BluWave-ai

Artificial Intelligence for Clean Energy

Optimizing Smart Grids with AI

Renewable energy use in smart grids is increasing due to the low cost of energy from these sources, but given that their output depends on weather fluctuations managing this can be a challenge. Using Artificial Intelligence (AI) for prediction of future loads and renewable generation states can guarantee stable and optimal operation while keeping the grid stable.

Some of the challenges that energy operators face that can be solved by AI software include:

- Accurately predicting renewable energy generation
- Dynamically integrating local renewable energy and storage in real time
- Managing real-time energy transaction pricing
- Integrating real-time micro weather and geographic data into power generation and distribution management
- Real-time management of distributed energy storage and generation
- Dynamic load peak shaving and management

BluWave-ai for Utilities and Enterprises

Bluwave-ai uses both real-time and archived data to perform accurate predictions and optimisation, sending recommendations, signals, and actions to grid resources to reduce energy costs.

Commercial and Industrial microgrids using storage and renewable generation to reduce energy costs and increase reliability and resiliency

Remote communities, mining and forestry operations, military forward bases, supplied by diesel generators

Utilities with distributed renewable energy resources and utility scale solar and wind generators

The BluWave-ai Solution

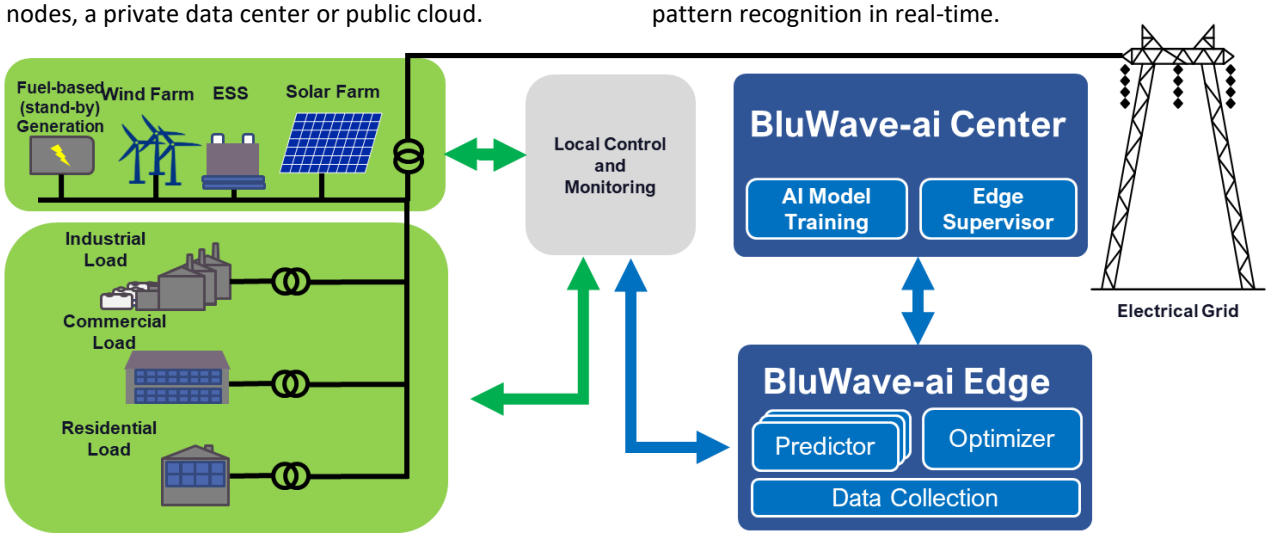
Distributed AI to optimize the operation of smart grids and microgrids

BluWave-ai's solution is distributed AI-based software to optimize the operation of smart grids and microgrids, enabling high renewable energy use.

It consists of components at the edge and cloud data center. BluWave-ai Edge is installed at the aggregation points of IoT sensors, meters, and other sources of data. The physical location can be at edge computing nodes, a private data center or public cloud.

