As a world leader in the design, manufacture and supply of protection, control, recording and monitoring systems for grid utilities and industries, Alstom provides a comprehensive range of support and services tailored to your needs.

For energy savings, network security and cost efficiency

Smart-grid devices, compatible communication protocols and advanced technologies can improve transmission and distribution network efficiency substantially. Nevertheless utilities, industries and energy sector providers still face concerns of financial performance, return on capital employed, security and profitability. Therefore, once installed, substation equipment should be thoroughly maintained, the control system architecture continually updated, and operating skills constantly enhanced throughout the equipment’s life time.

In response to stability and reliability expectations, Alstom substation automation solutions offer effective ways to save energy, ensure network security and optimise costs.

To meet your requirements, Alstom offers a complete range of solutions that target following issues:

- Equipment and system unavailability
- System and product failures
- Installed base age/obsolescence
- Life cycle management (R&D follow-up)
- Modernisation and extension
- Technology evolution
- Skills development

Transmission & primary distribution from 10 kV to more than 1,000 kV

"SAS Support teams are close to customers to ensure sustainable performances and optimised services"
SAS SERVICES OFFERING

In today’s business world, investing in quality, innovative equipment that optimises your electrical structure and raises your return on investment is essential. Once the equipment is installed, Alstom Grid SAS can assist and advise you to ensure continuous and optimised grid operability throughout the equipment’s life time.

Based on multi-year manufacturing expertise and extensive experience in refurbishment, Alstom Grid offers the most cost-effective and efficient solutions to increase the life span of your substation automation equipment.

From onsite assessments and periodic inspections through to complete life extensions, we offer individualised programmes to enhance your personnel’s skills and maintenance of your equipment tailored to system and product types, age and ratings.

SUBSTATION AUTOMATION SUPPORT COVERS:

- Maintenance contracts
- Renovation and modernisation plans, obsolescence management with software and hardware compatibility
- Extension projects
- Commissioning and testing of existing and additional equipment
- Repair services and spare parts
- Standard and customised training matched to skills development plans and new technologies
- Electrical network consulting to reduce operating costs and optimise customer investment

CUSTOMER NEEDS

- Improvement in equipment and system availability
- Reduction in outage times
- System & product failure analysis and resolution
- Installed base age/obsolescence assessment and management
- Lifecycle management
- Modernization & Extension
- Cyber-security
- Technology update: protocol, standards, maintenance tool (SMT)
- Skills development: new employees, knowledge refreshment, competency management

"Flexible support to meet operational needs, equipment uptime and long term performance"
MAINTENANCE AND TECHNICAL ASSISTANCE

Maintenance of assets is critical to achieving reliability of electricity supply and compliance with regulations. Lack of maintenance on the other hand can lead to loss of profitability, suboptimal use of new technology, absence of benefits from the installed base and deterioration or even severe incidents. Our experts are available to provide you with support on our solutions and supplement the efforts of your engineers and administrators.

To protect your valuable assets and to ensure trouble-free operations, a long-term agreement would ensure continuous performance, reliability and stability of your electrical network throughout its lifetime. This could be supplemented by a service level agreement (SLA) with specified response times. Substation automation system and product support can include:

- Preventive and periodic routine onsite maintenance
- Corrective maintenance (software and hardware)
- Long-term maintenance:
  - Multi-year maintenance with system updates and upgrades
  - Flexible maintenance plan
- 24/7 support service on critical issues and site attendance
- Maintenance and operations on legacy equipment
- Package of hours available at your discretion for consulting (electrical network studies) or training or other additional services

Alstom regional sales delivery support units (SDSU), spread across the globe, take care of your needs and deliver projects and services. Highly qualified engineers are available to provide training and counsel you on design applications for protection schemes and digital control systems.

Our technical staff boasts a broad level of expertise and provides high-quality maintenance taking into account operational constraints.

“Maintenance allows return on investment (ROI) optimisation and return on capital employed (ROCE) improvement”
MODERNISATION AND RETROFIT

Alstom refurbishment experts support the decision-making process to provide the most cost-effective solution for your renovation, modernisation or extension projects. Depending on each particular situation, Alstom offers the most adequate solutions for efficient management of substation protection infrastructure.

Our technical strengths include efficient project management, timely response, global capabilities and local presence. Backed by extensive experience as well as high product quality and based on your strategy, Alstom builds customised migration paths with operational milestones that are adapted to your constraints.

Furthermore, refurbishment solutions tailored to your requirements can be proposed to protect your investment. Integrated refurbishment experts address applications in generation, transmission, distribution and industry, aimed at:

- Optimisation of reliability and performance
- Adaptation of equipment to current needs and technology advances
- New norms and substation standardisation
- Safety conditions
- Product and system obsolescence management

Cost constraints and technical factors have a major influence in these business decisions. Alstom, with a long history in this field and legacy substations knowledge, will advice its customers to reach the maximum of benefits of their investments with minimum of operational risks.

Once replacement of equipment identified, various options are available:

- Plug & play kits
- Panel door or rack replacement
- Extension of existing installations
- Complete scheme replacement
- Protection system replacement
- Control system replacement
- Protection Relay component

“Technology up-to-date
Space saving
Outage time reduction”
AREAS WE COVER
Retrofit could be the most suitable economical solution in response to the following situations:
- Impaired safety conditions (staff safety and property protection)
- Reduction of equipment availability and reliability
- Non-compliance with standards
- Ageing equipment
- Lack of spares: unavailability or costly solutions
- Obsolescence
- Expert unavailability

OUR SOLUTIONS
- Customised solutions for transformers, generators, transmission lines, motors and substation control systems
- Alignment of shutdown period with system requirements
- Comprehensive solutions from re-engineering through site commissioning
- Product life extension on a par with new technology with minimum investment

REPAIR SERVICES & SPARE PARTS
Alstom Grid SAS addresses customer needs in repair services and spare parts through its certified regional repair centres, providing fast and efficient solutions.

