Automation solutions

Automation solutions for the minerals industry

One Source
Automation solutions for the minerals industry

A world leader in the minerals industry, FLSmidth offers automation solutions for every part of the minerals process flow sheet. Combining extensive process knowledge with proven automation solutions, FLSmidth is the preferred automation partner to the minerals industry - helping customers optimize their processes to the highest extent possible.
Use automation to optimize minerals processes

FLSmidth’s automation division is committed to being a recognized value-adding technology provider in the minerals and cement industries. We offer plant-wide automation solutions and services through Competence, Cooperation and Responsibility.

FLSmidth’s automation solutions range from simple equipment control to leading-edge process control solutions that seek to optimize minerals processing. FLSmidth combines its extensive process knowledge and experience as an equipment supplier across the entire flow sheet, with more than 40 years of automation experience and a track record of more than 700 control systems and 450 laboratory systems. As a dedicated supplier to the minerals industry, FLSmidth has more than 700 engineers focused on optimizing solutions for minerals processes, driving innovation to the benefit of customers.

The main philosophies
All automation solutions by FLSmidth follow a common group of philosophies that influence the entire product and service portfolio:

By people who know
FLSmidth provides automation solutions that are designed to mitigate risks and maximize utilization of plant assets - this is made possible by FLSmidth’s extensive experience with minerals processes and plants.

Global supplier with a local presence
FLSmidth has a global network of more than 40 local offices, supported by specialists in technology centers in Denmark, the United States and India.

Openness
FLSmidth’s automation solutions can be integrated with third-party suppliers and enables future modifications ensuring maximum flexibility for FLSmidth’s customers.

Independence
FLSmidth’s vendor independence and in-depth knowledge of the process and technical details - enables it to select the best components to suit customer requirements.

FLSmidth’s automation solutions are categorized into two groups:
Expert Control and Supervision (ECS)
Quality Control Systems (QCX)
Smarter Thinking
THIS WAY
FLSmidth’s extensive experience in plant automation has driven development of control solutions and process optimization that are particularly suited to the minerals industry. With features such as hardware independence, scalability, powerful I/O handling, advanced trending, proven security and an integrated engineering center, FLSmidth’s Expert Control and Supervision platform (ECS) has unbeatable proven reliability.

ECS is an advanced software platform that compiles critical process information, allowing decision makers to adjust production objectives and optimize efficiency and profitability.

ECS is modular allowing for flexibility, and is the foundation for the following solutions:
- ECS/ControlCenter (a dedicated control system for the minerals industry)
- ECS/ProcessExpert (an advanced process control solution)
- ECS/PlantGuide (a management information system specifically designed for minerals applications)
- Operator Training Simulator
- Advanced Instrumentation

ECS/ControlCenter – tailored plant process control
ECS/ControlCenter elevates the conventional control system to include advanced graphics and features specifically aimed at the minerals industry. Incorporating FLSmidth’s well proven libraries and standards, ECS/ControlCenter delivers efficient process overview, process control and process troubleshooting analysis.

Comprising an Insight Center, I/O Center, Security Center and Engineering Center, the ECS/ControlCenter is the complete solution for any minerals processing plant.

ECS/ProcessExpert – advanced process control for minerals applications
Consisting of a sophisticated toolbox and specialized application modules, FLSmidth’s ECS/ProcessExpert advanced process control is available for comminution, separation and pyro-metallurgical applications. Built on leading-edge technologies such as MPC and Fuzzy Logic, ECS/ProcessExpert provides advanced process control and optimization for minerals processing plants that will enhance profitability and reduce operational costs. This product has been designed to enable communication with most commercially popular control systems making it ideal for both green fields and existing operations.
More process control solutions...

**ECS/PlantGuide – management information & data historian system**

Designed to facilitate qualified business decisions, ECS/PlantGuide’s data collection engine ensures consistent quality of data collection. Reports and analysis can be generated in a variety of formats to suit management demands. ECS/PlantGuide is ideal for onsite use and for corporate reporting where data from geographically separate plants is required.

**Operator Training Simulator**

Built on extensive process behavior experience, FLSmidth’s simulation software provides an effective tool for process operator training, and reduces training costs and operational risks.

