ORGANIZER

India Smart Grid Forum

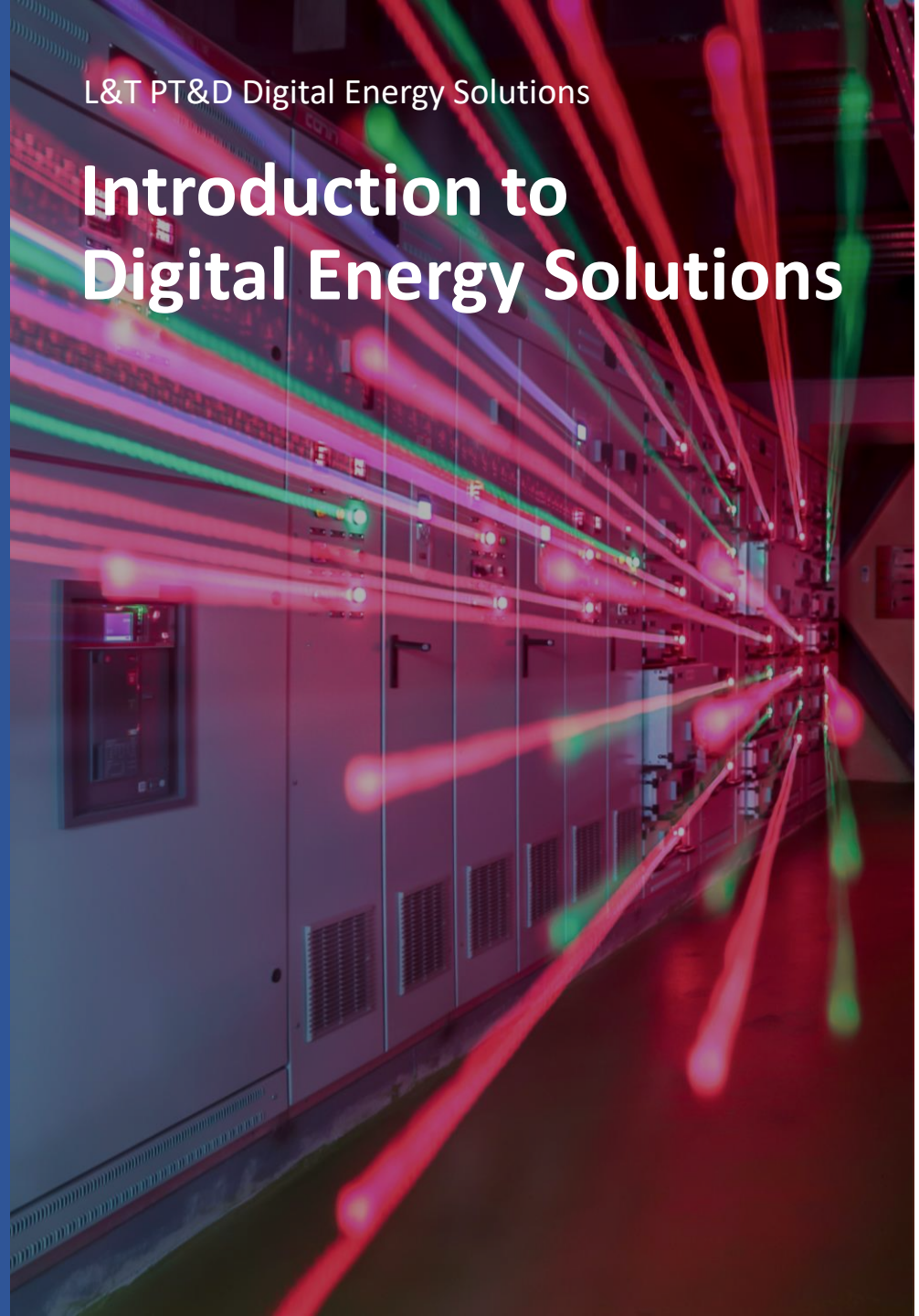
DISTRIBUTION UTILITY MEET DUM 2024

Session 7

RE, EV & GRID STABILITY

Suvendra Kumar Senapati
Head - Sales & Commercials
L&T Digital Energy Solutions

Digital Energy Solutions
Power Transmission & Distribution



L&T PT&D Digital Energy Solutions

Introduction to Digital Energy Solutions

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Digitizing PT&D's Value chain. Revolutionizing power Infrastructure.

We are part of Larsen & Toubro (L&T), a global, multi-billion-dollar technology, engineering, construction, and financial services conglomerate specializing in engineering, procurement, and construction (EPC) projects, high-tech manufacturing, digital transformation and technology services.

L&T Digital Energy Solutions is an integrated service provider that delivers fast, reliable, secure, and smart digital solutions for mission-critical power applications. Our advanced technology integration platform supports the effective exchange of information between your electrical installations and decision platforms, creating smarter, safer, and more efficient energy systems. Let us put our cutting-edge technologies to work for you.

