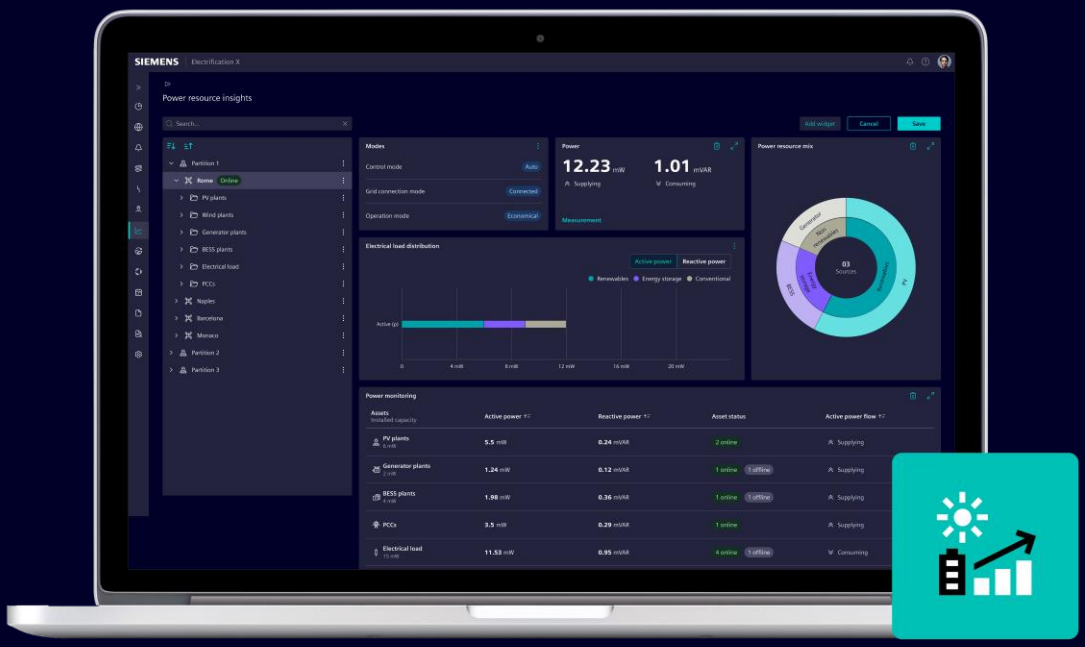


Electrification X

Power Resource Management

Bringing operational transparency and managing multiple industrial, PV and hybrid plants

SIEMENS

Contents

Overview

Power Resource Management is a feature set that empowers industrial plants and other microgrid operators and renewable operators efficiently manage the operational status of their power resources. With visualization of the power resources in flexible dashboards, users can efficiently manage multiple locations from one central platform. This feature set provides real-time insights and analytics, helping operators to promptly address issues, reduce downtime, and enhance overall grid stability.

Customer Benefits:

- Improved Operational Efficiency
  Real-time monitoring of all microgrids (including installed PV and hybrid plant) from a single dashboard. Faster decision-making due to centralized data access and easy comparison of different power resources.

- Enhanced Reliability and Resilience
  Early detection of faults or anomalies across microgrids locations. Analyze load balance and energy distribution during peak load.

- Power Usage and Cost Savings
  Insights into energy consumption patterns across sites. Identification of inefficiencies and opportunities for cost reduction.