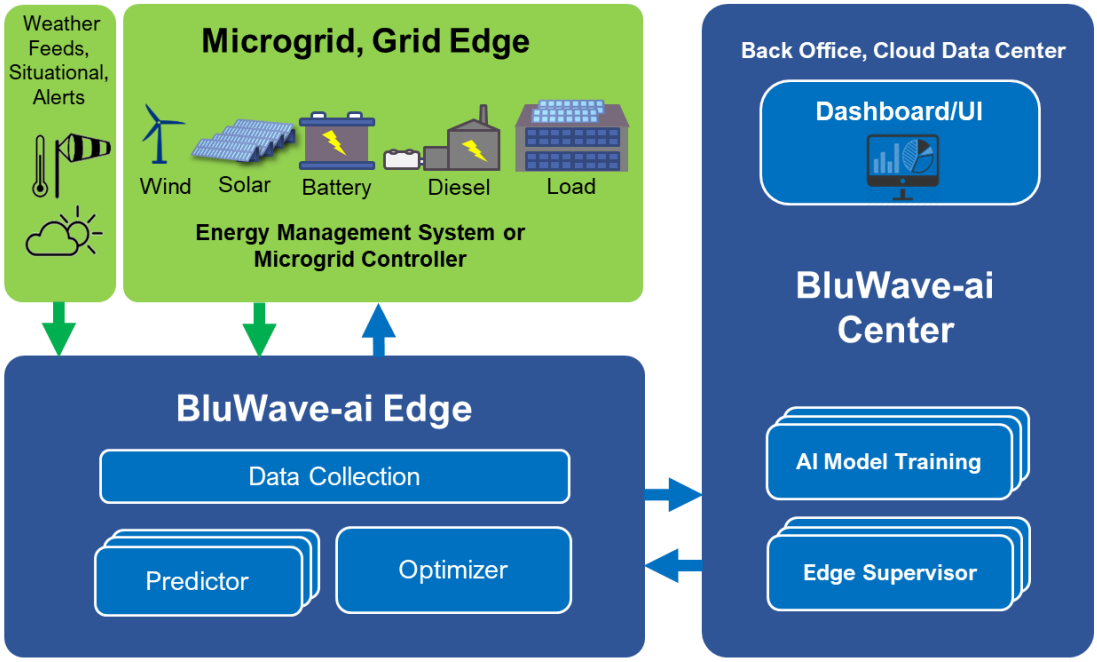
BluWave-ai Center machine learning runs in either the private or public cloud, collecting data from Edge nodes to train AI models and also coordinate functions between multiple BluWave-ai Edge locations

The overall solution includes an ensemble of machine learning and statistical techniques that discover patterns in data, performing predictive analysis and pattern recognition in real-time.



Use Case Example: BluWave-ai Optimizing Use of Utility Scale Renewables

The BluWave-ai Solution: Distributed AI



BluWave-ai Edge

- Runs AI Model inference on local data, providing predictions, recommendations and actions
- Operates at the aggregation points of sensors
- May be at an edge computing node, enterprise data center or public cloud based on business needs and where sensors are terminated

BluWave-ai Center

- Machine learning runs in the private or public cloud ingesting data from Edge
- Discovers patterns in data and generates models for predictions to optimize control
- Constantly improves AI Models with new data, pushing them to the Edge

Flexible Architecture, Simple Integration

- Easily deployed in a wide range of systems to receive and process data from SCADA, IoT devices, and
- Works with external data sources: weather, planned schedules, event signals, market pricing, and performance objectives
- Integrates with microgrid & utility control software to provide accurate predictions needed by operators for optimal control
- Built on widely used, industry standard technologies to ensure interoperability

BluWave-ai AI Models

- Wind Power Generation Predictors
- Solar Power Generation Predictors
- Load Predictors
- Optimization and energy storage control

Optimize Your Grid with BluWave-ai

Licences are available for BluWave-ai Center and Edge packages. BluWave-ai offers AI Readiness Assessments and AI Model Building Services for operators and developers with renewable generation and energy storage assets.

BluWave-ai's team of AI and Data Scientists, business analysts, and smart grid engineers can assess your particular project or existing system and determine the appropriate AI-based control and optimization solution to maximize the economic benefit and operational reliability.

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