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Energy Transition & Grid Stability

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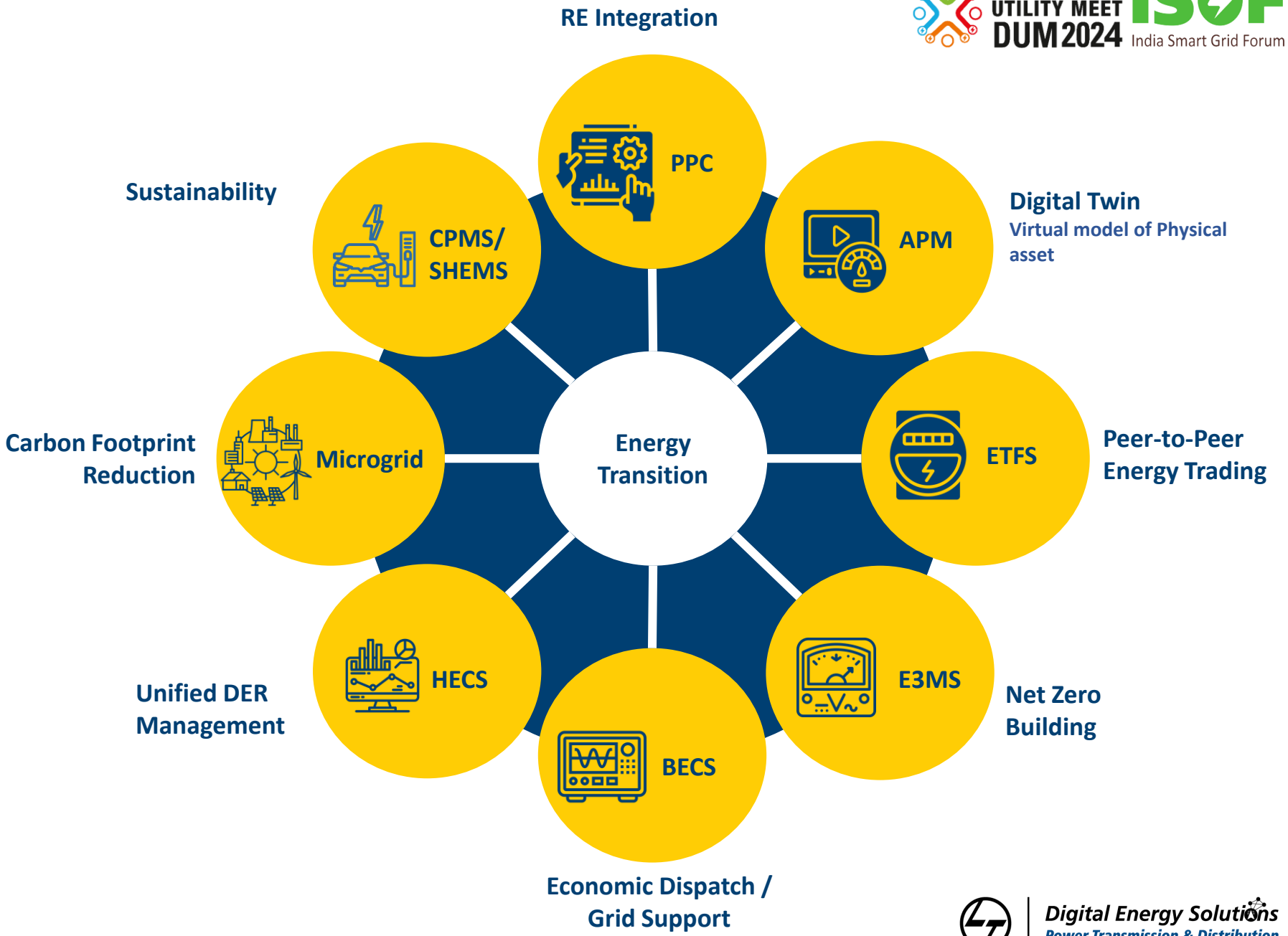

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TECHNOLOGY DIFFERENTIATION

Next-generation Software-defined Solutions with Cutting-edge Computing: Our solutions leverage advanced computing technologies to deliver high-performance, flexible, and scalable energy management systems. These solutions enable real-time optimization, dynamic adaptability, and seamless integration, providing precise control over energy operations.

Data Learning with Real-time Controller Solutions for DER Management: We employ machine learning and AI-driven controllers to manage Distributed Energy Resources (DER) efficiently. This real-time data-driven approach enhances system stability, optimizes resource allocation, and ensures the seamless integration of renewable energy into the grid

Power System Modeling with Real-time Digital Simulator for Software Validation & Integration: Our real-time digital simulators validate and integrate power system algorithm, ensuring accurate and reliable performance. This allows us to simulate complex grid conditions, refine system behavior, and verify software functionality, delivering robust, future-ready energy solutions.