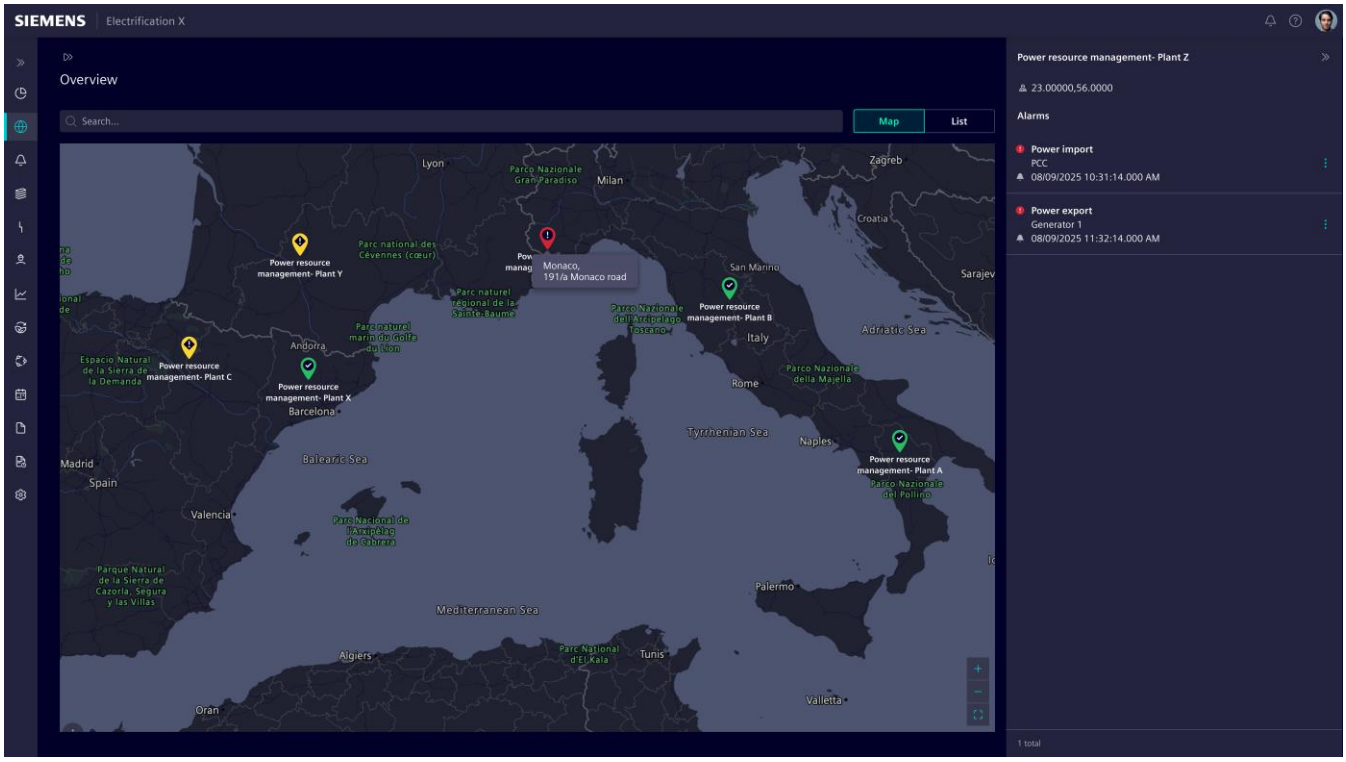
- Scalability and Flexibility
  Easily add or remove multiple plants in one homogenous system without any disruption.

Feature: Power Resource Monitoring

Power Resource Monitoring gives the visibility and operational transparency of power resources. The following views are provided as part of this feature and are described in more detail below:

Plant Location – Map View

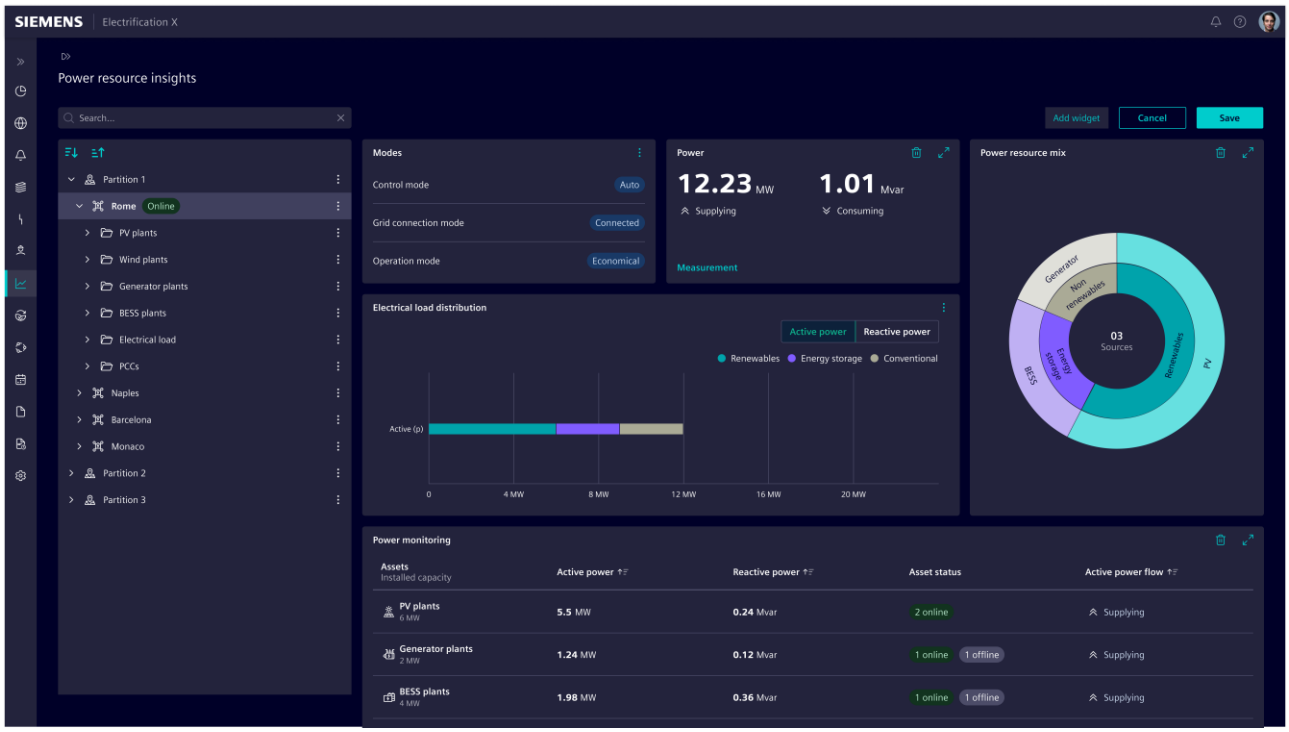
Geographic view of the plant or and a color code showing the transparency Index, alarms, and local time. Additionally, the latest unacknowledged alarms are shown in a list.



