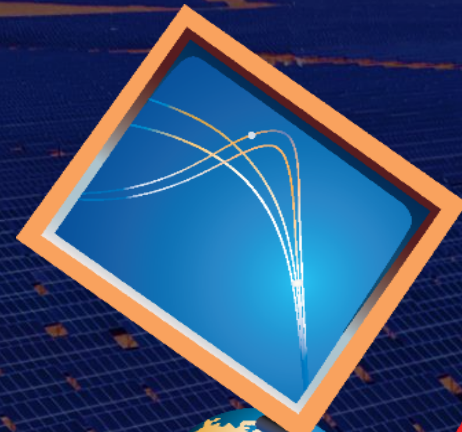


ETAP is truly thankful to IEI, Qatar Chapter for giving this opportunity.



etap[®]
Powering Success

Microgrid and Renewable SCADA System

Presenter
Giridhary Kutty Rajendran
Regional Director – BD
MENA Region

Overview & Facts

The Global Leader in Electrical Power Systems; modeling, design, analysis, optimization, control, and automation solutions

ETAP Offices

30+

Employees

250+

Sales & Support

500+

Clients Worldwide

10,000+

Corporate Office : USA
Local offices : Dubai, Abu Dhabi, Qatar, Egypt, KSA, Algeria

24 ETAP Group of Companies
33 ETAP Sales & Support Offices



- ETAP Automation Engineering, Automation, Services
- Sales & Support Regional ETAP Representative Offices
- ETAP's HQ R&D, Engr, Automation & Support Center



Engineers, Scientists, Experts, Professionals



Insights

Core executive team has been in place since its founding
Experts from multiple power system disciplines
ETAP employs a research and development team supported by a staff of engineers and scientists

Companies which have Standardized ETAP



QA Standards

- ISO 9001
- 10 CFR 21
- ANSI/IEEE 730.1
- ANSI N45.22
- 10 CFR 50, Appendix B
- ANSI/ASME N45.2
- ASME NQA-1
- CAN/CSA-Q396.1.2

ETAP Products & Solutions

Offline

- Simulation
- Design
- Analysis
- Optimization
- Planning

Real Time

- Operation
- Analysis
- Control
- Optimization
- Automation

Hardware

- PLC
- RTU
- Smart Controller
- Converter
- Gateway

System Integration

- Panel Design
- System Configuration
- i-FAT
- Commissioning
- SAT

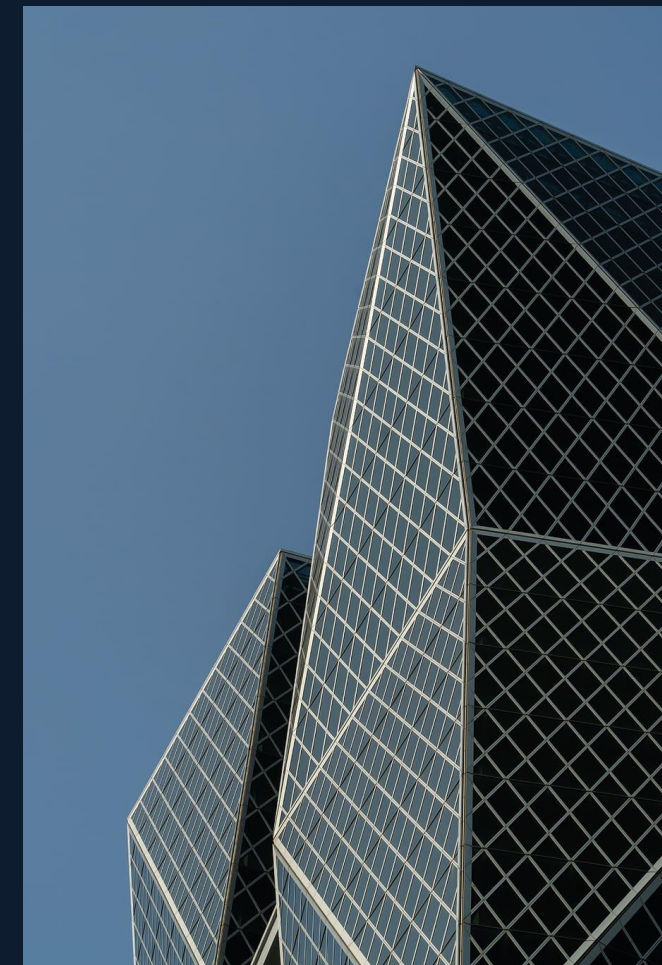
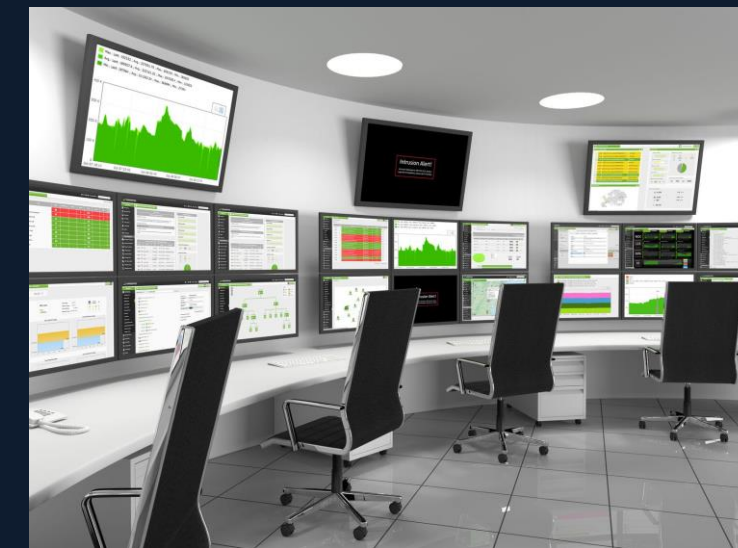
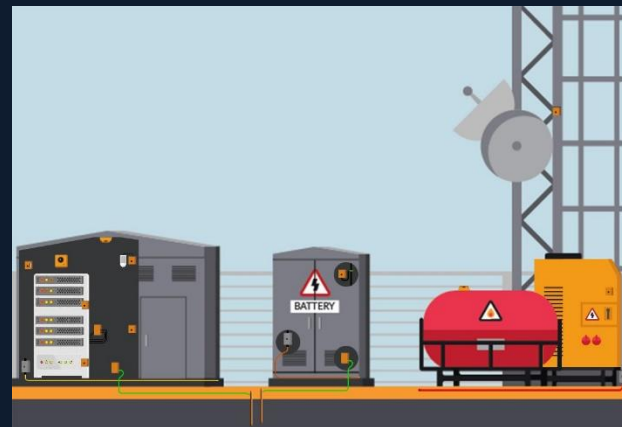
A Comprehensive Platform with Integrated Hardware & Software to design, simulate, operate, control, optimize, and automate geographically-expansive electrical power system networks