L&T PT&D Digital Energy Solutions

Renewables Segment

Solar Power Plant Controller (PPC)

- Industrial PC based Redundant PPC with Edge Computing
- Virtually expandable for regulating Multiple POI
- Fully configurable complying to all grid codes
- Supports Synthetic Inertia & STATCOM interfaces for grid support

Battery Energy Control System (BECS)

- Supports power load balancing, economic dispatch optimization as well as energy market participation
- Vertically as well as Horizontally scalable for Multiple BESS units

Hybrid Energy Control System (HECS)

- Unified Management of multiple renewable sources through a single edge-based computing platform
- Supports in meeting variety of operational compliances & interconnection standards

Microgrid Solution

- Enhances the integration of distributed & renewable energy sources along with load prioritization & management
- Minimizes carbon footprints & green house gas

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EV Segment

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Charge Point Management System (CPMS)

Smart Hybrid Energy Management System (SHEMS) & V2G

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Grid Integration & Advance Studies

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Digital Energy - Grid Integration

- Network Modelling/Parametrization, Grid Compliance study & Simulation for Renewables, T&D, Microgrids, Etc.
- UDM/Controller Model – Product native model development (PSCAD & PSS/E)
- Real time simulation capabilities (OPAL-RT & RTDS)

Advanced Grid Services- Power System Study

- Grid Integration/interconnection study
- Ensures regulatory compliance to enhance grid reliability, stability, and efficient power transmission
- Optimizes grid readiness for seamless integration of Distributed Energy Resources.
- Real time Hardware-in-Loop/Software-in-Loop simulation services
- Ensures equipment reliability, system compatibility, and compliance for a stable electrical environment

OT Cybersecurity services

- Overall, OT Cybersecurity Solution for Power utilities, Renewables plants, substations, control center, NOC, SOC, etc
- Real Time OT Network Monitoring & Alerting
- Vulnerability Assessments & Penetration testing

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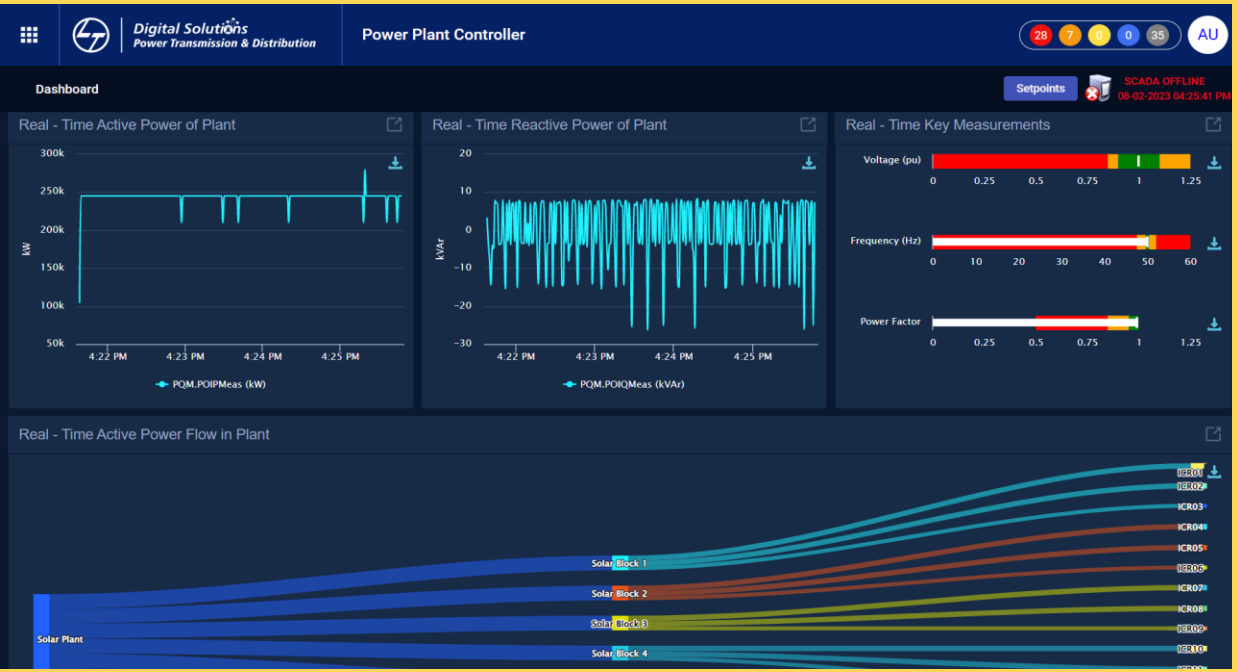
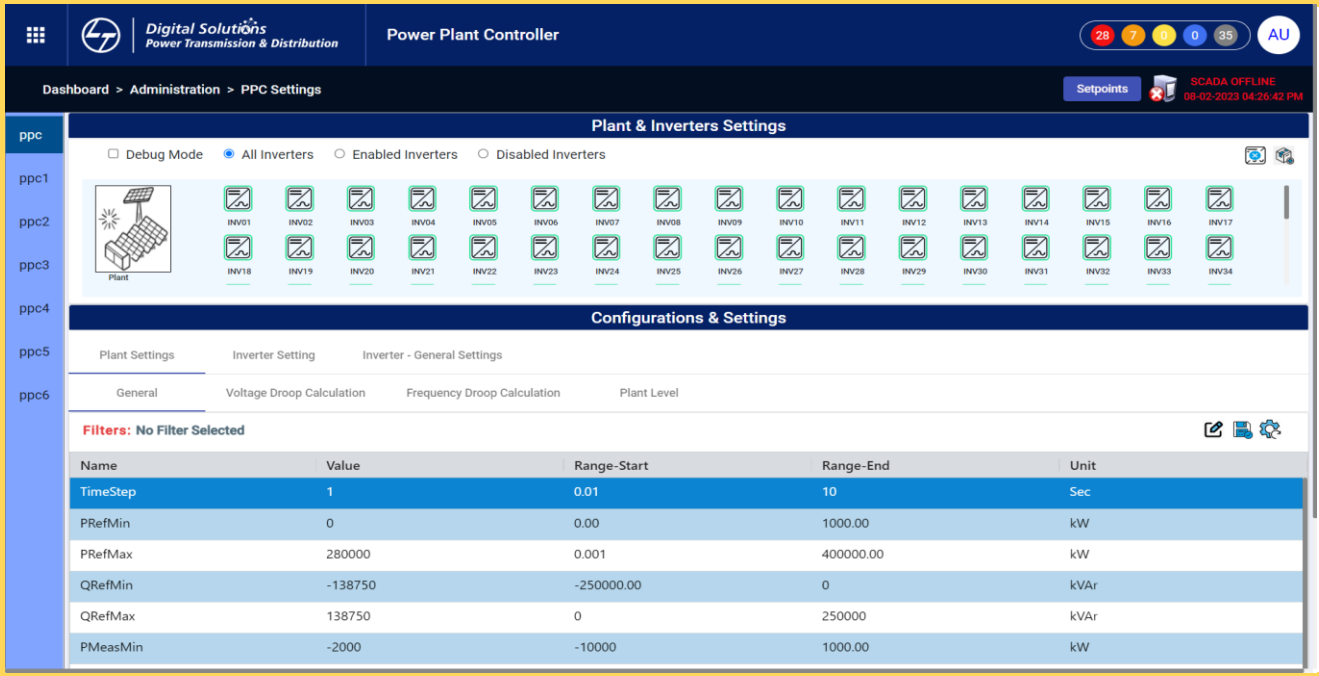
Power Plant Controller Dashboard