Electrification X – Power Resource Management: Map view

Location Dashboard

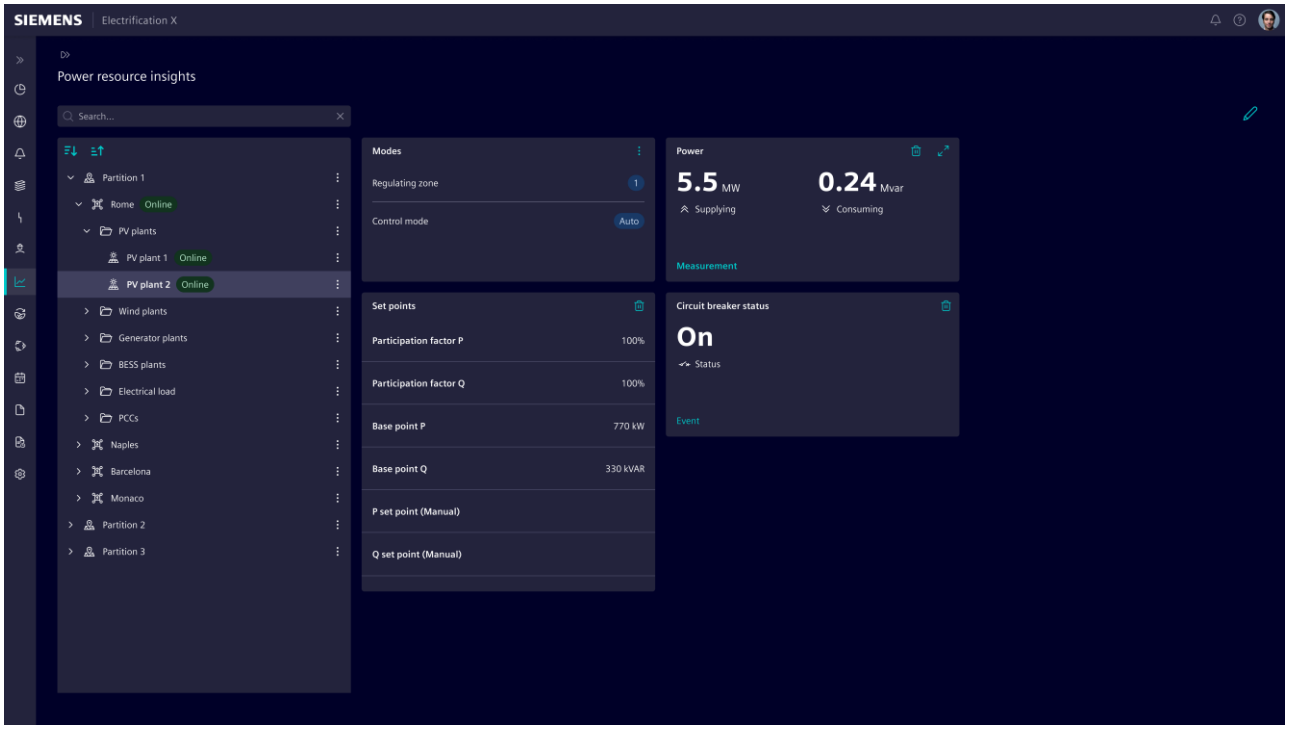
The **location dashboard** provides a unified interface for managing power resources in a location. It classifies both renewable and non-renewable energy sources. The dashboard visualizes the operating mode of the plant while connected to the grid. Real-time data show total power being supplied and consumed. A pie chart visualizes the mix of power sources including PV, battery energy storage, and generators. Load distribution is categorized into renewables, energy storage, and conventional sources. The monitoring includes operation mode, capacity, and power flow direction. The power resources actively supplying or consuming energy are continuously updated. It is designed to enhance operational transparency and decision-making across microgrids.



