AIR QUALITY
CONTROL SYSTEMS
SERVICE SOLUTIONS

POWER
Welcome to Alstom Power

Alstom is a global leader in power generation with a portfolio of products covering all fuel types. From fossil and biomass to nuclear and renewables, close to 25% of the world’s power production capacity depends on Alstom Power technology and services. Whether in design, manufacture, procurement or servicing, Alstom Power is setting the benchmark for innovative technologies that provide clean, efficient, flexible and integrated power solutions.

Alstom Power can supply anything from single components to complete turnkey power plants. Our Plant Integrator™ approach and power automation and control solutions ensure the optimisation of all elements to derive the maximum lifetime value from all our customers’ investments.

Alstom Power has more than 100 years of experience in engineering, procurement and construction (EPC) of new power plants. Our engineers are also experts in retrofitting, modernising and servicing existing plants. With operations in 70 countries, Alstom Power is close to customers all over the world, ensuring rapid response and service excellence at all times.

With our recognised expertise all over the power generation market, we are able to find solutions to the challenges of today.

CLEAN POWER TODAY!™
We recognise the need to improve the environmental balance of legacy plants while increasing adoption of new clean energy solutions.

PLANT INTEGRATOR™
Our solutions maximise performance by optimising the complex interactions between sub-systems from design to operation.

LIFECYCLE MANAGEMENT
At all stages of the lifecycle we support owners to maximise their return on investment while minimising negative environmental effects.
With operations in 70 countries, **Alstom Power is close to customers all over the world**, ensuring rapid response and service excellence at all times.

**Forward thinking services**

**A strategy to secure investments**
Utilities, independent power producers and industrial customers are all looking to maximise the returns on their asset investments by optimising operations and managing risk.

As a leading Original Equipment Manufacturer (OEM), we possess extensive technical expertise, equipment know-how and process capabilities that we can share with you. This reduces the need for you to make large investments to develop your own in-house engineering skills.

**Optimising emission reductions**
Alstom is specialised in developing cost-effective solutions and services to upgrade and extend the life of Air Quality Control Systems (AQCS). Our dedicated environmental services bring emissions and operation costs down and let plant operators focus on their core businesses.

**Not just for Alstom equipment**
We are not limited to servicing Alstom equipment. Many of our customers have equipment from other manufacturers, but are drawn to Alstom by the unique range of products and services that meet their specific needs.
HERITAGE

Our heritage includes the following brands: ABB, ABB ALSTOM POWER, ABB Fläkt, AB Svenska Fläktfabriken, Bahson, Carborundum, CE Environment, CE Preheater, CE Walther, Enviro-Tech, Fläkt, Fläkt Industri AB, Gadelius, Kennecott Sohio, Lugar, Norblo, Pangborn and Peabody.

PLANT INTEGRATOR™

Improving the efficiency of a power plant relies on fine tuning complex interactions between diverse sub-systems. Building on decades of turnkey solutions expertise, Alstom is able to reframe any specific question in terms of the impact on the overall availability and flexibility of the plant. We call it the Plant Integrator™ approach: it helps operators to maximise their total plant performance while fully complying with environmental, regulatory and commercial constraints.

RESEARCH & DEVELOPMENT

Alstom Power invests a large portion of its revenue in Air Quality Control System research and development (R&D). In addition, a dedicated R&D activity is reserved for environmental services in order to improve and innovate tools, products and methodologies for managing and maintaining Air Quality Control Systems. This R&D activity benefits from a network of world-renowned Alstom experts, who also support our customers in their operations to solve the most challenging issues.
In-depth portfolio combined with broad experience

In today’s power generation and industrial markets, plant owners and operators seek to establish long-term cooperation with major Original Equipment Manufacturers. They look for partners who are willing and able to develop solutions that will reduce emissions and increase production efficiency throughout the lifetime of their equipment.

As part of Alstom’s commitment to providing complete plant services for optimal performance, we are dedicated to supporting our customers to cost-effectively maintain their Air Quality Control Systems.