Web Client

- The web app is built upon modern standard web technologies.
- The web app is accessible using modern web browsers from within the Plant network & from remote locations.

PPC controller communicates with SCADA **on open industrial protocol like Modbus TCP, IEC 104, IEC 61850**

PQM communicates with PPC **through Modbus TCP/IP**

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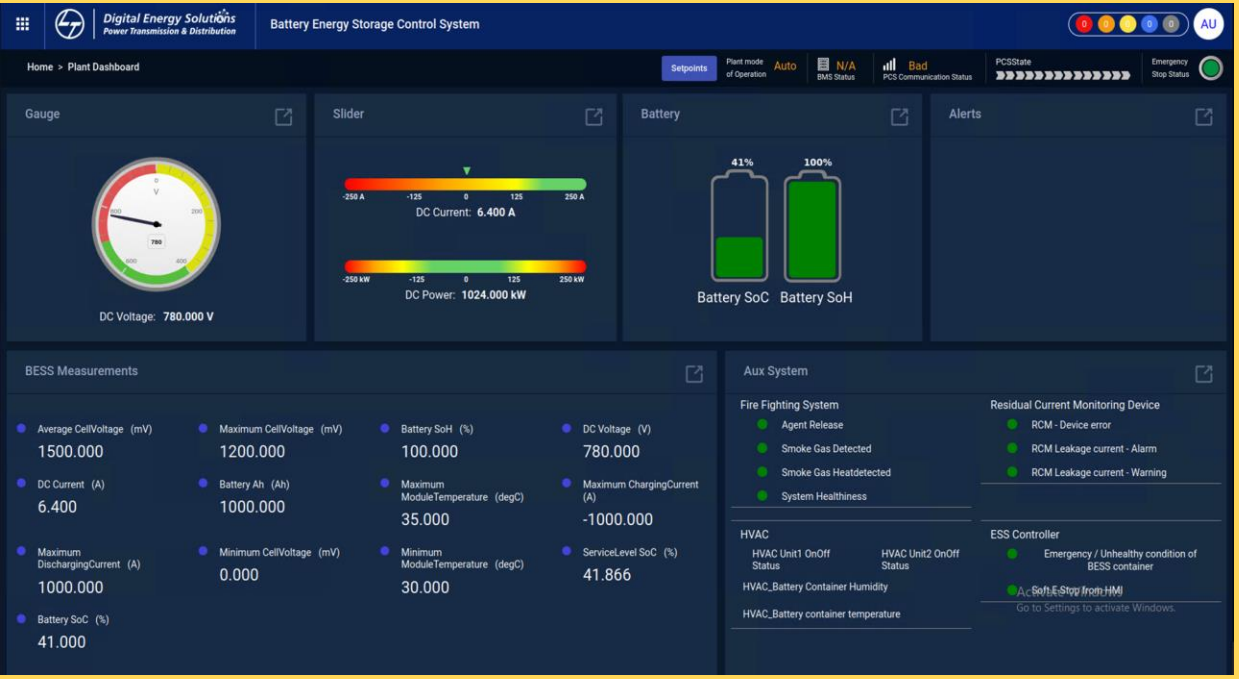
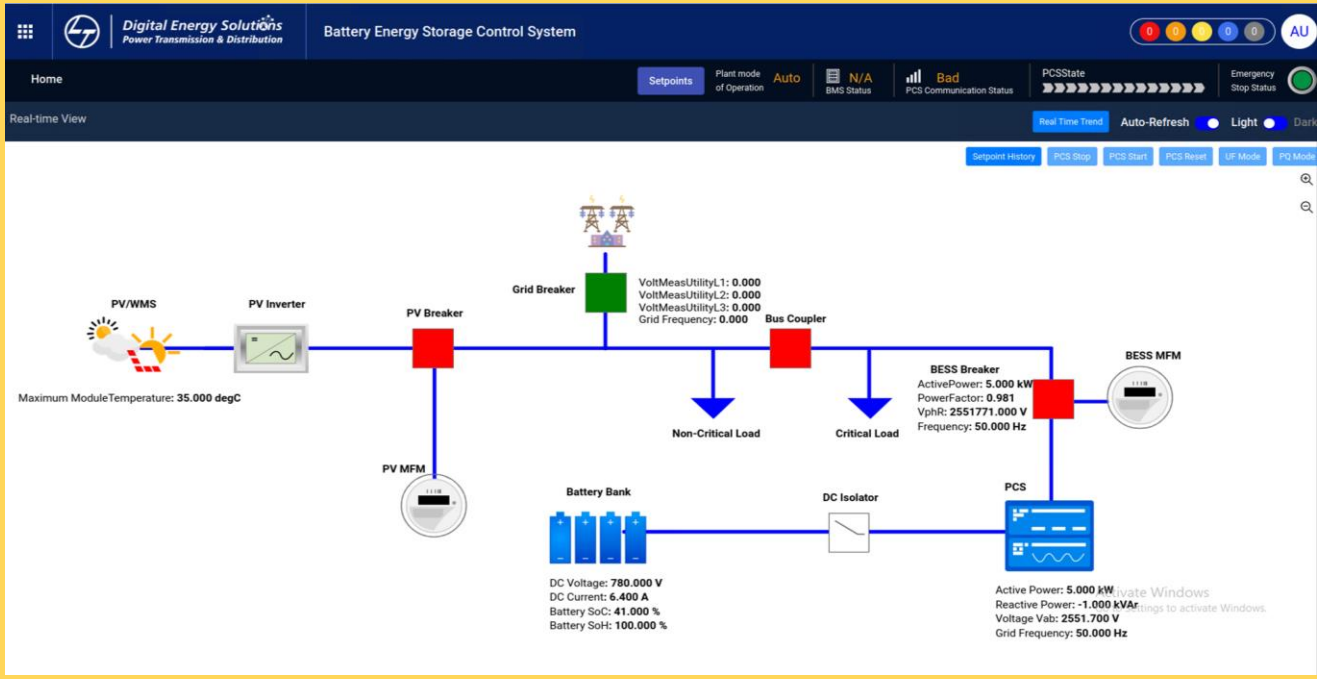
Hybrid Energy Management Systems