Electrification X – Power Resource Management: **Plant Dashboard**

PV Plant Dashboard

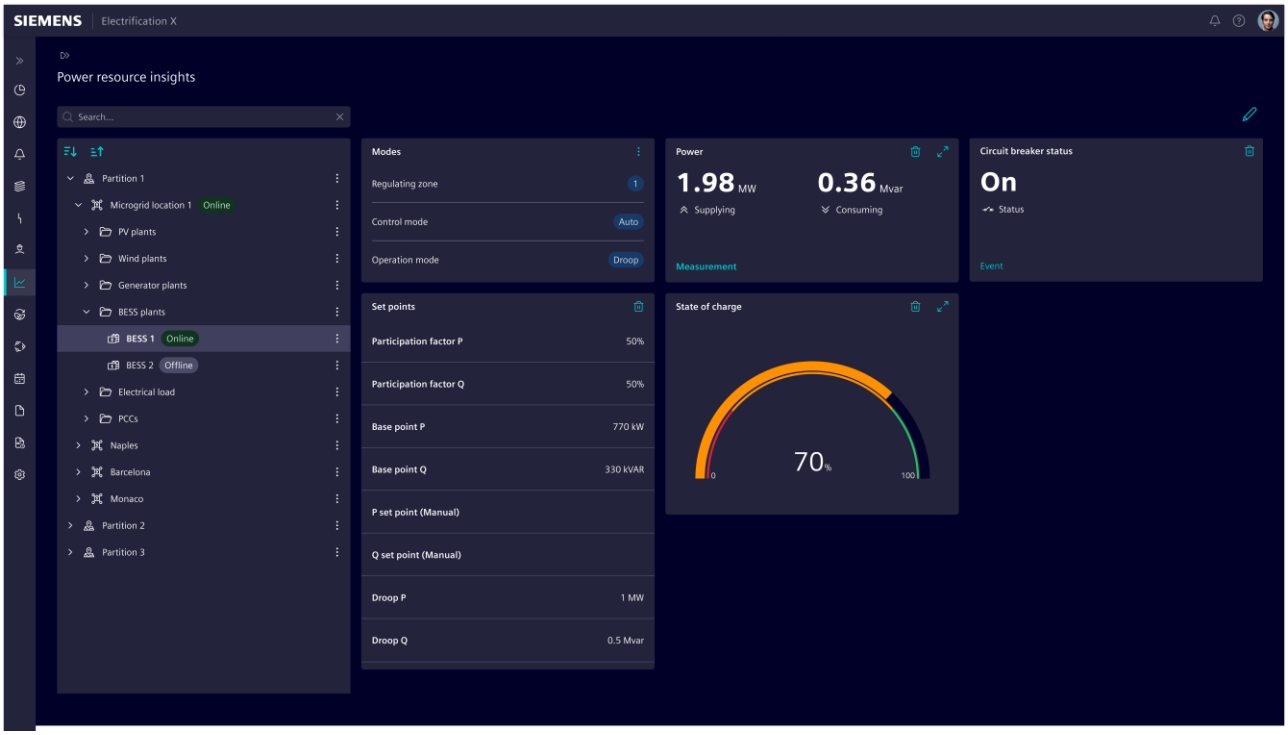
The **PV Plant dashboard** for monitoring power resources within a microgrid offers a structured view of PV plants. The dashboard highlights which components are currently online and actively contributing to the microgrid. It gives users the input about which control settings (set points) are configured for automated operation, ensuring efficient and balanced energy flow. Set points for active and reactive power participation are visualized, depicting how much a PV plant can contribute on top of present consumption in the microgrid. Real-time power metrics show how much power is generated. The circuit breaker position shows whether the plant is in active operation. The layout is designed to support quick decision-making and operational transparency.



Electrification X – Power Resource Management: **PV Dashboard**

Battery Energy Storage System Dashboard

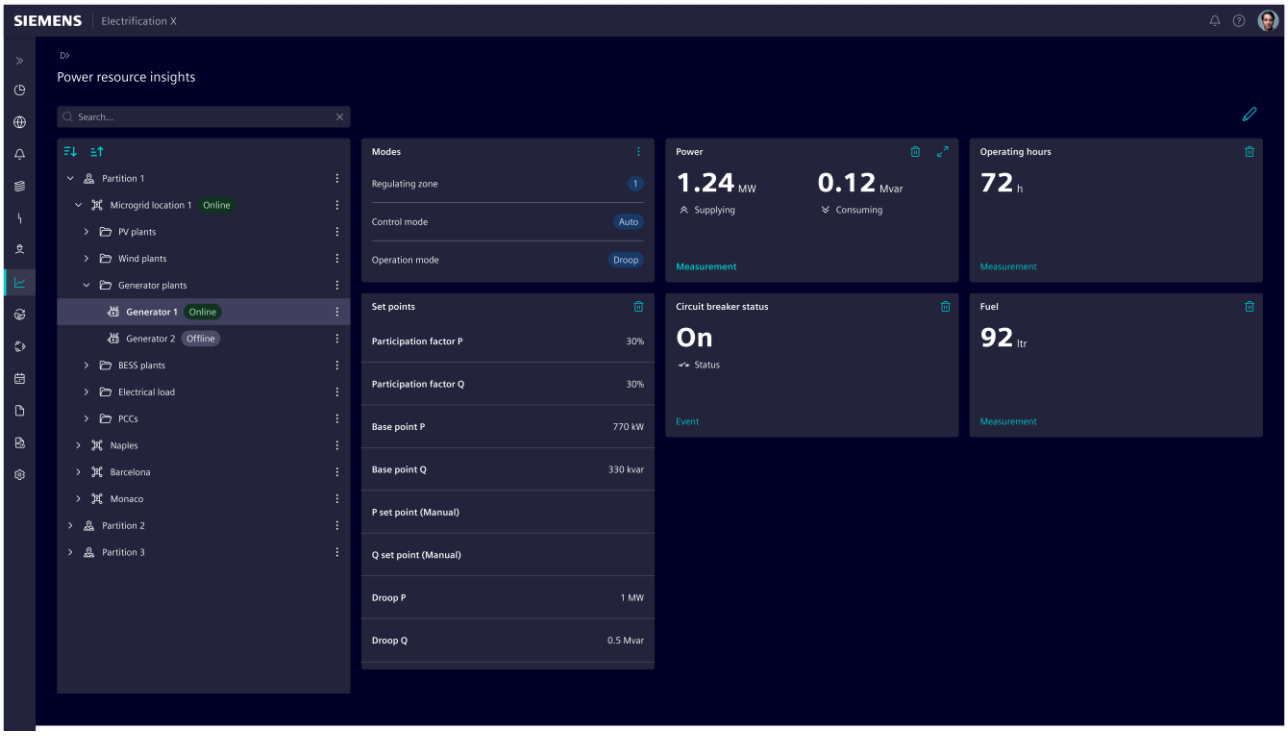
The **Battery Energy Storage System (BESS) dashboard** for monitoring power resources within a microgrid offers a structured view of BESS plants. The interface highlights which components are currently online and actively contributing to the microgrid. It gives users information about which control settings (set points) are configured for automated operation, ensuring efficient and balanced energy flow. Set points for active and reactive power participation are clearly defined, supporting how much maximum the BESS can contribute on top of present consumption. Real-time power metrics show how much power is being supplied and consumed by the BESS. The system status is reinforced by displaying the circuit breaker being in the "On" position, indicating active operation. The layout is designed to support quick decision-making and operational transparency.