**Advanced Instrumentation**

FLSmidth’s strong focus on minerals has resulted in the development of a range of advanced instruments specifically aimed at improving process equipment operation, reducing operational costs and protecting assets. Examples of FLSmifth’s advanced instrumentation solutions include:

- **Impactmeter**

  Understanding SAG mill load behavior enables mill operators to improve mill throughput, reduce energy consumption and protect mill linings and grinding media from premature wear and damage. The FLSmidth Impactmeter is a valuable addition to any SAG mill and can be integrated into FLSmidth’s advanced process control solution to provide exceptional quality of mill control.

- **Infrared Kiln Scanner**

  The Infrared Kiln Scanner measures kiln surface temperature and provides 3D graphical visualization of internal operational conditions. Knowledge of the lining condition and other factors contribute to planned maintenance and reduced operational costs.

- **Kiln Gas Analysis**

  Designed to safeguard production, FLSmidth’s Gas Analyzer helps to comply with emission standards, optimize fuel consumption and improve kiln and cooler lining life.
Electrical solutions for complete minerals plants

FLSmidth can provide:

• a comprehensive range of products and services for electrical engineering
• freedom of choice among the world’s leading suppliers of top quality components and equipment
• objective advice based on hands-on site experience and workshop expertise
• commitment to supplying state-of-the-art solutions tailored to customer’s needs

FLSmidth supplies complete electrical packages for minerals plants combined with state-of-the-art engineering experience. Packages include equipment such as:

• Power distribution
• Motors & drives
• Electrical rooms
• Emergency backup
• Cabling

FLSmidth’s global procurement agreements ensure competitive, brand independent pricing whether locally sourced or imported. FLSmidth can assume full engineering responsibilities or enter into a partnership agreement - and can also supply electrical packages for third-party machinery.

First in class engineering experience
Packages are combined with basic and detailed coordinated engineering, depending on project requirements. FLSmidth has extensive experience of providing expert knowledge within all areas of electrical engineering:

• Electrical engineering design
• Technical specifications
• Layout services

• Vendor evaluations
• Reliable documentation
• Procurement services

On-site services
FLSmidth also provides a number of on-site services to facilitate commissioning of electrical systems such as:

• Supervision
• Installation
• Commissioning

Using knowledge to lower costs
FLSmidth takes pride in developing and compiling product expertise and to maximize knowledge, FLSmidth’s development teams are headed by product specialists and focus on various areas, such as power distribution and instrumentation.

Accumulated knowledge of industry-specific electrical systems enables FLSmidth to lower costs and mitigate risks to the benefit of its customers.
Quality control solutions that automate sample preparation and analysis

The QCX software platform is the foundation of FLSmidth’s quality control solutions, and the comprehensive QCX product portfolio covers solutions such as:

- **Q CX/RoboLab** (robotized sample preparation and analysis)
- **Q CX/OnStream** (online process sampling and analysis)
- **Q CX/BlendExpert** (blending software for mill and pile control)

**Q CX/RoboLab**

- automated laboratory solutions
  
  Having automated equipment and processes in the laboratory results in significant benefits. It improves the overall quality of analysis through consistent sample handling, eliminates human errors in sample preparation and analysis, improves health and safety conditions and reduces sample turnaround time.

  These solutions are always customized using proven building blocks and can be scaled to any client-specific need, ranging from an automated combined mill and press for XRF analysis to fully automated, high capacity sample processing at commercial laboratories.

**Q CX/OnStream**

- in-process sampling and analysis solutions
  
  Q CX/OnStream is the perfect solution when a plant needs fast control based on one or more product quality parameters, such as particle size or chemical composition. Q CX/OnStream provides the plant with real time, reliable information about the product characteristics. In any system design, FLSmidth thoroughly investigates the requirements and suggests the optimal solution.

**Q CX/BlendExpert**

- accounting, sorting and blending software
  
  Q CX/BlendExpert is a well-proven suite of software used to optimize ore quality in storage facilities. It is designed to operate with most types of stock piles and material blending processes.

  Using Q CX/BlendExpert software together with the optimal sampling and analysis method provides a best-in-class control and optimization solution when handling different ores.
Project management

FLSmidth’s automation track record

• 700+ control systems
• 450+ automated laboratories and quality control solutions
• 60+ service agreements

FLSmidth has delivered more than 1000 automation solutions for complete plants and laboratories world-wide. The project execution and site activities are clearly defined in the ISO9000-certified quality management system which focuses on delivering ‘On Cost - On Time - On Spec’ - and FLSmith’s worldwide network of offices ensures local support. Typically, project execution is divided into three phases:

1) System Engineering includes development of project-specific drawings and diagrams, configuration of software and PLC programming as well as production of equipment. The engineering is verified by a factory acceptance test. This phase also includes development of project-specific equipment as well as programming or configuration to integrate with existing client systems.