BECS HMI – Easy User Interface & Custom Menu Structure





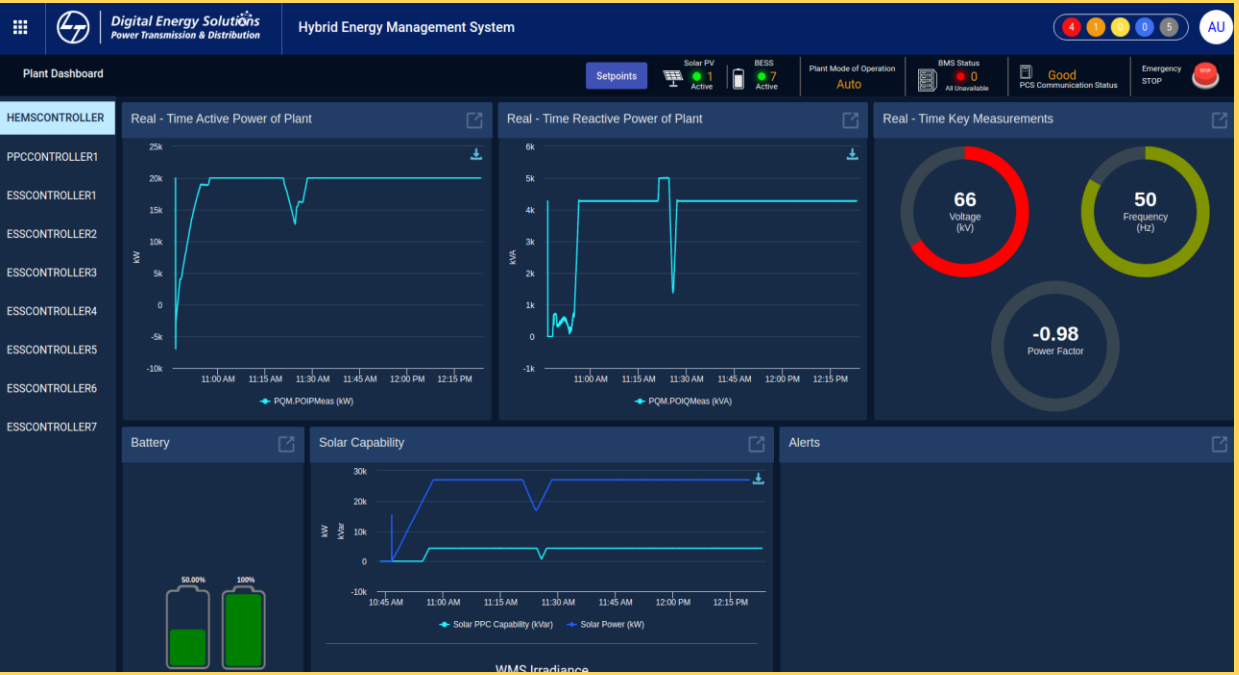
Web Client

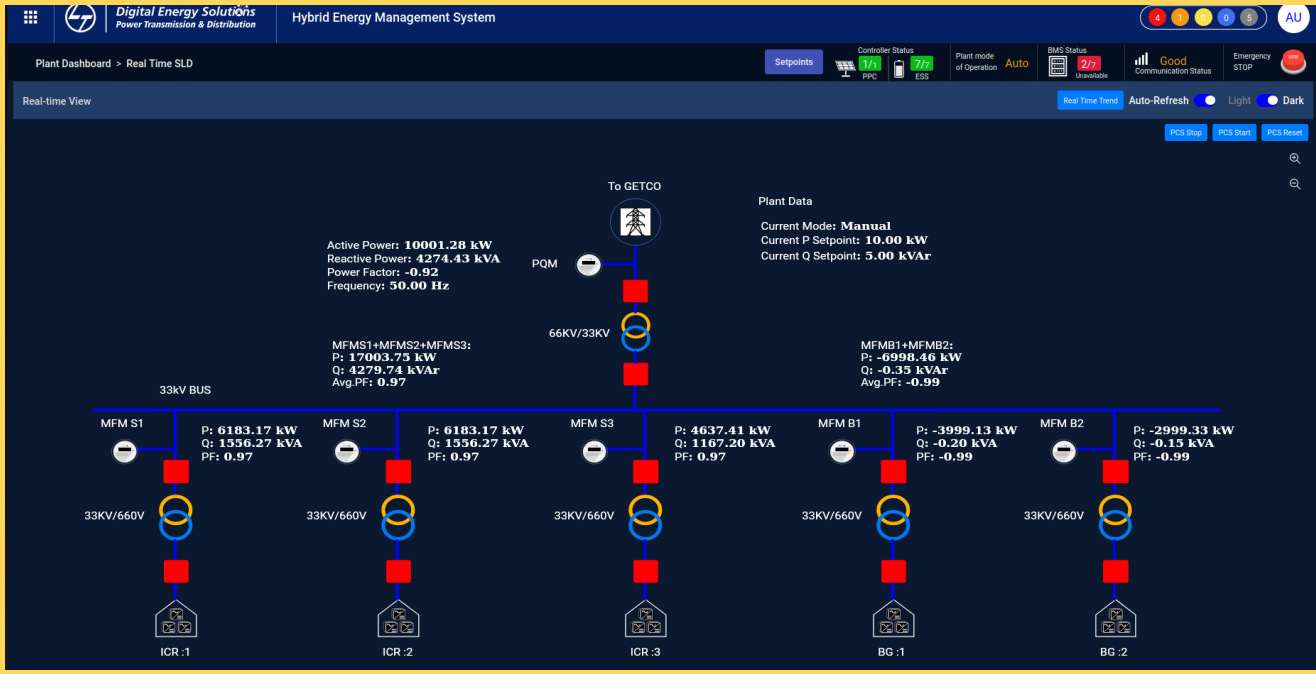
- The web app is built upon modern standard web technologies.
- The web app is accessible using modern web browsers from within the Plant network & from remote locations.

BESS controller communicates with SCADA **on open industrial protocol** like Modbus TCP, IEC 104,IEC 61850.