Electrification X – Power Resource Management: **BESS Dashboard**

Generator Dashboard

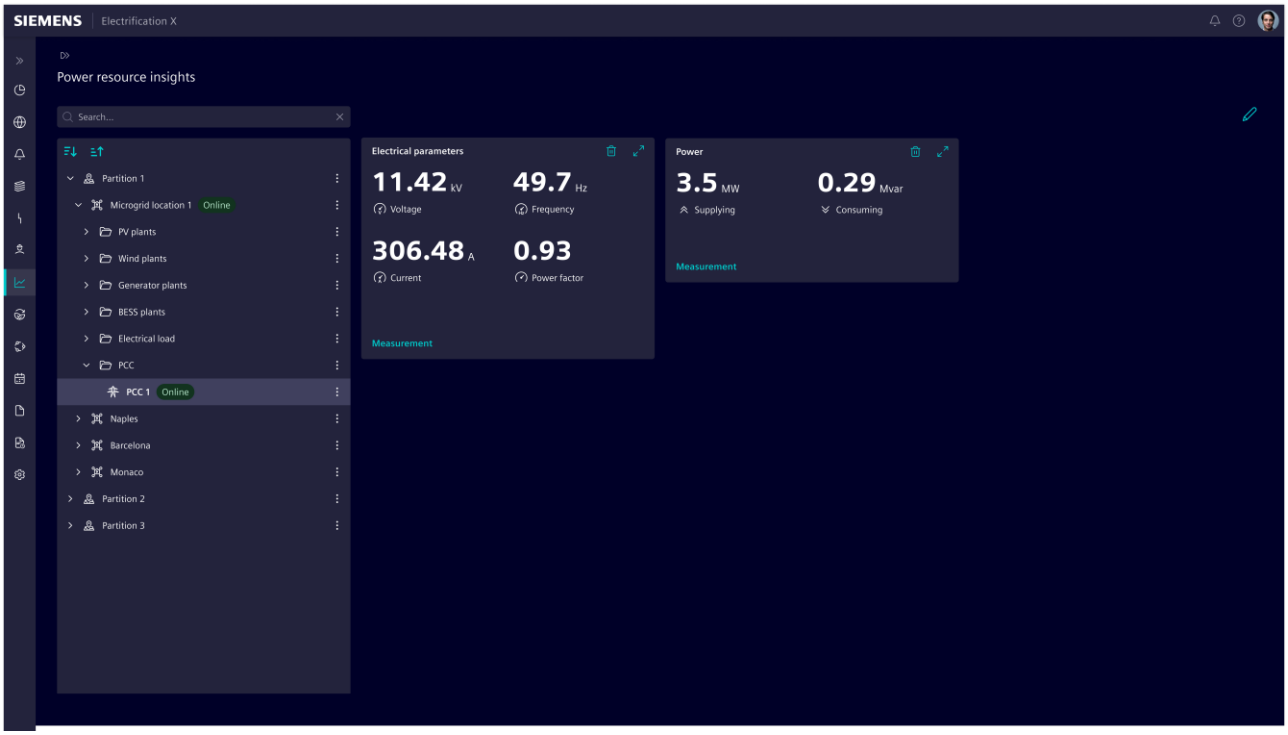
The **Generators dashboard,** especially diesel generator, for monitoring power resources within a microgrid or hybrid energy system. It offers a structured view of diesel generators. The interface highlights which components are currently online and actively contributing to the system. It gives users the information which control settings are configured for automated operation, ensuring efficient and balanced energy flow. Set points for active and reactive power are clearly defined, supporting how much maximum it can contribute on top of present consumption. Real-time power metrics show how much power is generated. Additionally, the breaker position is shown.



