CASE STUDY

Northern European TSO Enlists ABB to keep the lights on and fend off cyber-attacks

The TSO signed a comprehensive ABB Power Generation Care agreement to manage and maintain the full lifecycle of their assets and protect against potential cyber security threats.

As Finland’s primary transmission system operator (TSO), Fingrid is responsible for the nationwide high-voltage grid – the backbone of the country’s electricity transmission system. Fingrid also manages the nation’s cross-border electricity connections and promotes the smooth functioning of Finland’s electricity market place.

This TSO’s operation includes over 14,000 kilometers of transmission lines, 49,000 towers and 116 substations. The operation also transmits over 77 percent of the nation’s electricity. The TSO operates 10 reserve power plants running 21 gas turbines capable of generating 935 MW of power. 16 of their turbines are managed by System 800xA, Harmony Infi90, and P13 control systems from ABB.

Customer Challenge
Because of the aging digital infrastructure of these control systems, Fingrid was susceptible to cyber attack and equipment failure. The reason was straightforward: a complete lack of visibility into the hardware and software assets interacting with control systems across its fleet.

Instead of a comprehensive list of connected assets and associated details, the entry next to “Control Systems” in their asset-inventory ledger simply listed “System 800xA”. In reality, they had over 900 hardware and software assets interacting with their control systems, but the TSO could not identify them. Worse, they had no idea of the lifecycle status of these assets. Without this knowledge they were blind to the vulnerabilities they faced.
**ABB’s Solution**

To update Fingrid’s cyber security, ABB first ran an ABB Benchmark service against all the control systems to uncover Fingrid’s asset portfolio and determining the life-cycle stage of each connected hardware and software asset. This was done using ABB’s service products data collector (SPDC) and SCX data collectors. The information was then uploaded to Fingrid’s MyABB/My Control System for analysis.

The resulting Benchmark report allowed ABB and Fingrid engineers to establish a system performance baseline – a crucial first step to any system upgrades.

These efforts led Fingrid to update its System 800xA operating systems from Windows XP to Windows 10 and to install new servers that are more cyber secure. To maintain their cyber security readiness going forward, Fingrid also signed a three year ABB Power Generation Care agreement that ensures, among other things, their systems are keep up-to-date with the latest security patches and control system software updates.

The Care agreement also covers control system hardware maintenance and sustainability, performance and reliability, operational improvement, and system life-cycle management and offers customers discounts on future system upgrades. Fingrid was so pleased with the Care agreement, they also extended it to cover Generator Protection, Excitation and Synchronization devices for all 10 sites.

ABB’s engineers also developed a parts-focused website to keep track of the availability and location of control system spares. This was a capability Fingrid did not have prior to the system upgrade and Care agreement.

**Benefits to Customer**

- Decreased risk from cyber attack
- Up-to-date control systems software
- Up-to-date control systems hardware
- Visibility into installed base and asset life-cycle
- Increased productivity
- Improved system availability
- Improved system performance
- Greater reliability
- Discounts on future control system upgrades

**Benefits to ABB**

- Current work led to request-for-quotation for upgrading human machine interfaces (HMIs) of Fingrid’s five System 800xA
- Increased service agreement value by $129K/year.
- Use of data SPDC, Benchmark and Lifecycle Assessment for future proposals and quotations intended to upgrade and/or sell Advanced Digital Services
- Customer’s perception of ABB service quality and as a service provider has improved

**Service Pricing to Customer**

- Running SPDC for getting installed base covered and System Benchmark and Life Cycle Assessment: $4,000/site, or $40K total
- Power Generation Care Agreement: $125K/year

**Service/contract start date(s)**

- Original contract: 2008
- Care agreement: 2018

**Featured Solutions**

**MyABB/My Control System**

The MyABB/My Control System is self-service portal offering customers a single source of access to information, services, lifecycle information and service contacts as well as spare parts management for their installed based of ABB products.

**System Benchmark**

ABB’s Benchmark service is an automated service that allows customers to benchmark their current control system performance and configuration – an essential step before improvements can be made. ABB Benchmark is available for the MOD 300, System 800xA, Freelance, Harmony control systems. Cyber security and alarm benchmarks are also available. The Benchmark Report is available on customer’s MyABB/My Control System web portal within minutes after data upload for analysis.

**Lifecycle Assessment**

ABB’s Lifecycle assessment in myABB/My Control System provides customers with lifecycle status of their control system installed base that allows for the proactive planning of upgrades and provisioning of spare parts that mitigates operation risks.

**ABB Power Generation Care**

ABB Power Generation Care is a comprehensive service option that improves the performance of the plant’s automation and electrical assets, its operations and maintenance staff, its production processes, and cyber security readiness.