Grid Edge Solutions Service
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Introduction
About Hitachi Energy

Headquarters in Zurich, Switzerland

Customers
- Transport & Infrastructure
- Industry
- Utilities

Offering
- Services
- Software & Automation
- Systems
- Products

Geographies
- Asia, Middle East & Africa
- Americas
- Europe

Services
Software & Automation
Systems
Products

Grid Automation
High Voltage Products
Grid Integration
Transformers

38,000 employees
90+ countries with 200 offices
~250 years’ heritage combined
5,500 sales employees & field engineers
2,000 engineers & scientists in R&D

Public
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Global technology and market leader

Grid Automation

50% of the top 250 global electric utilities supported by our leading portfolio

Grid Integration

Technology HVDC leader in power quality and grid connection solutions and services

High Voltage Products

1 in every 4 high-voltage switchgear installed in the world

Transformers

World's largest installed base of power, distribution, traction transformers

~$4 trillion mission-critical infrastructure assets managed with our software solutions

Leader in HVDC* systems with 200 GW installed

More than 1M circuit-breakers installed in the world

Technology leader in transformer applications for HVDC, renewables and digitalization

Services

Maintaining and modernizing the world's largest installed base

More than 200 service centers and 1,500 field engineers worldwide

Public
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Grid Automation

At the forefront of Grid Automation technology since 1905
With you for the lifetime of your network

10
Global Manufacturing locations

40
Engineering centers worldwide

6,000
Employees worldwide

+100
Countries with sales and service support available
Who we are

As a pioneer in energy management and optimization, Hitachi Energy Grid Edge Solutions is a trusted partner in the evolving global energy ecosystem.

Our Grid Edge Solutions are leading energy innovation and transition

The e-mesh™ portfolio includes energy storage and digital automation solutions. Our global footprint covers more than 800 MW and 250 references.

Hitachi Energy helps customers increase profitability and unlock new revenue streams by reducing energy cost, maximizing renewable integration and lowering CO₂.
Grid Edge Solutions Service
Grid Edge Solutions Service

Uniquely qualified to fulfill your needs

Grid Edge Solutions Service is your strategic partner for a changing world.

We work with our customers to identify the most effective course of action for your requirements with a suite of service products that address problems before they grow, ensuring constant care of your assets and helping you hit key performance targets.

Our service agreements are tailored to your needs and offer total protection for your investment.

Global Footprint

Grid Edge Solutions Service has access to more than 40 engineering and service centers strategically located around the globe with regional Collaborative Operations Centers (COCs) to support the local service centers around the clock.

Our team of power system and battery experts and analysts can help you address today’s toughest power challenges and prepare you to meet the challenges of the future.
Collaborative Operations Centers

CUSTOMER CHALLENGES
Access to expertise and technology that allows them to harness the power of people and information to enable grid edge solutions

CUSTOMER OUTCOMES
✓ Continuous collaboration and access to experts
✓ Sound business decisions using detailed data analytics
✓ Increased productivity through improved asset performance
✓ Higher safety and security, reduced risks and lower costs

GLOBAL FOOTPRINT

+40 Engineering and Service Centers worldwide
24/7 Secure remote expert service delivery
3 Collaborative Operations Centers to ‘follow the sun’

Collaborative Operations Centers connect customers, operators and our people to provide grid edge solutions infrastructure for a sustainable energy future
Three-stage approach

1. Plan
We recommend carrying out an asset inventory, a performance assessment of the system, and/or a cyber security assessment to understand the status of your current installation.
A detailed report with recommended actions will help you to continually improve security throughout the lifecycle of the system and to understand the health of your assets.

2. Build
We provide recommended actions for you to implement based on the performance assessment of the system, and/or a cyber security assessment
Hitachi Energy can assist you in implementing the recommendations and enable your system to be up to date, optimized and more secure.