Electrification X – POWER RESOURCE MANAGEMENT: **Generator Dashboard**

Point of Common Coupling (PCC) Dashboard

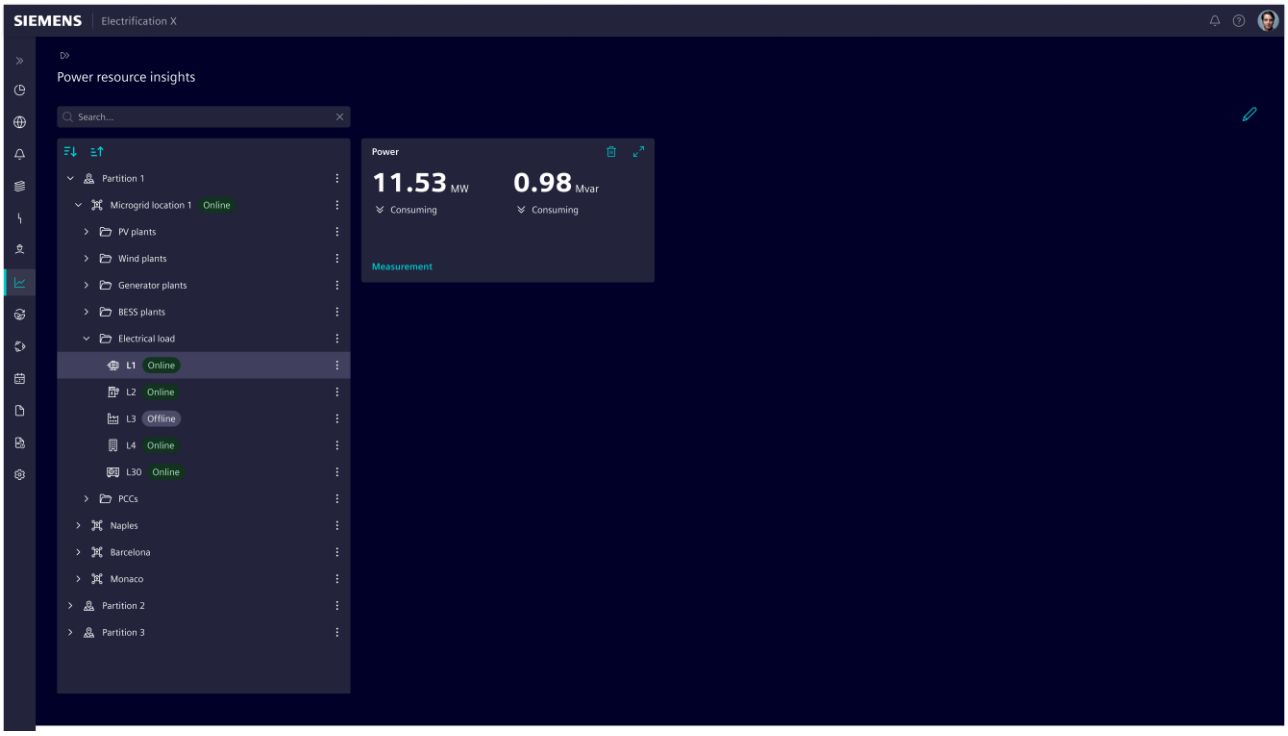
This is the exchange point of the microgrid with the power grid and measures whether power is consumed from the grid or exported into the grid. Key parameters are voltage, current, frequency and power factor. The power exchange with the grid shows the direction of power flow for efficient and balanced energy.