For advanced analysis and investigation requirements, customers benefit from the expertise of Alstom Grid’s centre of excellence at Stafford (United Kingdom) skilled in identifying faulty components and analysing the fault causes. This could lead to the introduction of a preventive mode to avoid repeated defects.

“We think about the most cost effective & efficient solutions to increase your substation automation equipment life span”
OBsolescence Management, Upgrade and Migration

Without regular upgrading, the installation will show flat performance, be subject to operational risks owing to ageing and have outdated functionalities. Our Services enable you to anticipate and plan milestones to prevent obsolescence, maintain system availability, improve performance and functionalities and preserve your investment with a long-term vision.

**Why?**
- Legacy has become obsolete
- Be ready for extensions
- Protection relay migration
- New SCADA protocols

**How?**
- Step by step implementation philosophy
- Outage limitation
- Engineering & commissioning time reduction

**Legacy to DS Agile**
- Latest technology
- Reduce system failures
- Simplify maintenance
- Preserve customer investment

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Our main goal is to help our clients finding preventive and curative solutions
- Reduce operating costs
- Extend lifetime equipment
- Ensure safety and security
- Optimise customers investment

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Migration efforts and benefits are spread over time.

New operational needs are combined with Alstom’s technology roadmap to continuously deliver optimisation and functionality enhancements.

Total cost of ownership is spread over the full life.

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![Image](image-url)

**Don’t let your assets become obsolete. Leverage Alstom Grid’s support to reduce your total cost of ownership**
COMMISSIONING & TESTING
Alstom Grid SAS provides a comprehensive range of services for the testing and commissioning of protection, BCU schemes and substation Control system for utilities, industries and offshore platforms. They include:

- Pre-commissioning test
- Scheme test
- Secondary injection test
- On-load test
- Bay controls, RTCC, synchronisation test
- Testing & commissioning of protective relays, measurement centres, BCUs,
- End-to-end test

On completion of a site analysis, our highly skilled engineers provide detailed procedure to validate testing. In addition, the collected data can aid in future trend analysis.

PROTECTION ENGINEERING AND NETWORK EXPERTISE
The protection engineering and consulting team offers unrivalled network expertise, enabling you to improve your electrical network quality. Our team can advise you after an audit or incident analysis and propose solutions to improve network operability.

Network studies also include panel refurbishment and protection relay replacement. They focus on: short-circuit and selectivity, protection plan and network.

EXTENSION
Global demand for electricity will continue to rise steeply, so that new interconnections, busbar increases, additional feeders or transformers in substations will all require additional, integrated protection and control systems resizing. Alstom can support you in your expansion projects by proposing tailored solutions to preserve network stability and reliability.

Extension projects can embrace conventional control systems and digital control systems, even in legacy phases. Starting from PSCN and Space 2000 through to Pacis4.6, Alstom offers compatible solutions to limit outages and manage legacy equipment. For this purpose, Alstom highly recommends systems upgrades to the latest versions still supported by R&D. This is aimed at extending the installation’s life span and spreading efforts and benefits over time.

"Maximise your electrical network availability"
### TECHNICAL TRAINING

Alstom Training Centres are recognised for the quality of their education. They offer a full range of training in operation and maintenance of power equipment, protection and control. To fit your needs, standard and customised courses are delivered, with a broad portfolio adapted to trainee levels and roles.

<table>
<thead>
<tr>
<th>TRAINING</th>
<th>CONTENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secondary Equipment</td>
<td>Power protection systems - fundamental &amp; detailed courses:</td>
</tr>
<tr>
<td></td>
<td>• Utility transmission power system protection</td>
</tr>
<tr>
<td></td>
<td>• Motor and transformer protection</td>
</tr>
<tr>
<td></td>
<td>• Line and cable protection</td>
</tr>
<tr>
<td></td>
<td>• Power network stability</td>
</tr>
<tr>
<td>Secondary Equipment</td>
<td>Protection &amp; control</td>
</tr>
<tr>
<td></td>
<td>• MiCOM range (P34x, P44x, P438, P52x, P63x, P74x, etc)</td>
</tr>
<tr>
<td></td>
<td>• Configuration and application on IEC 61850</td>
</tr>
<tr>
<td></td>
<td>• Communication protocol</td>
</tr>
<tr>
<td>Secondary Equipment</td>
<td>Substation control system</td>
</tr>
<tr>
<td></td>
<td>• Alstom Digital Control System</td>
</tr>
<tr>
<td></td>
<td>• Architecture, operation, maintenance &amp; basic configuration</td>
</tr>
<tr>
<td></td>
<td>• SPACE 2000: operation &amp; maintenance</td>
</tr>
<tr>
<td></td>
<td>• PSCN 3020: configuration, operation &amp; maintenance</td>
</tr>
<tr>
<td>Protection</td>
<td>IEDs:</td>
</tr>
<tr>
<td></td>
<td>• MiCOM Px20, Px30, Px40 operation</td>
</tr>
<tr>
<td></td>
<td>• Legacy products</td>
</tr>
</tbody>
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A better understanding of your equipment and the technology involved allows everyone to make the right decisions at the right time. Alstom Grid’s Technical Institute provides solutions based on customer needs to improve staff skills:

- Training on power system protection fundamentals
- Product training as per customer requirements
- Annual calendar with scheduled courses
- Customised courses at customer premises

Download the training catalogue:

“Enhance your staff capabilities and knowledge”

“24/7” Alstom Grid Worldwide Contact Centre

For more information please contact Alstom Grid:

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