etap μ Grid™

Solution for Design, Engineering, Operation & Automation of
Microgrid Electrical Systems

**Campus, Community, Remote & Offshore, Military,
Industrial & Commercial**

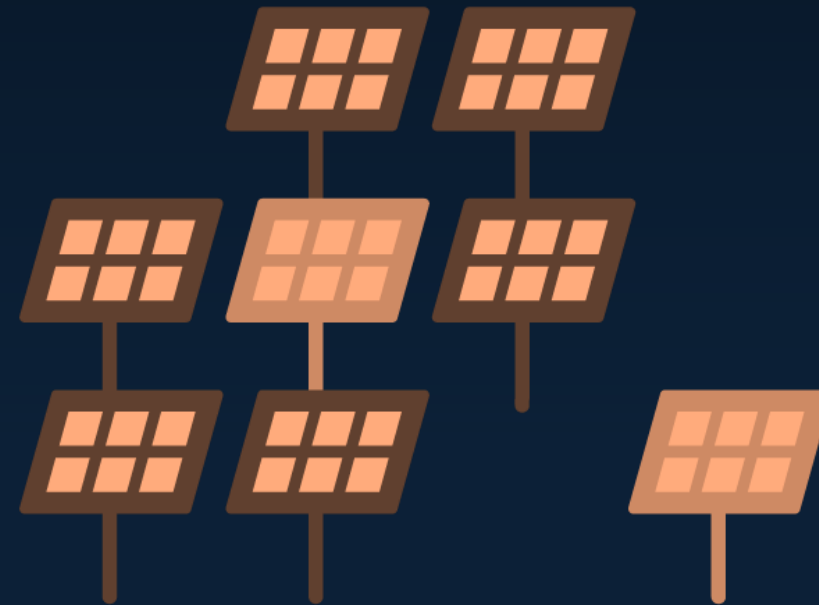


Power Plant Problem

Reduced Yield



Environmental
Factors



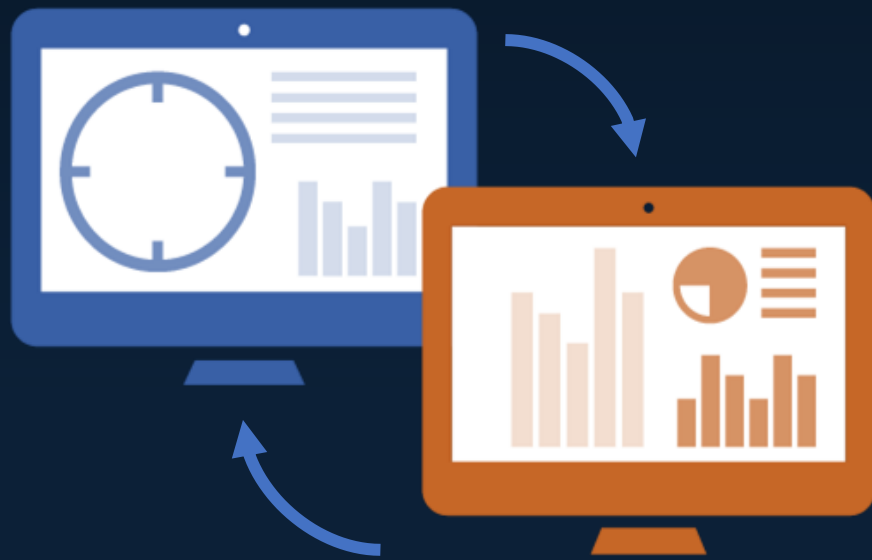