2) Shipment and Installation is often undertaken by the client if they have experience with dealing with local contractors. FLSmith provides detailed pre-installation services for training and support of the installation personnel.

3) Commissioning and Optimization involves on-site services by FLSmith and sub-supplier personnel to bring the delivered equipment and software into correct operation. The installation and commissioning phase typically include activities, with the goal of achieving a smooth and rapid start-up. It is essential that dedicated end-user personnel are appointed to follow these activities as they will support the system in future. Depending on the scale of the actual project, commissioning can require a few days or several months’ activity.

Project Management

A dedicated project manager is assigned to coordinate all internal and external activities through the entire lifetime of the project - and this person is the main contact for the client. At an early stage in the project, the project manager provides a detailed project plan, indicating the individual phases and all key deadlines, project meetings, etc.

Site Management

On larger and more complex projects, a site manager is appointed to assist the project manager, representing both FLSmith and all sub-suppliers. This person’s role is to prioritize daily work in order to optimize overall project progress, organize onsite tasks and hold project meetings with the client to coordinate common activities.
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FLSmidth recognizes that long-term success and customer satisfaction depends on servicing and maintaining installed solutions. FLSmidth has designed a number of services to best support its customers in maximizing return on their investment:

• Training courses to ensure maximum utilization of installed solutions
• Service & Migration agreements to secure long-term investments
• Engineering consulting to provide access to FLSmidth’s wide range of automation experience

**Service Agreements**

Service Agreements include access to a 24/7 hotline for emergency inquiries which ensures minimal system down-time in case of adverse events.

**Migration Agreements**

Migration Agreements ensure reliable, safe and trouble-free long-term operation by continuously migrating systems to the latest software and hardware.

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**Service & Migration Agreements**

Next generation service concepts from FLSmidth aims to support customers throughout the life-cycle of an installed solution. When the system warranty period is finished, an FLSmidth Service Agreement is a prudent investment and gives top priority to emergency assistance from skilled professionals.

The customer is supported via service visits on site and/or remotely via telephone hot-line and the internet, ensuring reduced system downtime and optimal plant performance. Furthermore, FLSmidth Migration Agreements ensure reliable, safe and trouble-free long-term operation by continuously migrating systems. Access to the latest software releases with service packs and software upgrades from FLSmidth is one of the benefits in these agreements.

A typical five-year Migration Agreement package includes, delivery of software licenses, replacement of hardware and one major conversion of the software platform.

With a combined Service & Migration Agreement, the system is kept up-to-date and operating reliably by FLSmidth. A Service Agreement includes access to a 24/7 hotline for emergency inquiries which ensures minimal system down-time in case of adverse events.

**Remote Services**

Secure remote assistance via the internet is a cost efficient way of providing fast and highly reliable service by product specialists. FLSmidth Remote Services allow a specialist to monitor a software application from a distance, making it possible to remotely evaluate problems and even make corrections. This is done on-line by a product specialist while the system engineer or operator can follow every step.
Innovating for the future

FLSmidth is dedicated to being the leading supplier of plant process and quality control to the minerals industry. Innovation will play an increasingly important role in ensuring sustainable competitive advantage in an ever-changing economy.

Knowledge at Work
Choosing FLSmidth means driving innovation to the maximum and ensures customers always benefit from the latest technologies and knowledge.

By combining machinery development with the latest automation technologies, FLSmidth leverages its extensive process knowledge to create innovative proven solutions. This is made possible through more than 40 years of innovation in automation solutions and expertise within the entire flow sheet.

Demonstrated Innovation
Beginning with the first industrial fuzzy logic application in 1971 and incorporating growing in-house process knowledge, FLSmidth has developed new generations of advanced process control employing the latest technologies such as Model Predictive Control. Demonstrating use of robotics from as early as the 1980s, FLSmidth’s use of robotics technologies has resulted in solutions that provide consistently high quality and reliability, and improve health and safety.

Reliability
FLSmidth’s proven track record for reliability and project execution means customers have come to expect delivery on time, on cost and on spec, every time. Delivered • Implemented • Demonstrated...
Our brochure makes no offers, representations or warranties (express or implied), and information and data contained in this brochure are for general reference only and may change any time. Please contact us for specific information or data that may relate to your interest.