Electrification X – Power Resource Management: PCC Dashboard

Load Dashboard

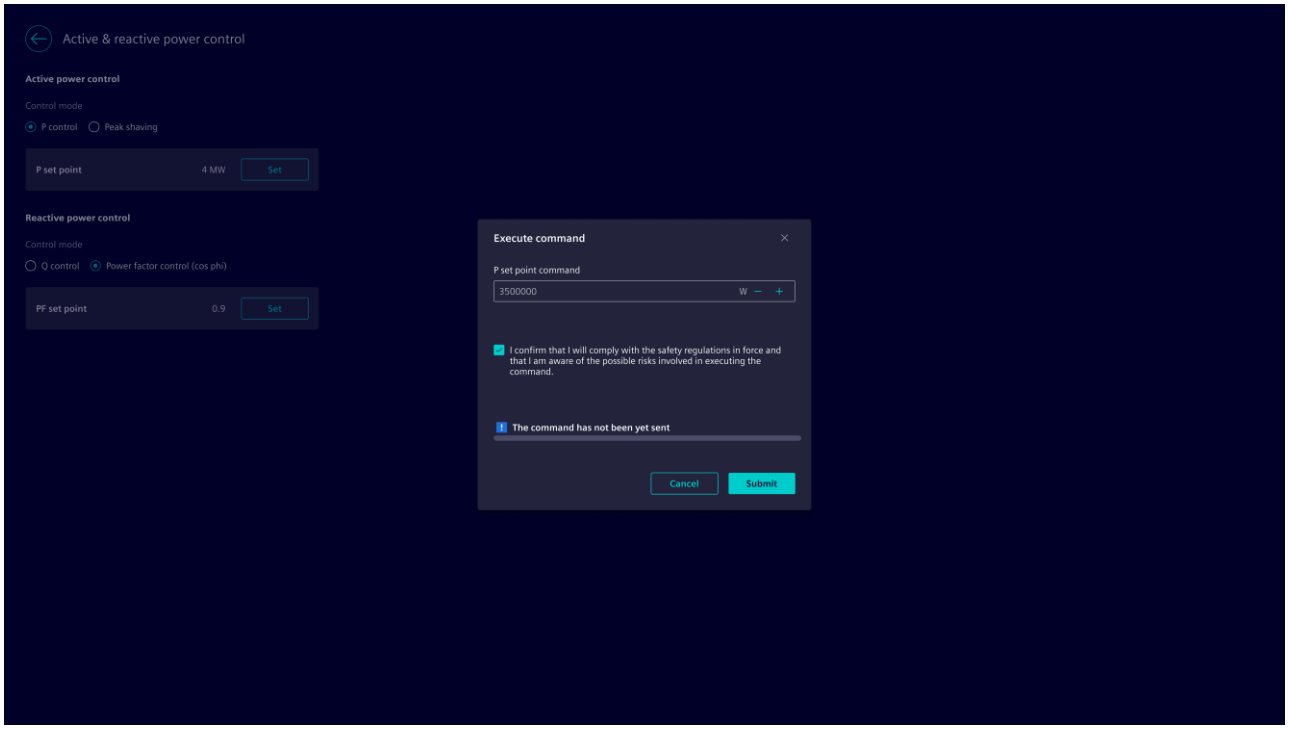
The dashboard gives insights into operational transparency for each measured load within the microgrid.



Electrification X – Power Resource Management: **Load Dashboard**

Feature: Power Resource Operations

Electrification X allows the user to conveniently configure the operational set points for active power control and reactive power control remotely for each individual microgrid. These set points are submitted to the control devices onsite.



Electrification X – Power Resource Management: **Operations**

Additional Functions

- Historical power consumption and asset utilization (based on rated capacity)
- List of feeders of the assets with individual alarm visualization and status
- Customizable SVG uploads for detailed substation single line diagrams, enhancing operational visibility

Subscription

Standard Subscription Plan	Electrification X Power Resource Management
Functions	All
Subscription metric	Feature Power Resource Monitoring: per MW per month Feature Power Resource Operations: per location per month
Subscription term	Annually, auto-renewal
Billing term	Annually, payment in advance
Upscale	Effective immediately, pro-rated billing
Downscale/Cancellation	Effective with end of subscription term
Connected Devices	To be purchased separately
Permitted Users	Unlimited, Extended Use

The Power Resource Management feature set under Electrification X subscription plan is the regular, scalable Offering for this Cloud Service. The subscription term is twelve (12) months with automatic renewal; the Cloud Service fee is paid in advance. The subscription plan can be upscaled at any time and Cloud Service fees for upscales are calculated on a pro-rated basis. The Customer can also scale down the Cloud Service effectively with the end of the current subscription term. The subscription fee will be adjusted for the upcoming billing term. The Cloud Service can be cancelled any time, effectively with the end of the current subscription term.

The subscription plan can be purchased in packages per MW managed capacity for Power Resource Monitoring and per location for Power Resource Operations.

Extended Use entitles the Customer to authorize its Affiliates and third parties to access and use the Cloud Services in accordance with the rights set out in the Terms and Conditions.

Prerequisites

Electrification X Tenant	The Electrification feature set is operated on an Electrification X Tenant. Therefore, a tenant with an Electrification X Base Package is required. The Electrification X Base Package has a subscription term of 12 month and must be purchased together with the Power Resource Management – Monitoring per MW and Power Resource Management – Operations per location per month, if not otherwise already available and in operation
Supported Connected Devices	The Cloud Service is currently compatible with commercially available Connected Devices from Siemens. A description of the available Connected Devices is provided below. A Connected Device must be purchased and installed on premises at a site specified by the Customer as agreed between the Customer and Siemens to use the Cloud Service. The customer is responsible for installing the Connected Device at the site and any associated costs to perform said Cloud Service in accordance with related Documentation for the Connected Device. List of supported Connected Devices: **SICAM CP-8031/CP-8050.** For order information, Customer may contact its local sales representative.
Web browser and viewing devices	Chrome is recommended to use the Cloud Service, but other standard browsers might also serve this function. Screen resolution of 1920x1080 pixels or higher is recommended for best user experience
Internet Connection	The bandwidth of Customer's internet connection determines the performance of the Cloud Service.