Technical
Faults



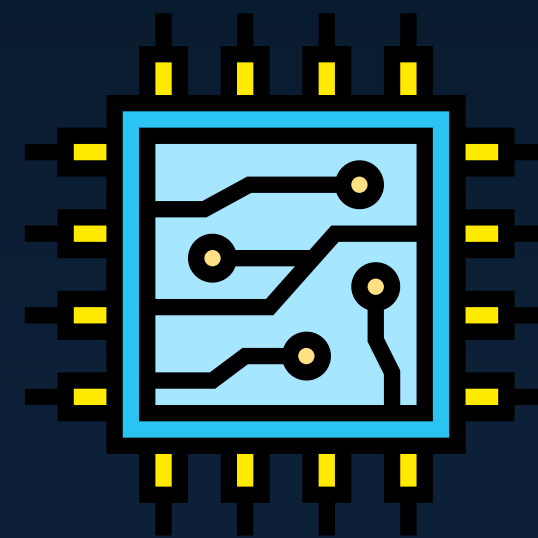
Site
Conditions

Solution

Awareness Intelligence Control



Upfront Validated
Design &
Engineering



Intelligent Model-
Driven Controller
Hardware



Monitoring &
Management

Integrated Model-Driven Design & Control Management System



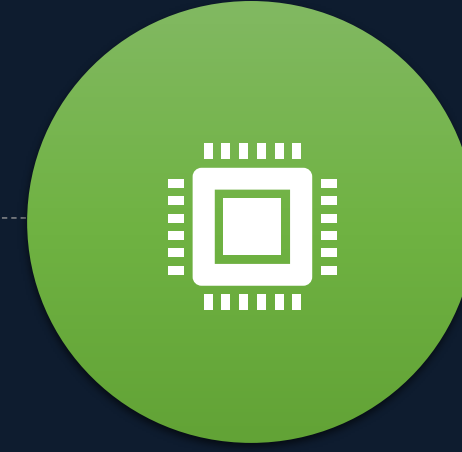
**Design &
Analyze**



**Validate &
Deploy**



**Awareness &
Intelligence**



**Control &
Maintain**

**Grid Compliance
Intelligent Model**

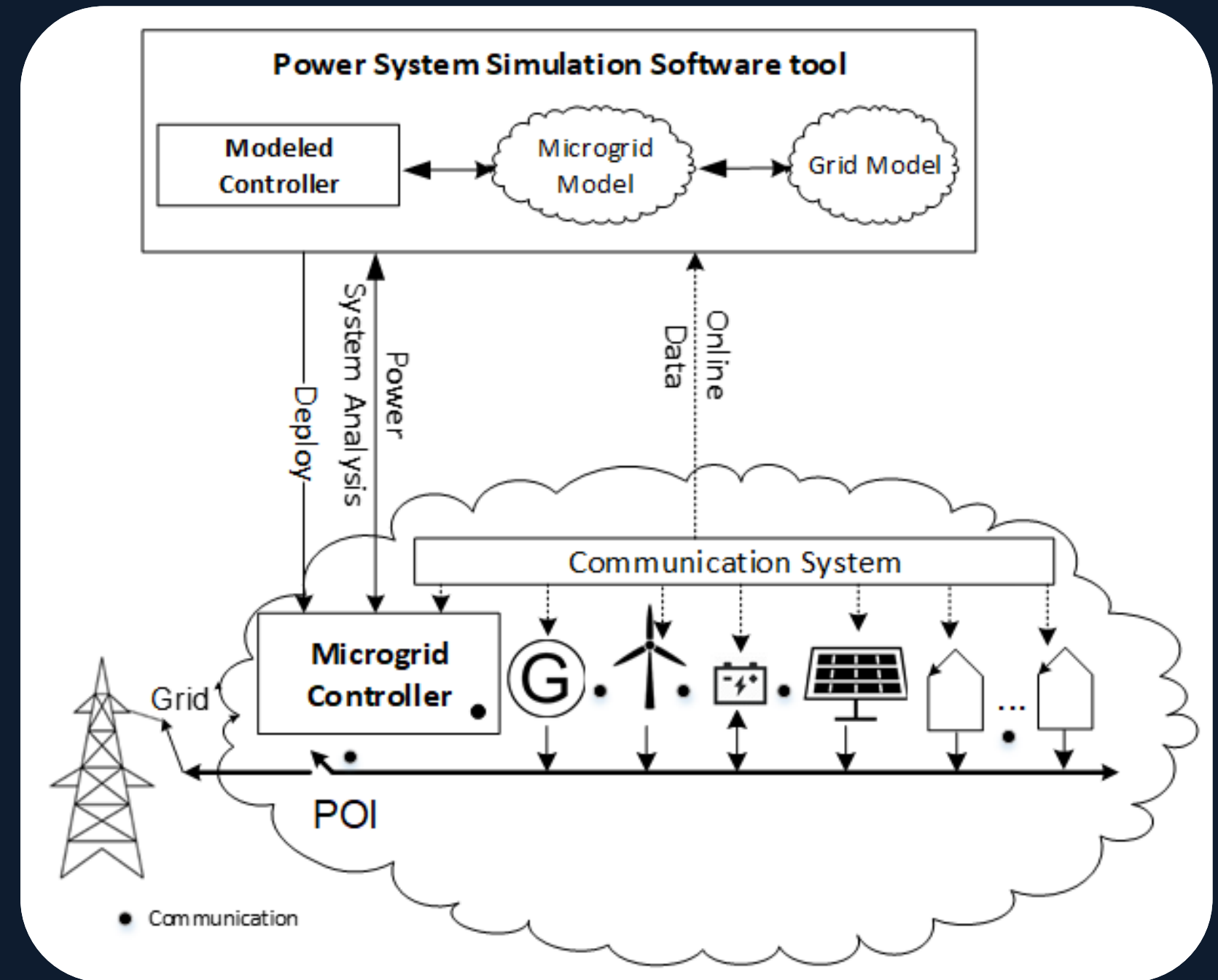
etap PSTM

**Intelligent Control &
Management**

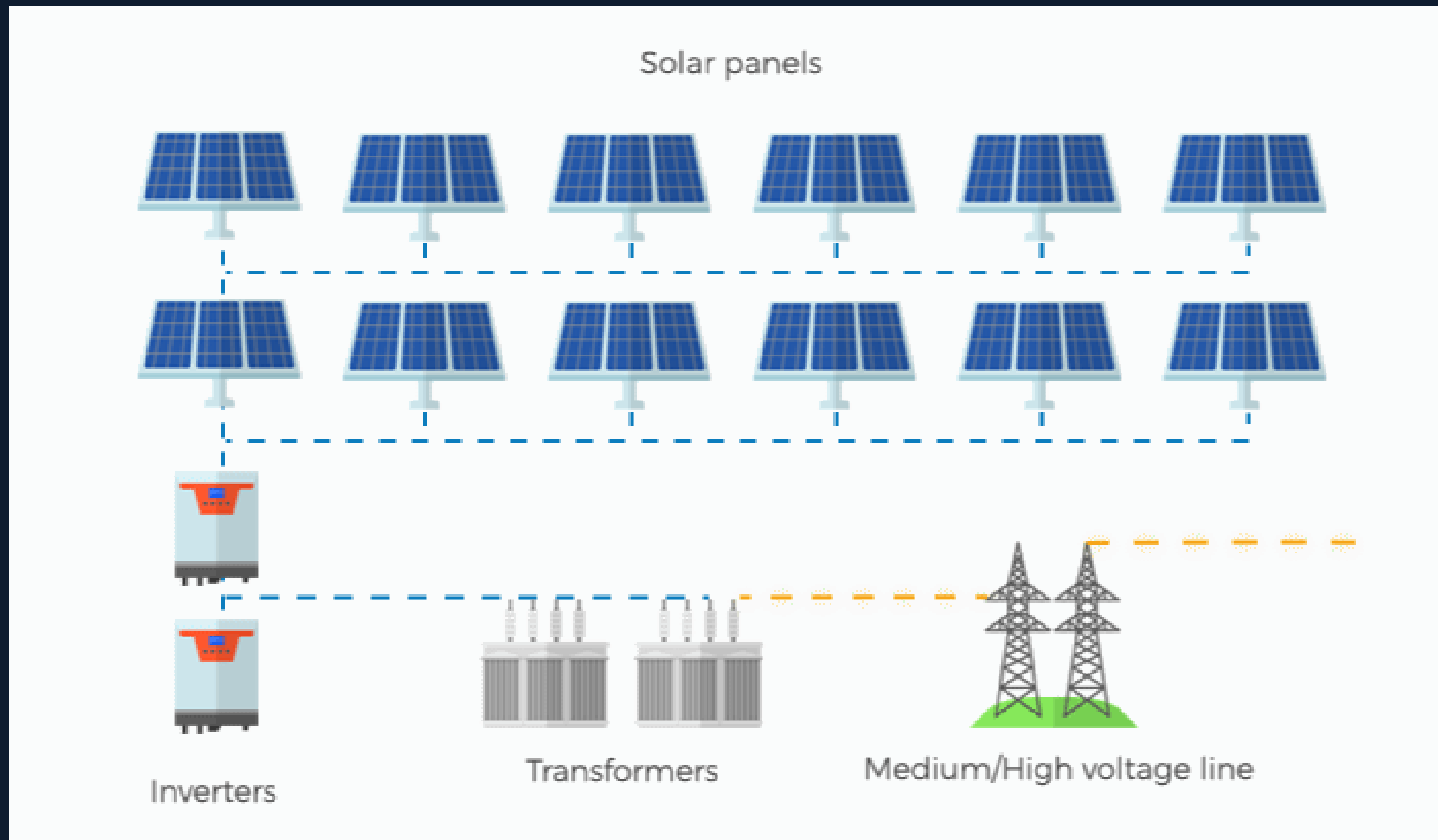
