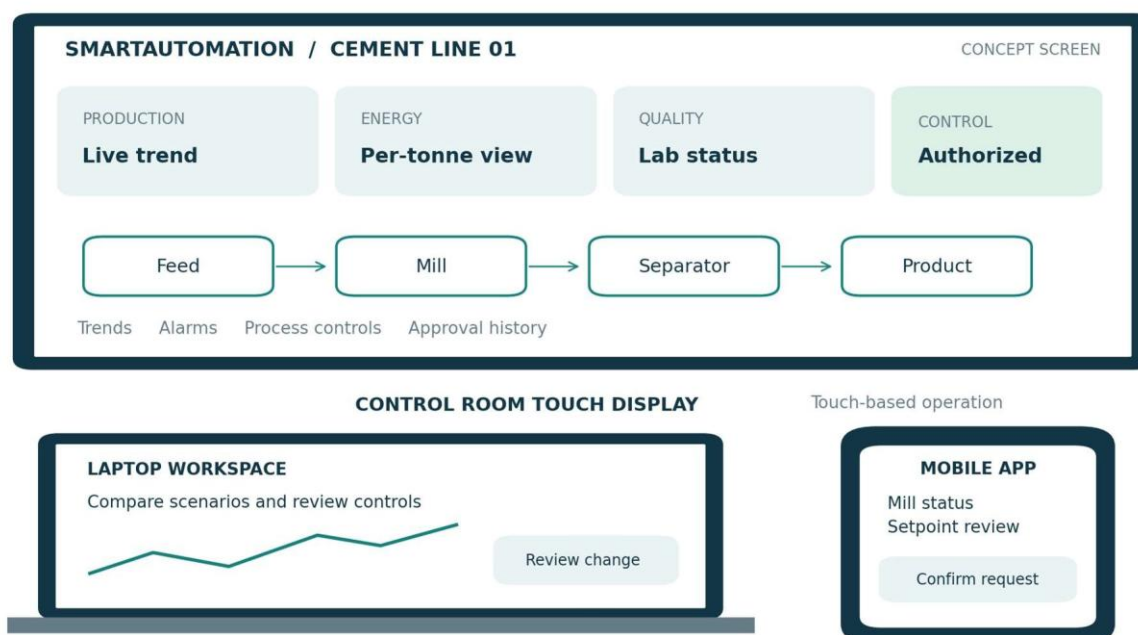
Measure	Evaluation approach
Specific electricity consumption	Compare kWh per tonne within agreed product, feed and operating conditions.
Throughput and product quality	Track output alongside agreed fineness or other relevant laboratory criteria.
Model usefulness	Measure prediction error, recommendation acceptance and performance on unseen operating periods.
Operational reliability	Track data availability, missing tags, alert usefulness and recovery from interruptions.

Measured changes must be interpreted against feed properties, product mix, production load and other operating changes. Savings targets are agreed after baseline assessment.

One process across three devices

Mobile app and laptop control with a large touch display

A common process view adapts to each screen. Authorized users can inspect conditions, review permitted setpoints, request approved start or stop sequences, acknowledge alarms and track commands to a confirmed outcome. Available actions depend on the user, process state and assigned control authority.



Illustrative interface concept. Screen content is a design proposal, not a screenshot of a deployed product.

Device	Primary operating experience
Mobile phone app	Plant status, alarms, approvals and explicitly permitted remote commands with confirmation.
Laptop	Detailed trends, twin scenarios, setpoint review and approved process-control workflows.
Large touch display	Control room overview, direct process navigation, alarm handling and authorized operating sequences.

