

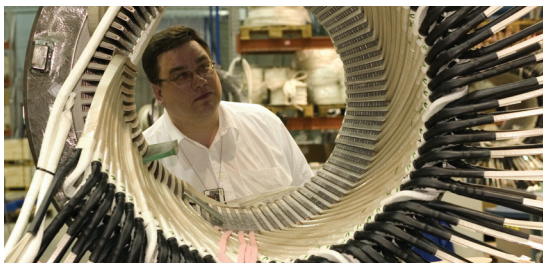
# ABB Factory takes Full Service approach to maintenance performance improvement

Case Study

## ABB manufacturer outsources plant maintenance function

ABB's Electrical Machine (EM) Factory in Juri, Estonia, manufactures wind power generator components that are delivered to major wind power generation companies around the globe. Its electrical power generators must approach 100% reliability. This requires the utmost level of coordination between factory maintenance, operations and purchasing, with optimum quality and regulatory controls. After initially struggling to ensure maximum equipment availability at the lowest possible cost, while also encouraging ongoing efficiency improvements, ABB EM Factory decided to outsource the entire maintenance operation.

"Full Service needs to be the best service company not only for ABB clients, but for ABB's own factories as well. We are taking every step to provide maximum value to ABB's Estonia factory, as we do with each site that selects our Full Service maintenance program," said Timo Jatila, service center manager and start-up manager for ABB Service.



### Project Scope:

When the plant opened in 2003, production equipment maintenance at the plant was contracted to ABB Service on an hourly basis. However, this agreement did not facilitate the factory's strategic goals. Maintenance expenditures were difficult to forecast, and hourly rate-based service operations failed to motivate performance improvements. Ineffective processes impacted equipment availability and the plant's output. The operations were largely reactive and the attitude was not customer-oriented.

To achieve the factory's stated objectives, EM management made the decision to move away from hourly service operations and adopt a more innovative maintenance approach. It was decided to outsource the entire maintenance function to ABB Service with a fixed price, performance-based, Full Service agreement.

### Benefits

All major metrics showed improvement such as:

- Average OEE increased by 5.1%
- Customer satisfaction increased as much as 20%
- Preventive/corrective ratio average increased 17%
- MTBF (Mean Time Between Failure) more than doubled in a single quarter

### Full lifecycle maintenance partnership

With the Full Service agreement, ABB Service commits to maintaining and improving production equipment by taking over responsibility for the complete scope of an entire plant's maintenance activities, including engineering, planning, execution, and management. If performance goals are achieved, financial incentives are awarded and if goals are missed, ABB incurs penalties.

Per the agreement, the EM Factory provides the office space, warehouse space, and workshop for ABB Service technicians. In turn, ABB Service provides experts in machinery and service operations, including relevant systems and business processes, and delivers a systematic and focused approach to preventive and corrective maintenance.

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## Maintenance Management Master Plan

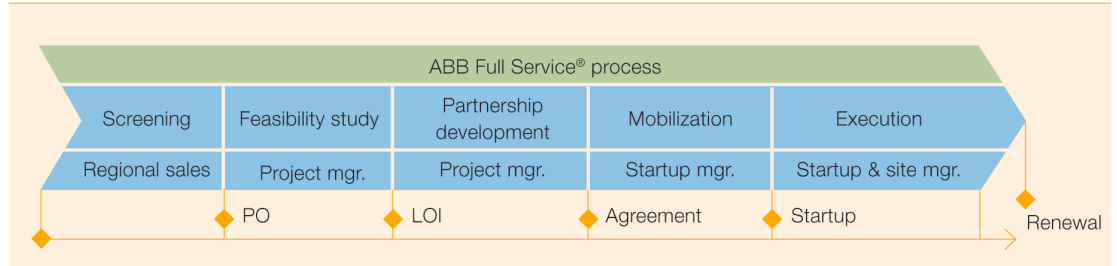
When the partnership agreement commenced, the EM Factory and Service organizations jointly developed a Maintenance Management Master Plan (MMMP), which laid the foundation for a common maintenance strategy with measurable performance goals.

Factory targets were established for Overall Equipment Effectiveness (OEE), Technical Availability, Mean Down Time (MDT), and Mean Time Between

## Maintenance management system

To execute the Full Service maintenance strategy, a computerized maintenance management system (CMMS) was implemented. All manufacturing equipment and associated workflow and inventory are now tracked in the Maximo CMMS. It provides the basis for reliability-centered maintenance (RCM), root cause analysis, risk assessments, spare parts optimization, and the reporting of performance benchmarks.

The ABB Full Service® process is used to develop the collaborate agreement together with the customer. The process helps identify the customer's needs and ensures that the methods and systems implemented will improve the plant's performance.



Failures (MTBF). Customer satisfaction targets measured competence, cooperation, communication, and effectiveness.

Also early in the master plan was the sharing of knowledge and best practices. ABB's local and global Full Service specialists provided on-site training to the factory's new maintenance team, as well as off-site support from remote locations. In addition, maintenance personnel from Juri participated in a month-long exchange program to cross-train with their Full Service colleagues at ABB's Helsinki, Finland plant.

The knowledge sharing practice proved to broaden the experience of all participants, accelerate the learning process, and foster teamwork. Cross-training enabled the individual engineers and technicians to operate effectively in multiple factories. Furthermore, barriers to communication were lifted by requiring English and Estonian language skills of all maintenance personnel.

## Continuous improvements

Additionally, continuous improvement strategies have been implemented across the board, from work processes, employee development and supplier selection, to the proposal of equipment modernization and investment projects. Juri's plant personnel and the Full Service staff work together in teams to maximize the factory's performance levels, product quality, and customer satisfaction. Performance evaluations and improvement workshops ensure that ongoing refinements are made. The results in Juri have been so positive that ABB's Electrical Machine business has decided to implement Full Service at additional sites such as Ludvika, Sweden and Shanghai, China. The new EM factory in Shanghai just started electrical machines production and signed a Full Service agreement. Their Full Service start-up is supported by the same manager that launched the service agreement at Juri in order to facilitate similar results. The outsourced maintenance strategy is delivering results and the ABB Electrical Machine factory is off to an excellent start and future improvements in OEE, technical availability, and cost effectiveness will determine long-term success.



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