etap μGridTM

Model-Driven Solution

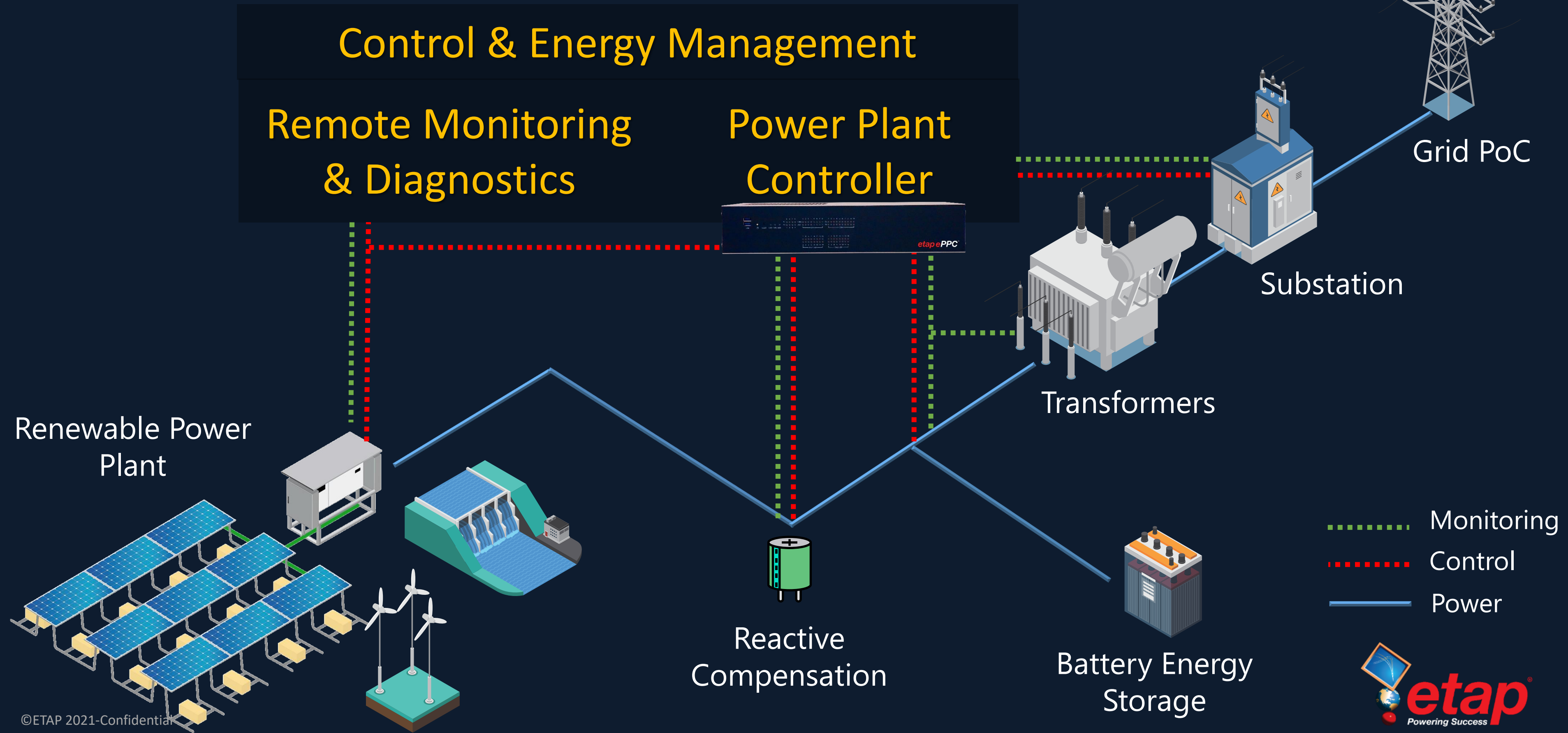
- Model system and product(s)
- Product is a digital twin and can be deployed to a hardware
- Minimize and simplify settings
- Support design to operation
- Enable predictive simulation
- Handle distribution microgrid dynamic configuration



