



FACTS CARE

# Lifecycle service for FACTS Power quality

Your uptime insurance

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# Lifecycle service for FACTS

## Your uptime insurance

ABB FACTS (Flexible Alternating Current Transmission Systems) provides more stability and quality in existing and new power networks, with minimal environmental impact. With 60 years experience in delivering power quality solutions, over 800 installations, a complete portfolio, in-house manufacturing of key components, and professional customer services. ABB is your partner in shaping the grid of the future.

FACTS technologies allow more power to reach consumers through the existing transmission network. This results in lower investment costs and shorter implementation times compared to the traditional alternative of building new power plants and transmission lines. It also gives the additional benefit of lowering the environmental impact. On top of this, FACTS helps you to improve power quality, grid reliability and delivery performance.

Lifecycle services from FACTS, FACTS Care, and FACTS upgrades gives you uptime insurance for your installation. Production uptime, availability and reliability are of highest importance for our customers. Care service products such as 24/7 rapid response, maintenance, spare parts, partial upgrades, and upgrades are available.

The total cost of ownership throughout the system lifecycle should be relevant in relation to

Production uptime, availability and reliability are of highest importance for our customers around the world.

the system capacity and performance requirements (service level). Our commitment is to listen and be responsive to our customers. We deliver customer satisfaction by providing timely and responsive service, with integrity, and a passion for excellence.

**ABB Ability Services**  
Lifecycle Services from FACTS are built on FACTS Care, FACTS Upgrades and boosted by ABB Ability™, our portfolio of digital solutions. The ABB Ability platform will empower our customers to take advantage of digitalization for the future. To connect to the Industrial Internet of Things, Services and People. We can monitor, control and manage your devices, processes and operations on-site or remotely. Some of our digital building blocks are MACH Control System, Cybersecurity, and AR/VR (Augmented Reality/Virtual Reality).

### FACTS CARE

Health and safety is always our first priority





# FACTS Care

## Peace of mind for our customers

The ABB FACTS Care agreement is a production uptime insurance for your FACTS installation. Production up-time, availability and reliability are of highest importance for our partners and customers. The total cost of ownership and capital expenditure incurred when investing in the plant, needs to be in balance with the operational expenditure, the ongoing maintenance (service)cost for running a product or system. Our commitment is to listen and be responsive to our customers.

We value our customers, and always strive to earn their trust. Power companies globally are relying more and more on the use of external service providers to support their assets allowing them to focus on their core business of asset management. ABB's customers globally are choosing to establish long term service

agreements with ABB that allow them to leverage ABB's local service resources and global expertise throughout the entire asset life-cycle.

ABB service experts are involved during the whole life-cycle, from design, through installation, warranty and service. Our service people always strives to handle all issues arising. We stand fully behind the system delivery, during warranty and service agreement periods. Handling issues that may arise, and also doing preventive scheduled activities.