Designed for deliberate operation

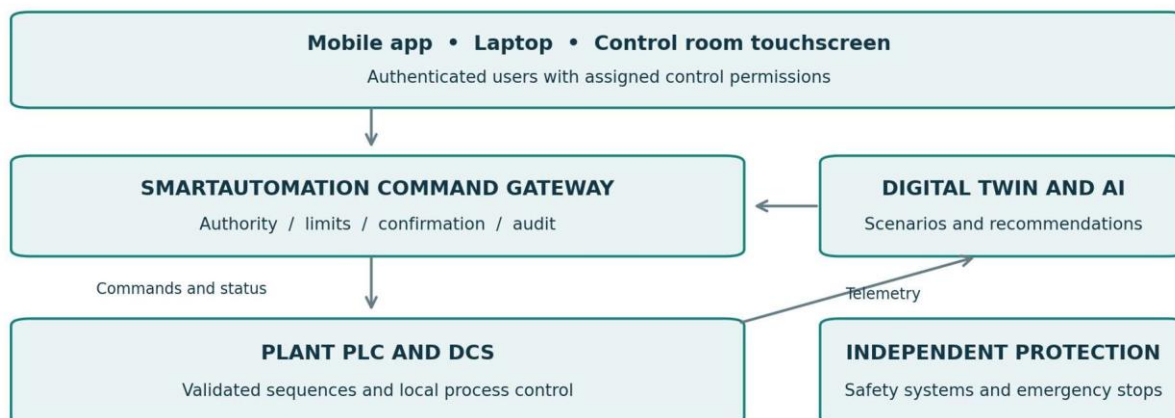
Large touch targets, readable status text and clear unit labels support operation. The interface displays the current value, requested value, permitted range and command status. Consequential changes require a review step; acknowledgement of an alarm does not clear the underlying fault.

Routine controls are digital. Independent emergency stops, local isolation and protective systems remain physically available where required by the plant safety design.

Digital twin and controlled action

Model the process and validate each path to automation

The digital twin combines equipment relationships, synchronized measurements and calibrated process models. It supports scenario analysis and recommendations within a validated operating range. The platform introduces read-only observation first, operator-approved control next, then bounded automation after commissioning.



Conceptual command path. Independent protection operates separately from the app and digital twin. Field wiring and safety architecture are engineered for each site.

Control rules for every device

- **Authority and handover:** Only an authorized session may control the relevant process. Explicit ownership and handover prevent conflicting mobile, laptop and control room commands.
- **Validate and confirm:** Check identity, permissions, equipment mode, plant permissives, limits and input freshness before execution. Display requested, accepted, executed or failed status from the plant system.
- **Connectivity and fallback:** Show stale data clearly and block new writes when the connection is lost. Do not silently replay queued commands on reconnection; reconcile actual plant state before resuming control.
- **Local protection:** PLC and DCS logic retain local control. Interlocks, emergency stops and safety systems remain independent. Remote access cannot bypass them.

AI assists within a validated operating envelope

Models are checked against unseen plant data and monitored for drift. AI suggests or, after approval and commissioning, initiates only bounded changes through the command gateway. Loss of confidence disables new AI-driven writes and invokes the agreed fallback. Optional vision supports defined inspection and material-flow tasks.

Expansion and engagement

Cement first with a reusable industrial software core

A phased industry roadmap

Phase	Focus	Requirement for expansion
Cement pilot	One grinding circuit and a validated operator-advisory workflow	Representative data, process expertise and a measurable customer outcome.
Cement expansion	Additional grinding lines, selected assets and later kiln or cooler use cases	Separate models, engineering validation and commissioning for each process.
Steel edition	One selected process, such as reheating or rolling, based on partner demand	Steel-specific process knowledge, datasets, quality constraints and validation.
Additional industries	Repeatable use cases in other manufacturing environments	Evidence of customer demand and reusable integrations with validated domain models.

Connectivity, access control, asset models, workflow services, dashboards and model monitoring can be reused. Cement and steel require different process models and operating constraints; each industry extension is a dedicated engineering effort.

Start with a plant readiness assessment

Review the customer's process priorities, instrumentation, data history, system interfaces and operating constraints. Deliver a data-readiness assessment, selected use case, baseline measurement plan, integration design, prototype scope and commercial pilot proposal.

A successful pilot needs a plant sponsor, a process engineer, an automation or OT contact, and access to suitable operational records. Missing instrumentation or integration work is identified before committing to performance targets.

Commercial offering

The proposed model combines paid discovery, implementation and a recurring platform license per site or agreed process scope. Optional process modules, integrations, support and model maintenance can be priced separately. Instrumentation, external licenses and site commissioning are scoped explicitly.

Discuss your SmartAutomation use case

AI DIGIMARKET LLC, USA | aidigimarket.com

Technical context: Siemens, Digital Twin — siemens.com/en-us/company/digital-twin/comprehensive-digital-twin-for-industry/; ABB, Digitalization and sustainability in cement — new.abb.com/cement/abb-in-cement/digitalization-and-sustainability-in-cement. OT security reference: NIST SP 800-82 Rev. 3, csrc.nist.gov/pubs/sp/800/82/r3/final. References describe industry guidance, not SmartAutomation certification or partnerships.

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