Renewable Power Plant General Setup

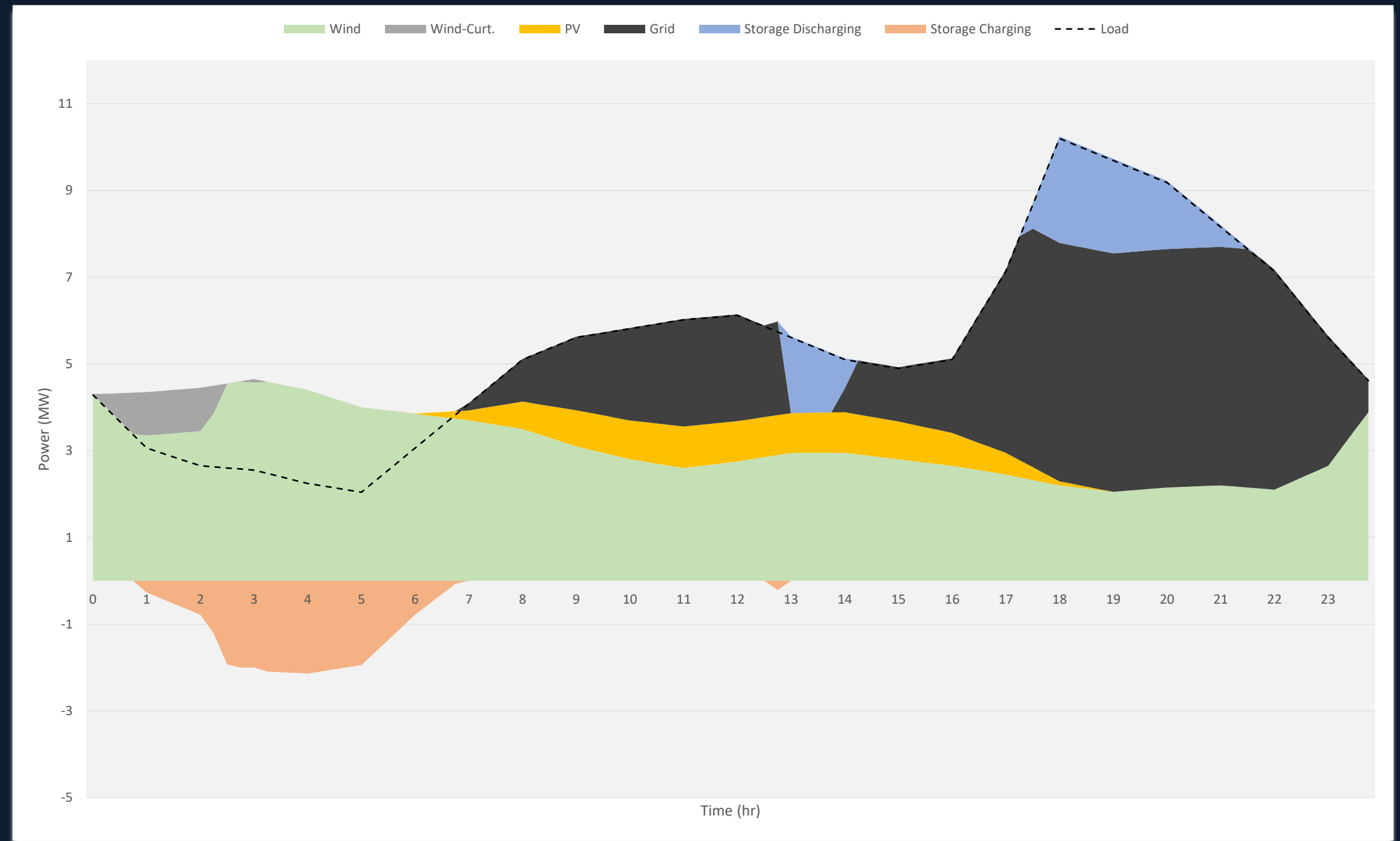


General Architecture



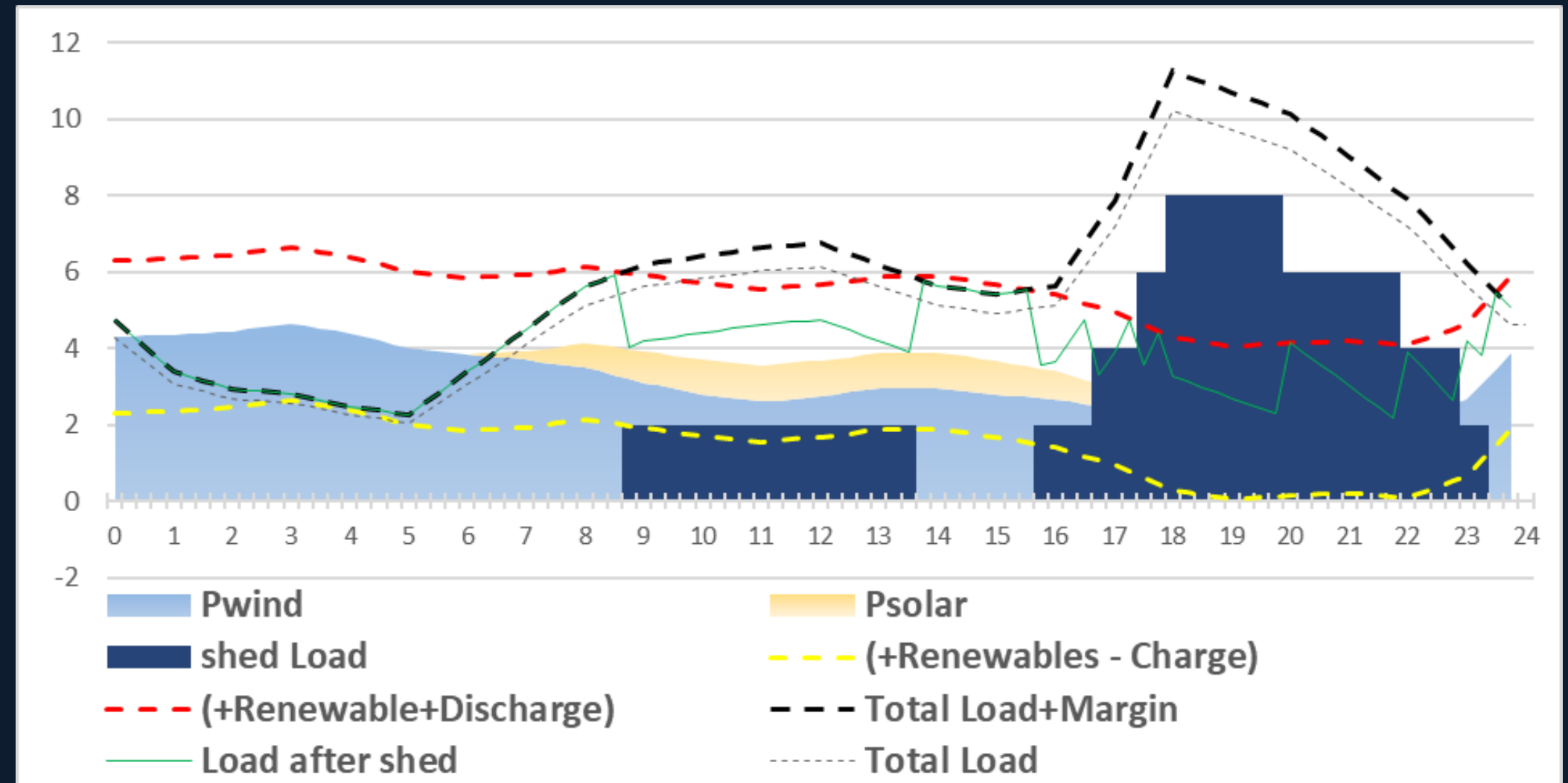
What is Microgrid Controller?

- Optimal Dispatch
- Minimize Cost