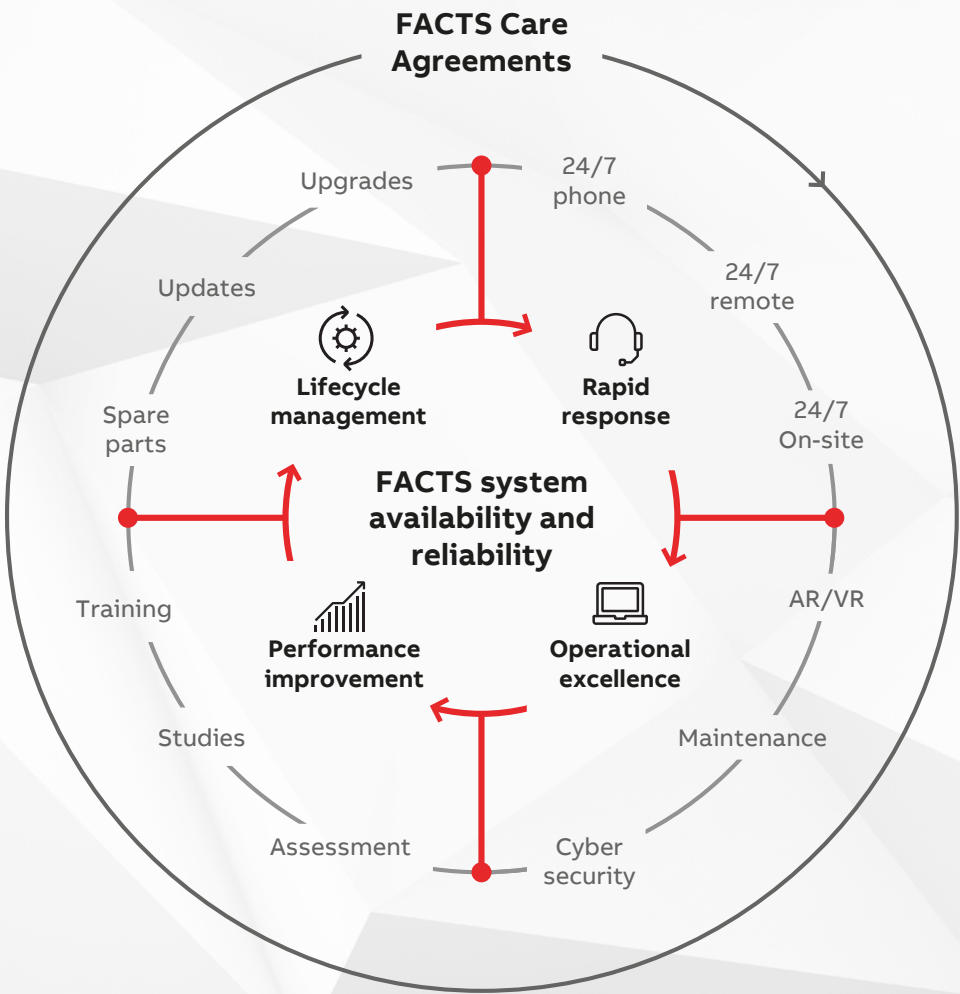
**Think globally, act locally**  
Locally and globally we are one team, customer proximity is of highest importance, and our local service engineers are an extension of the regional and global team. Enabling that our customers always get access to the relevant expertise.



### FACTS CARE AGREEMENTS

The FACTS Care agreement is the key to ensuring the reliability and availability of a FACTS System during its entire lifetime.

01 Lifecycle Services for FACTS consists of service categories divided into service products, each with a specific customer value.





# Rapid response

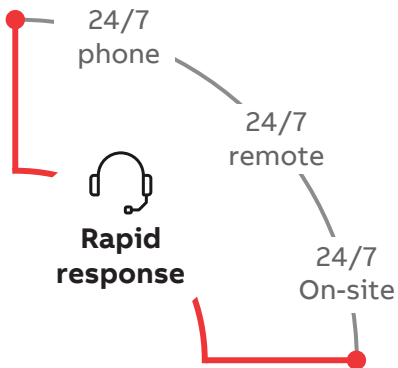
When the incident is there

Rapid Response guarantees fast and flexible response to maximize your equipment uptime.

We are at your service around the clock, guaranteeing quick and efficient response. We are committed to restoring your production within the agreed time frame. In case of an incident, it feels safe to know that assistance is close by. Rapid response is our range of services aimed at quickly and easily correcting a fault and helping you to get back into operation after an unexpected failure or unplanned stoppage. Our services include 24/7 Phone, 24/7 Remote Service and on-site Corrective maintenance.

**24/7 phone**  
In the event of a problem, 24/7 phone support provides the security of a hotline at any time by phone, e-mail, or some other agreed upon means of contact. Quick connection to a skilled, knowledgeable ABB engineer offers direct access to the solutions you need immediately, and saves valuable time. Minor incidents are usually solved quickly, and in the event of a major issue, you will have the right support from the start. Can also be complemented with Augmented Reality (AR) service to support on-site engineer remotely.

**24/7 remote**  
The remote assistance for FACTS enables ABB to



24/7 access to FACTS experts and minimized downtime

immediately start troubleshooting and monitor a FACTS System from a secure remote location within the ABB network. Remote assistance is a key feature from both a monitoring management and corrective maintenance perspective. In addition, being able to perform a system data and alarm analysis from the FACTS system helps our Customers to stay one step ahead.