Ordering

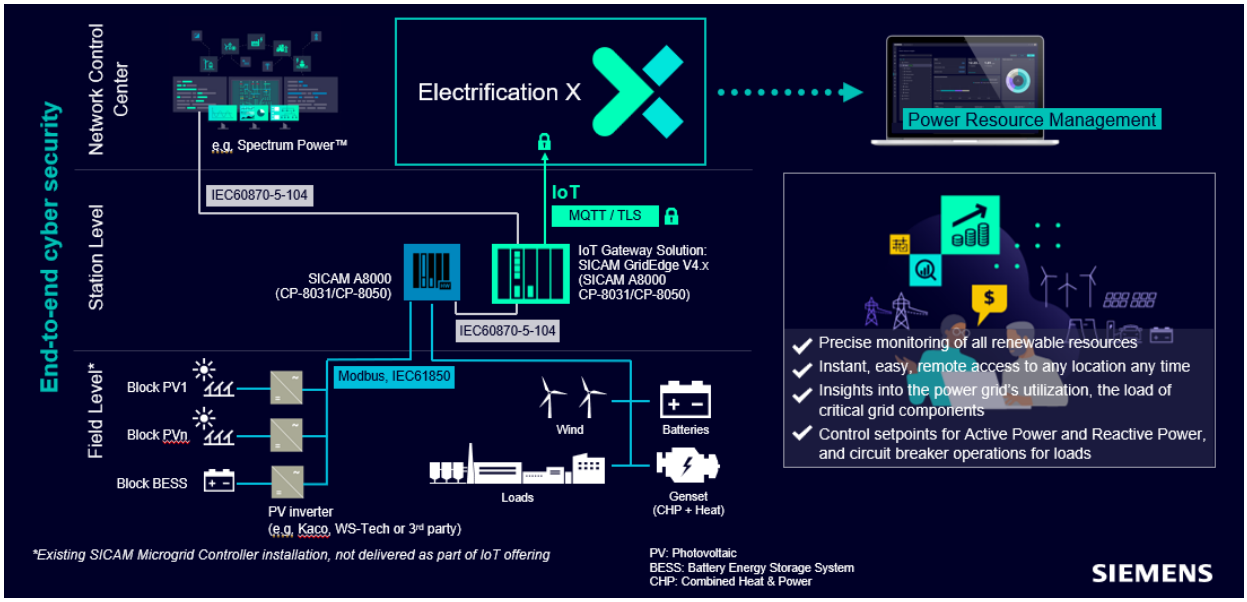
Ordering Process for the Subscription	To order the Cloud Service for the first time, Customer must request a quote from its Siemens sales representative. Depending on the offering either with Services, then customer will receive a link to his tenant, or without services, then the Customer will receive a link to the shopping cart. In this case Customer needs to (i) choose the payment options and (ii) accept the Terms and Conditions to start using the Cloud Service. The "Terms and Conditions" consist of the "Electrification X Supplemental Terms", the Siemens Universal Customer Agreement, the Acceptable Use Policy, the Siemens Data Processing Terms, this Product and Service Data Sheet and any other Supplemental Terms which may be referenced in either of the mentioned documents. Customer may upgrade, downgrade, and cancel the Cloud Services directly in the Subscription Manager store https://subscribe.siemens.com
Ordering Connected Devices	To order Connected Devices the Customer may request a quote from its Siemens sales representative
Connected Device	**SIEMENS: SICAM A8000 CP-8031/CP-8050**
Ordering	For order information, Customer may contact its local sales representative

Product Documentation

Technical Documents	Document ID	Document ID German	Document ID English
Building X – Accounts User Guide	A6V12050070		
Building X – Devices User Guide	A6V12050067		
Building X – Data Setup User Guide	A6V12481797		
Building X – Connect X200/300 Installation Guide	A6V13057554		
Building X – Connect Hub User Guide	A6V13471544		
Electrification X – Base Package Operating Manual		E50417-H7500-C200-A6	E50417-H7540-C200-A6
Electrification X – Engineering Guide		E50417-H7500-C203-A6	E50417-H7540-C203-A6
Electrification X – Power Resource Management Operating Manual		E50417-H7500-C212-A1	E50417-H7540-C212-A1
Electrification X – Security Manual		E50417-H7500-C204-A6	E50417-H7540-C204-A6

Technical Documents can be downloaded here:
https://support.industry.siemens.com/

Topology



Data communication between the Connected Devices on premise and the Cloud Service requires internet connectivity (to be provided by the Customer).

Specific Terms

Third Party Terms for Use of the Cloud Service	Software may contain third-party software, technology, and other materials, including open-source software, licensed by third parties under separate terms ("Third Party Terms") which are specified in the "read me" files, header files, notice files, or similar files. Third Party Terms shall prevail with respect to the respective technology. If and to the extent required by Third Party Terms, Siemens will provide the source code for the respective technology upon written request and payment of any shipping charges by Customer.
Customer Support	Siemens offers helpdesk support. Customer may contact its local Siemens representative for support requests.

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