- Limit POI Power
- Maintain SOC
- Curtail Renewable



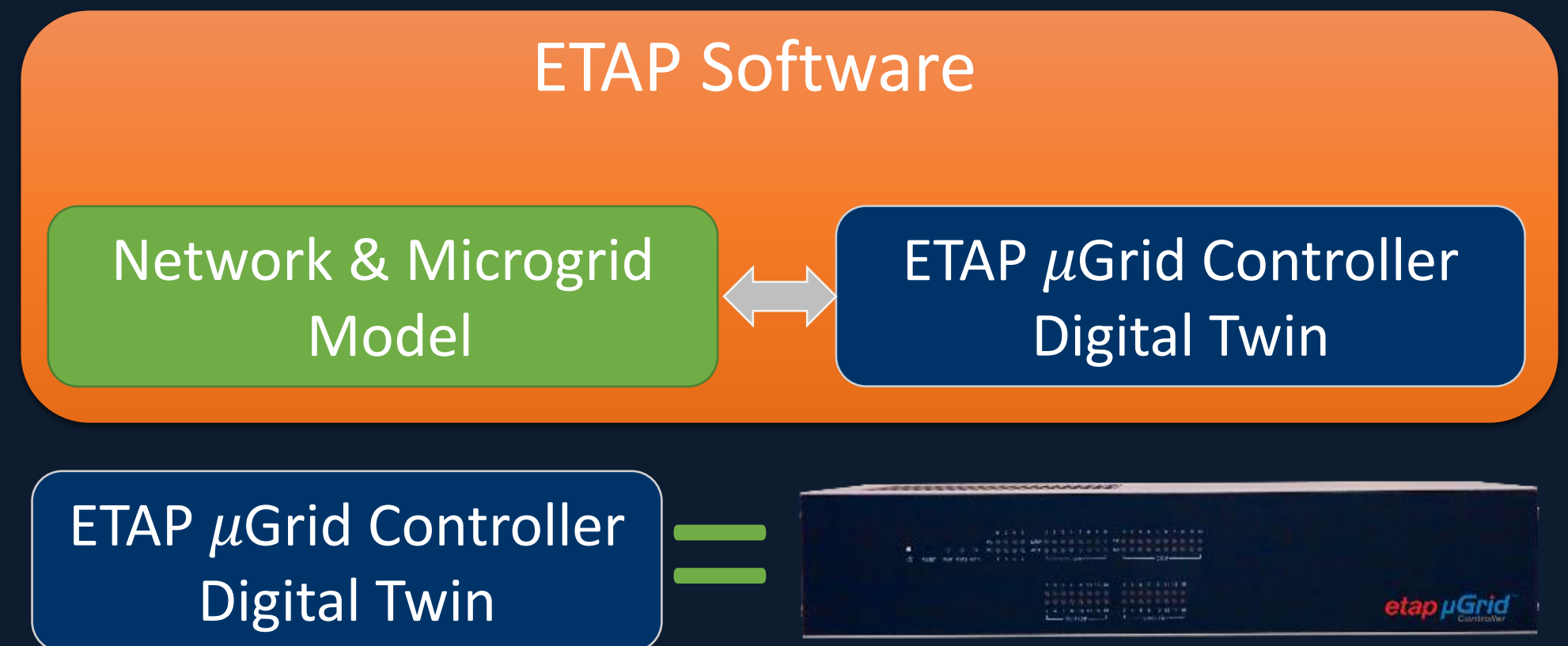
What is Microgrid Controller

- Load/generation shed
- Continuously update
- Considers Priority
- Utilizes energy storage