Our flexible and customised expert services cover the full flue gas line and apply to a full range of Air Quality Control Systems including:

- Electrostatic Precipitators (ESP)
- Fabric Filters (FF)
- Wet and Dry Flue Gas Desulphurisation (Wet and Dry FGD)
- Selective Catalytic Reduction (SCR)
- Mercury Control
- Other equipment for the flue gas line

Our wide expertise in power generation, pulp and paper, iron and steel, non-ferrous, mining, aluminium, cement, waste to energy and petrochemicals has enabled us to develop adapted solutions for each industry.

Alstom offers service solutions or specific services at all stages of the plant lifecycle:

- Parts
- Outage and Repairs
- Field Service
- Advice and Operational Support
- Performance Improvements
- Service Contracts
- Services on Other OEM (OOEM)

OUR COMMITMENTS

- Solutions for changing regulations and ageing equipment
- Dramatically reduced emission levels
- Guaranteed emissions and availability at the lowest cost
- Reactivity, reliability and speed
- Advanced technology with local service
Parts

For own and custom-designed components (ESP, FF, Dry and Wet FGD), Alstom supplies a wide range of spares. Our extensive Original Equipment Manufacturer knowledge and experience enables us to deliver the highest quality and innovative spare parts. With a responsive and competitive spare parts management, customers benefit from flexible solutions such as online ordering, spare parts pooling and inventory programmes. Based on 100 years of experience, Alstom’s global supply chain responds to stringent quality requirements.

Alstom Air Quality Control System spare parts benefit from:
- Many years of operational experience, which has brought life-cycle cost models and enhanced parts (ESP, FF, Wet and Dry FGD)
- Dedicated R&D, delivering new designs with increased performance
- Ability to build the most appropriate and reactive supply chain for customers
- Global sourcing with stringent quality requirements

Interface module IM300 for ESP networks
Inner arm / hammer clamp
Spiral electrode

Supporting your
Outage and Repairs

Leveraging the competence in our global workshop network and AQCS local service centres, Alstom offers repairs and spare parts for all environmental technologies and components.

Additionally our assessment processes cover both the planning and execution of preventive maintenance as well as outage management, ensuring on-time delivery with the best quality and commitment to safety. Whichever outage occurs, planned or unplanned, Alstom is a proven expert in outage techniques and emergency response methodology (ERP).

Using reliable modern technologies and materials, Alstom offers outstanding and competitive lifetime extensions.
We can provide dramatically reduced emissions and considerable energy savings by combining deep process knowledge with leading AQCS upgrade solutions.
Performance improvements

Plant operators today face multiple challenges in their efforts to make their plants more competitive, while complying with more stringent environmental regulations. Alstom’s upgrades, optimisations and retrofits are tailored solutions based on its comprehensive knowledge of all types of equipment, technologies and processes needed along the flue gas line. We have extensive experience improving ageing AQCS equipment when laws, regulations as well as fuel and process changes.

Our technical solutions for retrofits and upgrades rely on a combination of process expertise with innovative mechanical, electrical and IT systems. The most appropriate upgrade solutions are proposed after a thorough assessment by our experts who have managed hundreds of similar projects worldwide. This unique technological knowledge is further developed through significant R&D investments, specifically dedicated to the installed base and with a particular focus on efficiency and environmental aspects. Alstom has developed a series of control systems (EPIC) and high frequency power supplies (SIR) for ESP, control systems for FF (EFFIC) as well as emissions and energy optimisation algorithms, like EPOQ, for various environmental equipment.

Alstom’s upgrade projects can always be combined with Long Term Service Agreements (LTSA) and Operations and Maintenance (O&M) contracts, with the aim of extending lifetime, reducing emissions and maintenance costs, as well as increasing plant productivity.
Advice and operational support

Alstom’s dedicated technical service and process engineers are backed by an unmatched installed base experience, enabling them to provide best-in-class technical assistance and support to any manufacturer’s design. Alstom supports customers in choosing the right solution to maximise plant and Air Quality Control System performance, availability and reliability with a large range of innovative services like condition and lifetime assessments, outage compression techniques, inspections, ERP, monitoring and diagnostics, remote control and optimisation (via the proprietary system ProMo) and training.