Communicates with BESS **through Modbus TCP/IP**

HECS – Easy User Interface & Custom Menu Structure





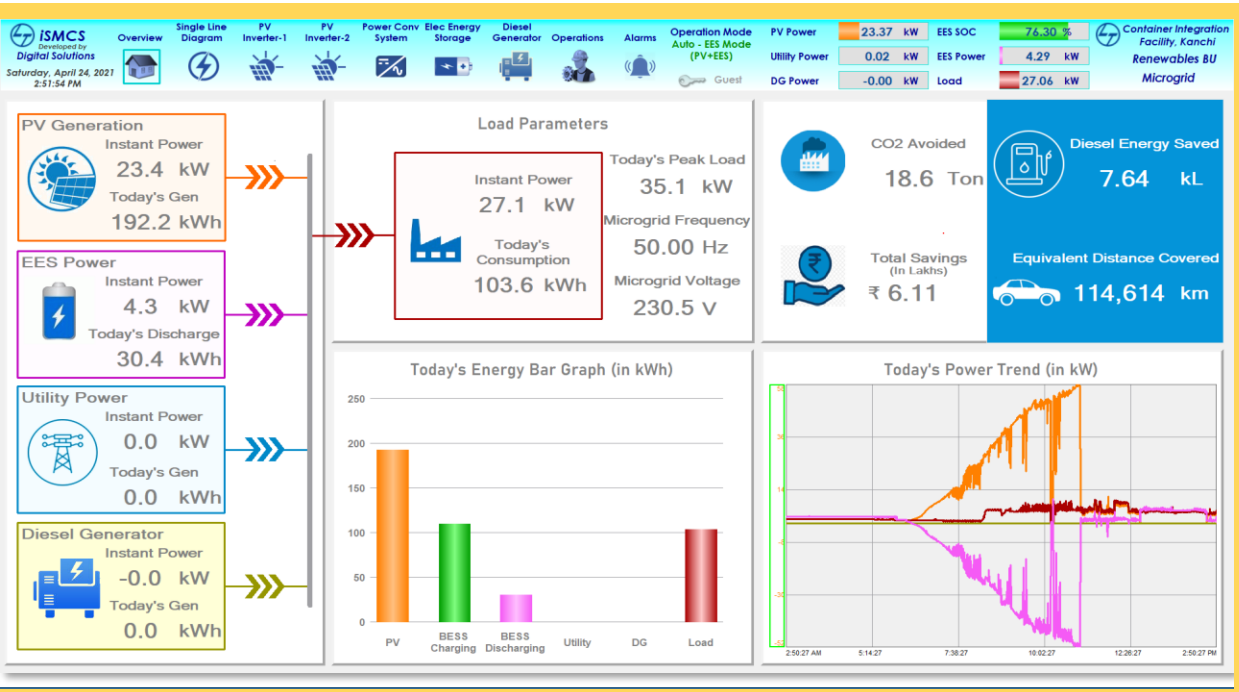
Web Client

- The web app is built upon modern standard web technologies.
- The web app is accessible using modern web browsers from within the Plant network & from remote locations.

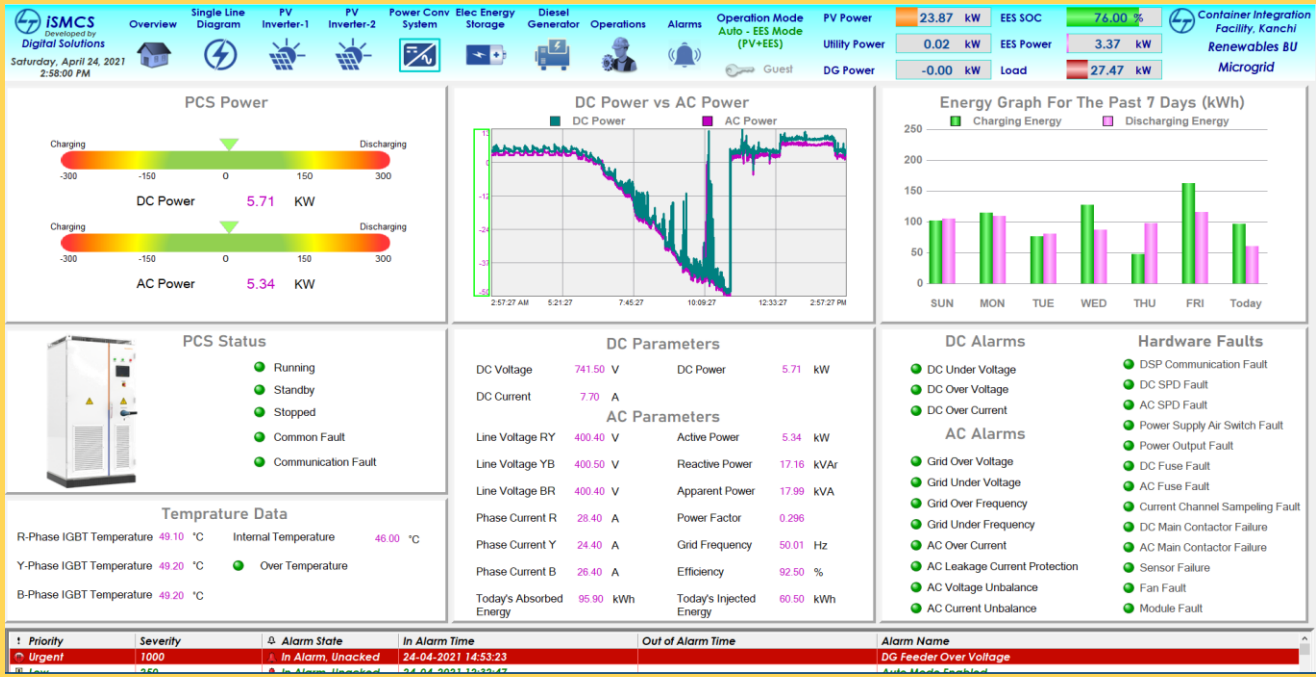
HECS controller communicates with SCADA **on open industrial protocol** like Modbus TCP, IEC 104,IEC 61850.