3. Operate & Maintain
By appointing Hitachi Energy as your service and performance partner, you benefit from our domain expertise across the globe.
Our recommended approach is to engage with us through Service Level Agreements (SLAs). This will guarantee our services to you at short response times, and ensures sustained, trouble-free systems and cybersecurity vigilance.
Service Modules
Four service modules

What if you could leave all the worrying about software, hardware, compatibility and security to someone else, and just focus on your business?

You can, with Hitachi Energy’s long-term service agreements and digital services.
Maintain + Sustain

We have developed and continue to develop maintenance offerings for assets and systems to drive sustainable performance, from corrective, preventive and predictive to reliability-centered maintenance.

Leveraging cutting-edge tools and models, we accompany customers into the future of service, allowing them to realize and leverage the impact of continued service advancements.

Our recommended approach to Maintain and Sustain is through service agreements. They consist of service levels we commit to as well as a set of value adding modules.

Our aim is to maximize the lifetime value of your investments.

Four service modules

- Rapid Response
- Spare Parts
- Performance Monitoring
- Maintenance
- Extended Warranty
- Cybersecurity and Patch Management

We help you to sustainably run your operations by ensuring the reliability of the electrical grid and its elements.
Assess + Advise

Understanding grid assets can be complex; we want you to decide with confidence. Grid Edge Solutions leverages a range of techniques (physical inspections to field remote assessments) to generate insights, offer targeted recommendations, and advise on the best path forward. We leverage our long history in energy management & optimization as well as technology excellence to deliver engineering studies, asset investment planning, and much more.

We offer insight on existing assets, advise on best practices, and assess investment plans to improve returns outlook.
Upgrade + Replace

Making the decision when to revitalize an asset or systems can be complex.

We develop our solutions and products to provide operational benefits. Digital solutions to upgrade your current capabilities in diagnosing and optimizing your current and future assets will be key in the future.

We will help you determine the right time to upgrade and retrofit your systems as well as when to replace and recycle products to enable a sustainable business environment.
Train + Develop

To define the most effective training package and to ensure the most efficient knowledge transfer, we will consider the following elements in the preparation of the training and development plan:

- Your learning objective
- Participants initial knowledge
- Your network and product specificity
- Participants’ availability and number
- Your equipment availability

We will then prepare a training and development plan with suitable teaching solutions to meet your goals. Based on your feedback, we will then organize and schedule the training plan accordingly.

Participants will be able to derive the most benefits from system functions and capabilities
Our SLAs and service modules deliver an effective course of action for our customers’ requirements.

They provide ongoing technical and functional support to help you meet most of your requirements.

We also offer tailor-made service agreements and products that can be designed and dedicated to your specific requirements.

Simply select the services that meet your needs and contact us to discuss them further.
Reference cases
Successful implementation around the globe
About the project

- **Project name**: Sembcorp Materials Recovery Facility BESS
- **Location**: Tuas, Singapore
- **Customer**: Sembcorp and NTU
- **Completion date**: 2021

Customer benefits

- To provide ancillary services such as Frequency Regulation using Automatic Generation Control (AGC) and Primary and Contingency Reserves
- To schedule and dispatch BESS by a cloud based Virtual Power Plant digital platform.
- To store excess power generated from rooftop PV system and discharge to Sembcorp MRF load

Solution

- PowerStore Battery (2 MW / 4 MWh)
- e-mesh Control System
- e-mesh SCADA
- e-mesh Monitor
- **10 years Service Level Agreement**
TVO: Utilities

About the project

- **Project name:** TVO 90MW BESS
- **Location:** Olkiluoto, Finland
- **Customer:** TVO
- **Completion date:** Estimated 2022

Customer benefits

- Enables the 1.6 GW Powerplant to operate at 100% output power in combination with several Demand Response Assets:
  - BESS
  - Gas Turbines
  - Industrial plants
  - Reserve Market participation
  - Black start (option)

Solution

- Nuclear Power Plant (1.6 GW)
- PowerStore Battery (90 MW / 85 MWh)
- e-mesh Control System
- e-mesh SCADA
- e-mesh Monitor
- 3 Years Service Agreement

Creating one of the largest BESS in Europe and by far the largest BESS in the Nordic region, Finnish Utility TVO is adding to a 1.6 GW unit to the “OL3” plant in Finland. Fingrid, as the local grid operator, required approx. 300 MW system protection assets in combination with the “OL3” power plant. This very fast responding BESS (0-90MW in 200ms) will support the grid in case of unexpected power dropout from the plant.

