

Role of Digitalization in Energy Transition

IEA Strategies for Digitalization of Electricity Systems Workshop
John Finney, Hitachi ABB Power Grids 25 February 2021



Business Volume ~10 BUSD

4 Business Units – unmatched portfolio

- Grid Automation
- Grid Integration
- High Voltage Products
- Transformers

World's largest installed base

Transport & Infrastructure

Industry

Utilities

Customers

Services

Software & Automation

Systems

Offering

Products



36,000 employees

~5,500 sales & field engineers

~2,000 engineers & scientists in R&D

Present in ~90 countries
115 factories; **200** offices globally to ensure customer proximity

Headquarters in **Zurich, Switzerland**

AMEA

Europe

Americas

Geographies

“
So how will
Digitalization
help?”

The challenges

Increased System Complexity

Unpredictability and reduced reliability

Cost

Digitalization enables

- Real time insight into system condition through ever increasing device & system intelligence
 - Autonomous & self learning systems
 - Standards based interconnectivity
 - New market availability and market democratization
- Highly accurate production forecasting
 - Fast switching and control
 - Highly localized supply/demand balancing
 - Data Driven failure prediction & prognostics
 - Failure simulation coupled with Weather feeds improve storm preparedness
 - Asset Performance management maximizing system utilization performance
 - Virtualized control of disparate Assets simplify Virtual Power plants
- Maximized life cycle value through remaining useful life projection
 - Data driven process and maintenance schedule optimization
 - Risk focused investment planning & simulation
 - Reduced operational silo's & remote management, improve workforce effectiveness

Delivering

Simplified grid control, improved visibility and greater system stability

Improved grid reliability & resiliency
Increased capacity for hosting renewables

Cost effective, agile innovative industry & markets

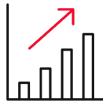
Common challenges



Safety



Costs, footprint



Availability, reliability

How we help

We provide a complete substation portfolio of devices, software, modeling and services to help our customers realize best-in-class levels of productivity, safety and visibility while providing new opportunities for cost savings through accelerated ROI and more efficient maintenance scheduling. Can be extended into secondary asset performance management and services packages to further ROI benefits.

Customer Project: T&D Owner/Operator in UK prepares for future grid needs

Objectives

- Accelerate progression to IEC61850 based transmission network substations
- Develop solutions for fully digital and retrofit digital substation deployment
- Investigate connectivity options to optimise system availability, reliability
- Reduce copper wiring throughout to reduce footprint, environmental impact

Solution overview

A transmission and distribution network owner/operator in the UK began working with us in 2016 to implement substation solutions that prepared them for the needs of the future grid.



Benefits:

- ✓ **Reduced frequency and duration of outages**
- ✓ **Reduced costs of new substations**
- ✓ **Significant reduction in outage time during substation upgrades**

Common challenges



Asset reliability, availability



Prediction, prevention of failures



Maintenance, replacement prioritization

How we help

We provide expert asset models, statistical models, simulation and advanced operational business intelligence for risk-based optimization of asset portfolios, improving asset related processes and outcomes.

Customer Project: US Transmission Utility optimizes asset portfolio

Objectives

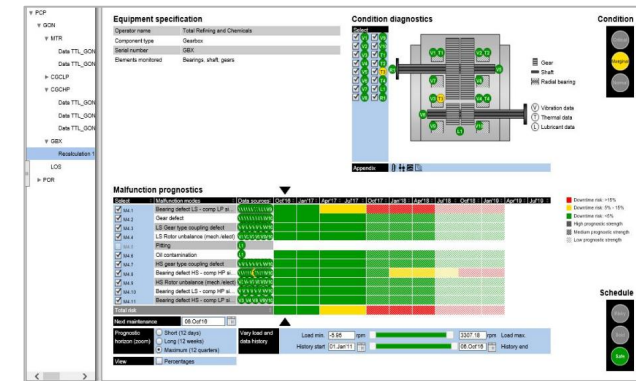
- Improve safety and prevent failures
- Optimize maintenance effectiveness
- Support asset renewal prioritization
- Establish a proactive approach for asset replacement
- Improve reliability planning

Benefits

- ✓ Savings from avoided unplanned outages, lower planned outage spend
- ✓ Avoided CapEx from asset replacement
- ✓ Avoided catastrophic asset failures


Solution overview

A large United States transmission utility owner has been using our Lumada Asset Performance Management solution since 2015 to manage and optimize over one million assets and multiple asset classes.



Common challenges

 Complexity from distributed energy sources

 Cybersecurity threats

How we help

We provide a portfolio of Wired and Wireless Communication solutions that enable robust, long-term, real-time, deterministic, highly reliable, easy-to-use and flexible communication services for successful digital transformation.

Customer Project: European energy service provider modernizes and future proofs network

Objectives

- Develop pure, highly secure MPLS-TP network to control, protect customer grid
- Create multiservice solution to support critical/non-critical services
- Simplify network management, configuration, troubleshooting
- Modernize electrical grid, employ future-proof IEC61850 solution

Solution overview

A large energy service provider in Europe contracted us to design and supply their new mission critical communications network based on the industry leading FOX615 hybrid platform and FOXMAN network management system.



Benefits

- ✓ **Critical system protection**
- ✓ **Reduced total cost of ownership**

HITACHI