**24/7 On-site**  
The on-site support, also called corrective maintenance, can be available 24/7 with a certain response time, as per agreed service-level.





# Operational excellence

We together manage your assets, operations, and risk

Operational excellence is the way that we together manage your assets operations, and risk to deliver strategic business results. ABB Ability is our portfolio of digital solutions and the platform they are built upon that helps customers take advantage of digitalization. Today, we offer solutions that range from remote monitoring systems to systems that maximize availability, reliability and security.

**Augmented Reality (AR) and Virtual Reality (VR)**  
AR and VR can be inherent in different service products, and enables ABB's global service experts to collaborate with local service staff.

AR is a complement to 24/7 phone support and enables remote guidance projected in front of the Field Service engineer.  
Added values:

- Major savings through reduced downtime.
- Maintenance of diverse range of assets
- Environmentally friendly support
- Competence sharing and improved service

VR is used to boost industrial services, to plan site activities via virtual commissioning, virtual maintenance planning, and virtual training.

**Maintenance**  
During the execution of a FACTS project, preventive maintenance on the system will be described in a Preventive Maintenance Plan. The purpose of this plan is to define the



Increased availability, security, reliability, and performance

recommended preventive maintenance activities that can be foreseen, and to estimate the manpower requirements for these activities. It includes detailed maintenance instructions for each piece of equipment. It typically contains information such as item designation, maintenance activity, needed time interval, and required manhours and qualifications of the personnel.

**Cyber security**  
Cyber security is not a single, one-time activity, but an integrated part of the lifecycle management. We take a systematic approach to cyber security through our operations on a local and global level. ABB offers non-invasive service



products including consulting, awareness training, assessment and recommended mitigations. The security mitigations includes network segmentation, system hardening and patch management.

ABB provides a cyber security solution, following international security standards development and respecting customers' need for control and integrity. We recognize the importance of cyber security standards including NERC CIP Cyber Security regulation for utilities; and other standards such as ISO 27000 and the NIS Directive. Our subject matter experts continuously monitors these evolving standards, and adapts the system and processes to meet these requirements.

Keep your system secure using security update management service

Our current cyber security offering includes annual security refresh, security update management service, auditing & assessment, centralized data logging & monitoring, system hardening, and other service tailored to the customer's individual needs.

Security Update Management Service Features	Bronze	Silver	Gold
Establish ABB as the single security update source	●	●	●
Monthly listing of identified potential security updates	●	●	●
Access to MACH Main computers security add-ons	●	●	●
Validation of identified patches against a representative test system		●	●
Identified patches are tested for adverse reliability impacts		●	●
Identified patches are tested for adverse security control impacts		●	●
Monthly Security Patches Report of tested and recommended patches		●	●
Installation of approved patches			●
Annual Security Refresh			●



# Performance improvement

We optimize connectivity, reliability and efficiency of your assets

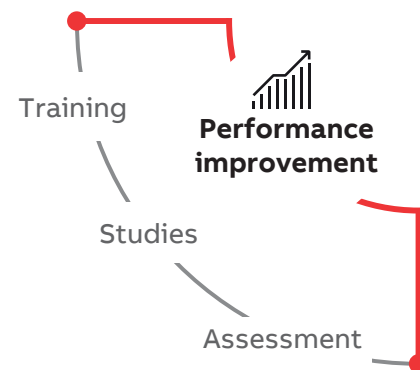
Performance Improvement optimizes connectivity, reliability and efficiency of your assets to increase speed and yield. Performance improvement includes training and consultancy services that helps you identify ways to improve the reliability, availability and security of your FACTS system. Our team of experts can check the current status of your system.

## Training

Knowledge, keeping up the skills and competency level in your company is crucial to remain competitive in the long run. ABB provides comprehensive training for engineers, operators, programmers and maintenance personnel, including up-to-date technical expertise and support for a full range of products, systems and applications. It includes theoretical and hands-on training sessions designed to provide operation and maintenance personnel with the skills they will need to maximize the reliability, productivity and safety of their systems.