Press release
Hitachi Energy is collaborating with Territory Generation to deliver a high specification Battery Energy Storage System that will accelerate the transition to clean energy in the Northern Territory. Integrating intermittent renewable generation, enabling the energy system to be more sustainable, flexible and secure for 150,000 Territorians.

Press Release / In the media

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**Darwin-Katherine Power System: Utilities**

**About the project**
- **Project name:** Darwin-Katherine Battery
- **Location:** Northern Territory, Australia
- **Customer:** Territory Generation
- **Completion date:** Estimated 2023

**Solution**
- Large 300MW Isolated regulated Utility Grid
- Power supplied by multiple Gas Turbines as well as distributed & central solar PV.
- PowerStore Battery VSM (34.7 MW / 34.7 MWh)
- e-mesh Control System
- e-mesh SCADA
- **10 Years Service Agreement**
- Ability to operate entire network on VSM+Solar

**Customer benefits**
- Replace gas turbine for spinning reserve with Virtual Synchronous Machine
- Less than 5 years payback; annual cost savings of around $9.8 MAud and emissions reductions of about 58,000 tones/year.
- Increased system stability and reliability from inertia allowing the connection of more central and distributed solar
Phillip Creek compressor station (PCCS) is the starting point of the 620 km long Northern Australia gas pipeline, and located 1,000km south of Darwin. The remoteness of the site, the extreme weather conditions and the significance of the PCCS made the on-site battery system the best option to provide stand-alone and back-up power to ensure the reliability of supply.

**About the project**
- **Project name:** Phillip Creek compressor station
- **Location:** Tennant Creek, NT, Australia
- **Customer:** Jemena Ltd
- **Completion date:** 2021

**Solution**
- Gas Generators
- PowerStore Battery (1.2 MW / 1.48 MWh)
- e-mesh Control System
- Remote monitoring
- 20 years Service Level Agreement

**Customer benefits**
- Reliability, affordability and sustainability of gas supply to Jemena customers
- ‘Digital twin’ simulating the PCCS system addressing the challenges of a remote operation
- System able to resist the corrosive environment and extreme weather conditions (0-45°C)
- Solution designed, delivered, installed and commissioned within 12 months, even with site remoteness and COVID-19 travel restrictions
Fort Chipewyan: Remote communities

Fort Chipewyan, an isolated community of 1,200 people, is Alberta’s oldest established community, which relied on diesel fuel for all its electricity production. Hitachi Energy collaborated closely with ATCO and 3NE to understand the community needs and the long-term intent of the project to maximize both energy output and reduce dependence on diesel.

Press release / In the media

About the project

- **Project name:** Fort Chipewyan Microgrid
- **Location:** Alberta, Canada
- **Customer:** ATCO & Three Nations Energy
- **Completion date:** 2019

Solution

- Solar PV (2.6 MWp)
- PowerStore Battery (1600 kW / 1600 kWh)
- e-mesh Control System
- 4 Years Service Agreement

Customer benefits

- Helps the community to be energy independent
- Reduces dependency on fossil fuels (a reduction in usage of 800,000 liters of diesel fuel per year)
- Reduces greenhouse gas emissions significantly (a reduction of 2,170 tons CO₂ emissions per year)
- Eliminates the noise and odor of the diesel generator
- Decreases the risk of accidents on the winter road and in the community
- Lowers wear and tears on the ice road as well