Customer benefits:
- Environmental compliance to new emissions regulations
- Maintenance cost optimisation
- Performance improvement of AQCS equipment, including the reuse of selected by-products
- Availability and reliability
Field service

Alstom’s Global Field Service Network has a strong local presence and provides customers with strong technology support and engineering capabilities with quick access to experts. Alstom provides maintenance management, field repairs, erection, commissioning, construction and supervision. Our vast technical and outage management experience allows us to service, retrofit and upgrade our customers’ plants to improve their performance on both OEM and other OEM components and systems. With an absolute commitment to safety, Alstom Field Service processes cover both planning and execution ensuring on-time delivery with the highest quality.

Services on other original equipment manufacturer

Following a series of acquisitions and mergers over the last century, Alstom benefits from a large heritage comprising the broadest technical product portfolio and expertise capability to service and upgrade or retrofit the widest range of other OEM components and systems. Through proven and solid technical expertise, Alstom has extensive experience in interfacing and integrating Alstom and other supplier’s equipment.
Our service agreements and O&M contracts are designed to maximise plant and equipment availability and performance while minimising emissions, energy consumption and maintenance costs.

### Service contracts

Alstom’s service contracts are tailored to meet our customers’ operational, maintenance and support requirements. They are flexible in scope of services and equipment covered, as well as contract duration and risk sharing. Whether the right solution is a Long Term Service Agreement (LTSA), an Operation and Maintenance (O&M) or a frame agreement contract, Alstom’s comprehensive contracts are designed to create a win-win situation with its customers. Our services carry long-term performance guarantees, using well proven methodologies and commercial practices.

Alstom provides the following services: In-depth performance and condition assessment, regular inspections, planned outage preparation and work, unplanned outage response, 24/7 on-call service, operation support and recommendations, spare parts management, remote monitoring, diagnostics and control and performance guarantees. These services apply to all or part of the flue gas line equipment. They can be implemented fully or by module, while the division of work between the customer and Alstom is adapted to each case.

### LTSA FRAME AGREEMENT REFERENCE

- **Customer:** Botnia Group, Finland
- **Plant type:** Pulp and paper with recovery boiler and lime kiln
- **LTSA scope:** - 4 x Alstom ESP
  - Fans and conveyors
- **LTSA period:** Five years
- **Main customer benefits:** Guaranteed ESP unit availability providing emission assurance and optimised plant production
References

Alstom is a world-leading supplier of flue gas cleaning and control systems for power generation and industrial applications. With 100 years’ experience, Alstom has the products, process experience and resources our customers need. Our fleet covers installed power exceeding 200 GW in particulate control, 120 GW in DeSOx, 40 GW in DeNOx and 10 GW in Mercury.

**Nalco, India - ESP Retrofit**
Customer: National Aluminium Company Limited
Scope of supply: Design, engineering, supply, erection and commissioning of the mechanical and electrical components of the ESPs, including the control system and the ash handling system
Main customer benefits:
- Reduced plant particulate emissions below 150 mg/Nm³ as requested by the Environment Pollution Control Board, to conform India’s more stringent environmental regulations

**Sines 3-4, Portugal - ESP Upgrade**
Customer: EDP - gestão da produção de energia s.A. C.T
Scope of supply: Internal replacement, new high frequency power supplies (SIR) and control systems (EPIC)
Main customer benefits:
- Particulate emission guarantee 40 mg/Nm³
- Plant emissions reduction: down from approx 80 mg/Nm³
- Reduced O&M costs
- System life extension and reliability improvement

**Lowman Station, USA - WFGD Upgrade**
Customer: AEC Alabama Electric Cooperative
Scope of supply: Performance enhancement plates, sparger, spray nozzles and WFGD trays
Main customer benefits:
- Environmental compliance: SO₂ removal efficiency above 97% (from guaranteed 92.5%)
- Improved SO₂ capture
Alstom’s service organisation encompasses 200 sites in 70 countries around the world, designed to ensure proximity with the customers’ plants, while making innovative products and expert resources accessible from everywhere.

The AQCS product line is organised around six execution centres, fully equipped with the key AQCS functions (capture and tendering, engineering including process expertise, project management, field services, procurement) and globally distributed to support customer requests. The results are reduced response times and a high level of service.

We are where our customers are

Worldwide presence

We are where our customers are

AMERICAS
- Knoxville, USA
- Sao Paulo, Brazil

EUROPE
- Växjö, Sweden
- Cologne, Germany
- Milano, Italy

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