## Studies

ABB FACTS supports our customers with in-depth FACTS studies to raise understanding and



Optimized asset management for life extension

awareness. Consulting Studies will help you identify ways to improve the reliability, availability and security of your FACTS System. Our team of FACTS experts will check the current status of your system and its dependencies of the surrounding grid, and the surrounding environment. Knowing the condition of your FACTS system and the surrounding effects from the grid, we will be able

to prevent and protect the system against potential problems. Our studies will provide you with support.

## Assessment

Assessment helps you to understand the lifecycle status of your FACTS System. We can assist you in identifying critical equipment and how to minimize risks. This gives you a comprehensive picture of the condition of your system. The assessment is an objective basis for decision, helping you to achieve a long term reliable system. Every part of the system is categorized according

to ABB's definition of equipment lifecycle status: active, classic, limited or obsolete. Your ABB representative will know the site and equipment and with a tailor-made service agreement, a sustainable long-term plan can be developed, helping you to plan in advance and budget for maintenance.





# Lifecycle management

We optimize and extend your equipment life

Lifecycle Management employs powerful tools and knowledge to optimize and extend your equipment life. Modernizing a FACTS installation has been shown to extend the system lifetime, improve availability and reliability, increase cost efficiency, improve performance, increase the capacity, and adding functionality.

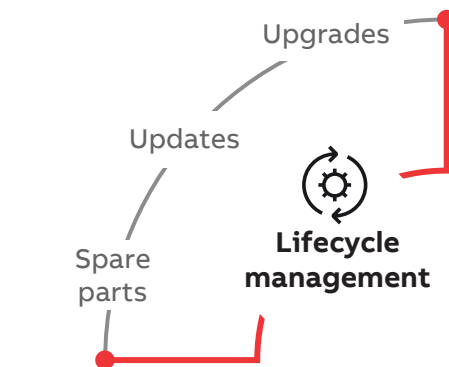
We have made over 100 SVC and SC upgrade/updates projects, and have 60+ years experience in the most challenging environments in the world.

## Spare parts

ABB strives to continuously increase the lifetime of your components. Using high-quality spare parts management, we are able to inform you what spare parts are needed to minimize unnecessary downtime. Since parts are not infinitely immune to wear and tear, you need to know how to achieve maximum availability throughout their lifetime.

## Updates

We offer relevant update packages to bring older installations closer to the functionality we supply in today's installations. We offer updates that improve reliability, add functionality and accessibility, secure spare part availability and increase overall performance.



Extended lifetime and new functionality

## Examples:

- Computer Replacement
- Software Update
- Remote Service HW
- Cyber Security Update

## Upgrades

Based on many years of experience from complex installations, ABB offers services to evolve or upgrade the installation to the next generation, to extend system lifetime, to improve availability and reliability and to avoid being outdated.



There are several reasons to upgrade a system. First, many installations are critical for the supported system, transmission, or network. Additionally, there are challenges to maintain competence in limited and obsolete technologies when key staff members leave the company. Proactively upgrading the installation before a severe outage occurs can save time and money. The parts of a FACTS installations that are 15 years or older, may be in need of an upgrade.

The need for upgrading depends mainly on the general condition of the equipment and the potential unavailability of spare parts. An upgrade may consist of a new control system, new functionality and a new generation of hardware and software.

## Examples

- Control & Protection Upgrade
- Control System Upgrade
- Cooling system Upgrade

Being proactive and planning an upgrade is far better than passively waiting for a breakdown, and upgrade reduces risk of outage and long down period.

## Minor incidents, major incident and breakdown

Upgrades extend the systems operational lifetime, its value and production capacity. Also with an upgrade, the systems reliability and availability will increase significantly.