PQM communicates with PPC & EMS **through Modbus TCP/IP**

Micro Grid Controller– Easy User Interface & Custom Menu Structure

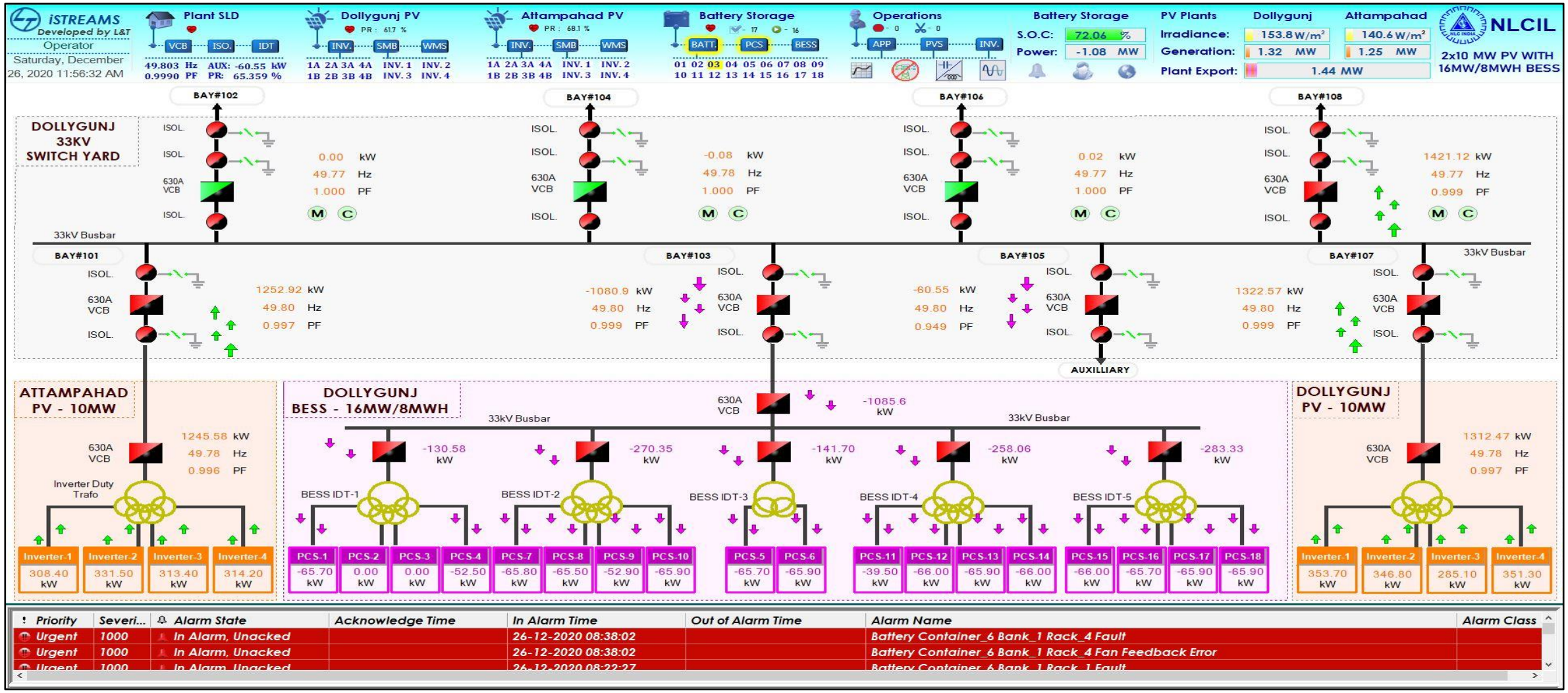


Overview Screen



Battery Container Screen

SCADA Overview Screen



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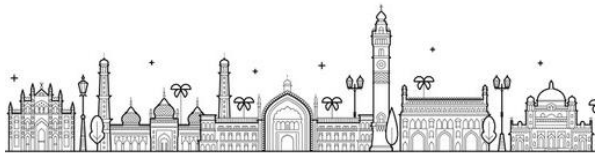
THANK YOU

For discussions/suggestions/queries email: ***dum@indiasmartgrid.org***

www.dumindia.in

Links/References (If any)





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