ETAP μ Grid Controller

- Digital Twin
 - Controller element
 - Design & feasibility study
 - Renewable and battery sizing
 - Evaluation & testing
 - Optimal settings
 - Predictive simulation
 - Develop & debug



Renewable Energy



Solar

Wind

Hydro

Storage

Geothermal



Microgrid Management System

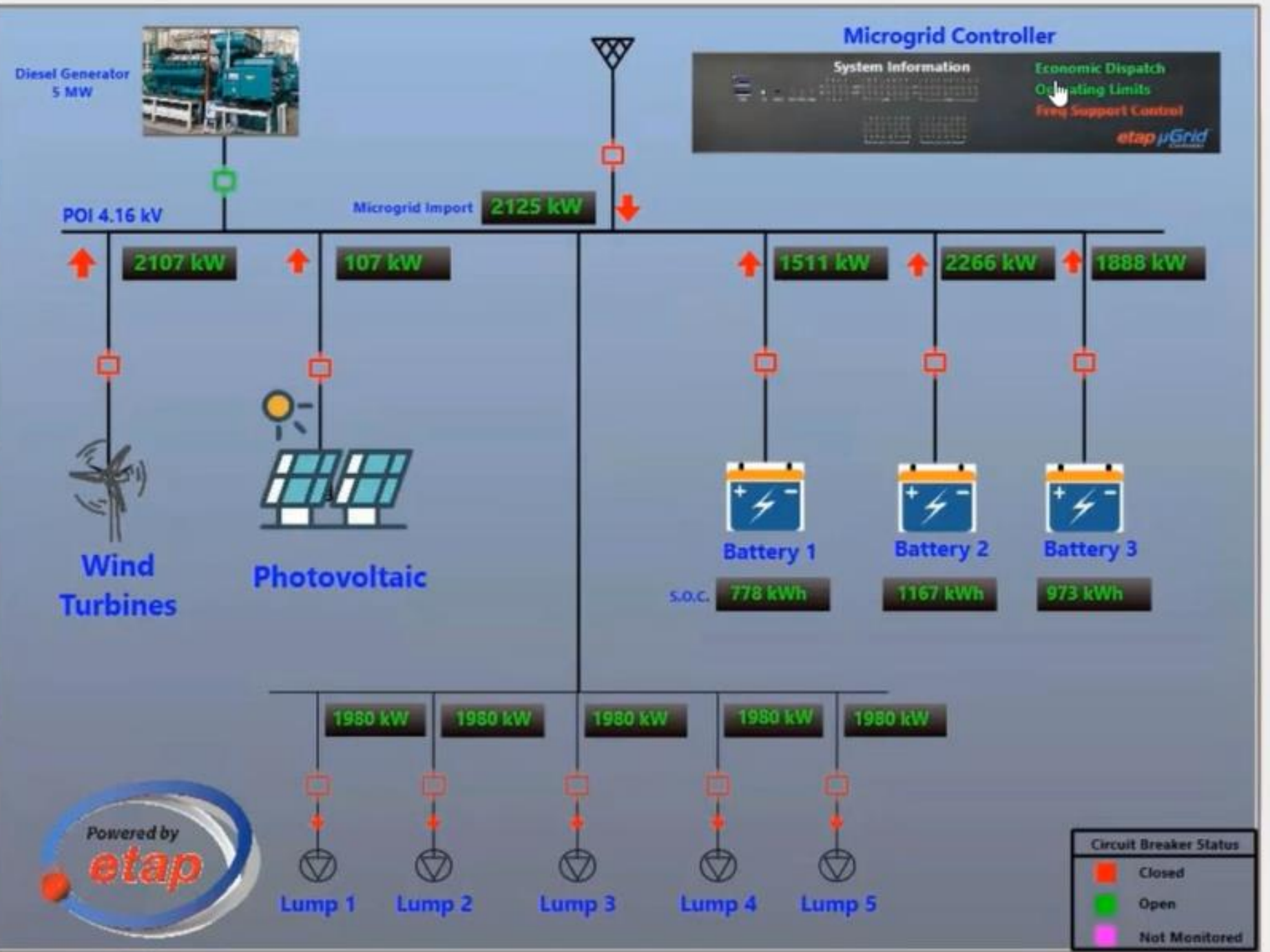
PV Output MW 0.1 MW

WTG Output MW 2.1 MW

Simulation

PV Generation: 0

100% 10%



Thank You!