# FACTS Care agreements

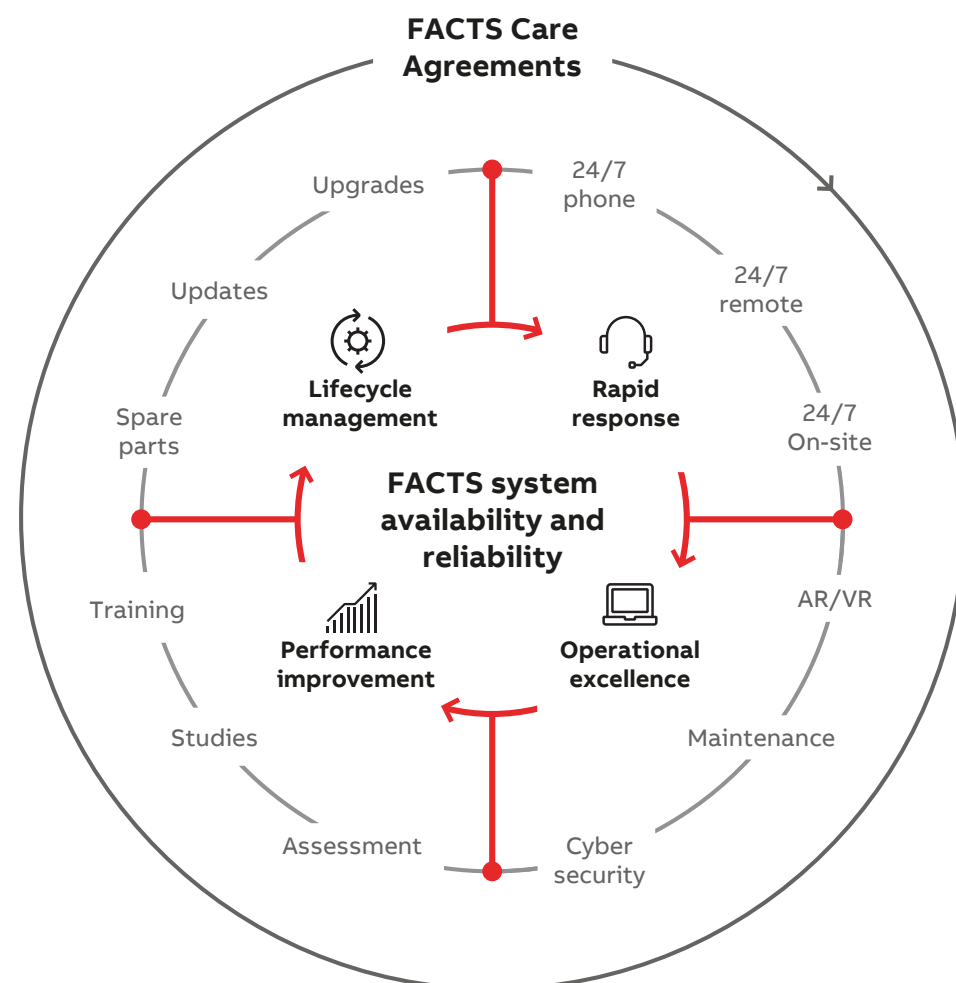
## An uptime insurance tailored to your needs

The FACTS Care agreement is the key to ensuring the reliability and availability of a FACTS System during its entire lifetime.

There is a growing demand for FACTS Care agreements, an uptime insurance for increased peace of mind, enabling the customer to focus on their core business. The best effect of a Care agreement is achieved when implemented early in the system lifecycle. Following that, necessary services can be applied throughout all stages of the life of your system.

FACTS Care agreements defines the service level, validity time, and whether it is a recurrent (licensed) or one-time delivery. FACTS Care agreements, are available for all phases of an installation's life cycle.

By signing a FACTS Care agreement with ABB for all services needed for the FACTS System, maximized availability and reliability is obtained. Rapid response, lifecycle management, performance improvement, operational excellence, and other services are tailored to our customer needs. FACTS Care service products is a foundation for our FACTS Care agreements, and tailored to the customer needs. ABB can in agreement with the customer be the sole provider, single-point-of-contact, to service your asset. This includes 24/7 support, and we follow international standard for maintenance.



### FACTS Care agreement definition:

- Defines the service level, validity time, and whether it is a recurrent (licensed) or one-time delivery.
- Strict observation of health, safety and environmental issues.
- Dedicated project manager as your main point of contact.
- Our case management system will help us keep traceability on your installation to provide efficient support.
- As a contracted customer you will always be prioritized.
- 24/7 Support via phone, remote, and AR.
- Corrective and preventive maintenance
- Spare parts
- Training

The FACTS Care agreement is the key to ensure reliability and availability of your FACTS System, giving you peace of mind during its entire lifetime.

Strict observation of health, safety and environmental issues, rules and regulations are built into all services provided.

