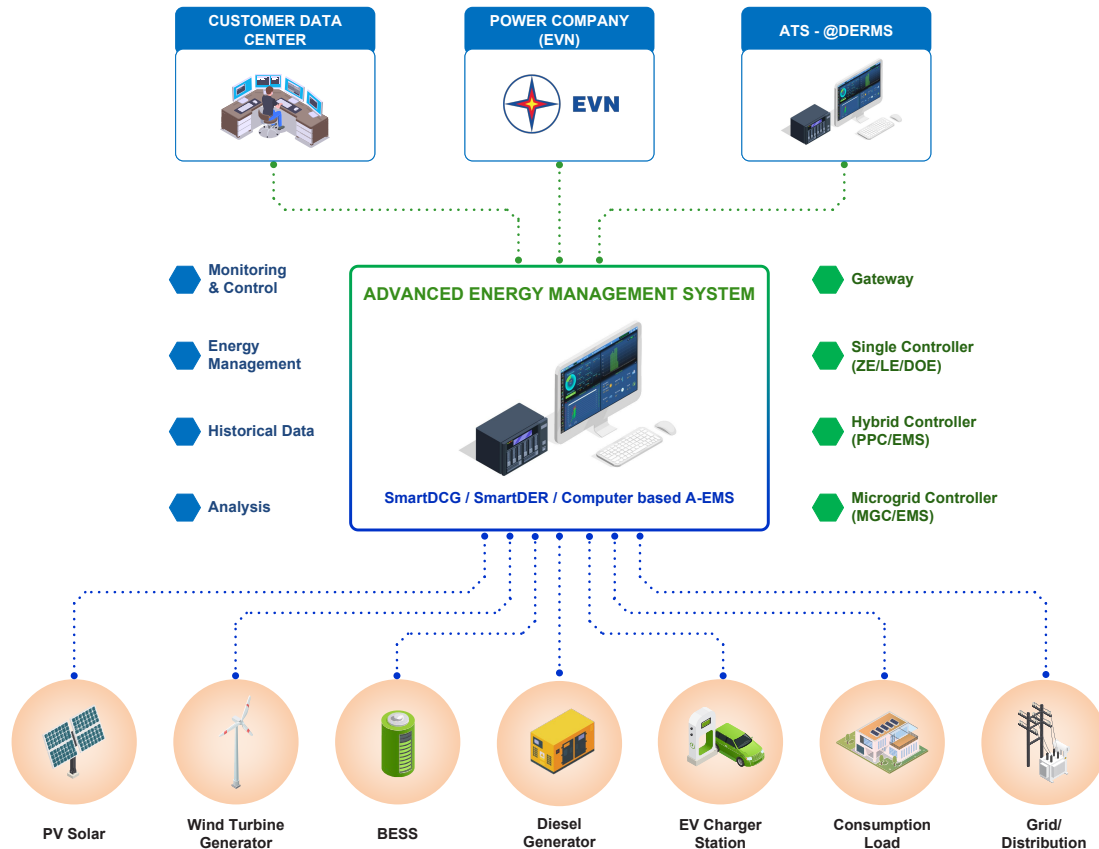


The **Advanced Energy Management System (A-EMS)** is essential for enhancing power stability, optimizing energy generation, and reducing operational costs. Developed by ATS, A-EMS provides reliable connection, monitoring, and grid-compatible power control for **Commercial and Industrial (C&I) Power Systems**, including PV Solar Systems, Battery/Flywheel Energy Storage Systems, Diesel Generators, Wind Turbines, and other decentralized energy assets. With its flexible design, smart multi-function integration, and expandability, A-EMS supports owners in achieving optimal operation of electrical and power systems.



APPLICATIONS

- ◆ **Gateway:** Collects and aggregates data at the project site; connects and exchanges data with EVN's monitoring and control system and the customer's data center (if any).
- ◆ **Single Controller:** Monitors and controls On-Grid power systems with a single energy source (Solar, Wind, or BESS). Integrates functions such as Zero Export, Limited Export, P/Q/PF/V control, and device control. (Includes Gateway functionality)
- ◆ **Hybrid Controller:** Monitors and controls On-Grid power systems combining multiple energy sources (e.g., Solar & BESS). Integrates advanced EMS functions for reliable operation and optimized energy utilization. (Includes Single Controller functionality)
- ◆ **Microgrid Controller:** Monitors and controls power systems operating in both On-Grid and Off-Grid modes, compliant with IEEE Std. 2030.7 for Microgrid systems. (Includes Hybrid Controller functionality).

PRODUCTS OPTIONS



SmartDCG



SmartDER



Computer based A-EMS

ADVANCED TECHNOLOGICAL FEATURES

- ◆ **Hardware Agnostic:** Compatible with a wide range of connection standards, various DER devices, and multiple manufacturers of Intelligent Electrical Devices (IEDs).
- ◆ **Grid Code and Standard Compliance:** Adheres to global grid codes and electrical control standards, ensuring fully compliance with EVN's regulations.
- ◆ **Intelligent Controller:** Manages power production, optimizes the operation of the power generation system, adapts with required standards and safety regulations.
- ◆ **Supports Multiple Standard Protocols:** IEC 61850, IEC 60870-5-101/104, DNP3, IEEE C37.118, Modbus, and more, and certified by DNV-GL.
- ◆ **System Integration Capability:** Supports standard protocols, API, and MQTT for seamless integration and communication.
- ◆ **Versatile Connectivity:** Supports VPN, 4G/5G, Internet, and direct connections via Ethernet ports, Serial ports, etc.
- ◆ **Ease of Use:** Simplifies system operation with an intuitive interface, support local and remote management capabilities.
- ◆ **Scalability and Flexibility:** Easily adapts to changing energy needs and system expansions, providing long-term flexibility and scalability.

FULLY IN COMPLIANCE WITH TECHNICAL REQUIREMENT FROM EVN

1 | Monitoring and Control

- ◆ Data acquisition and monitoring, exchange fully data list and receiving control command from SCADA of Power Company.
- ◆ Support Zero Export Control or Limited Export Control
- ◆ Support Modbus TCP, IEC 60870-5-104 protocols. Various communication channels like 3G/4G/5G, Internet.

2 | Operational Data Storage

- ◆ Operational data stored at a resolution of one second, with a minimum retention period of upto 6 months.
- ◆ Buffer Data: Data is securely stored during connection failures, and is automatically sent to SCADA of Power Company once connection is restored.

3 | Cyber Security

- ◆ Support TLS, OpenVPN/IPSec protocols.

RIGHT FOR TODAY - READY FOR TOMORROW

1 | Scalability

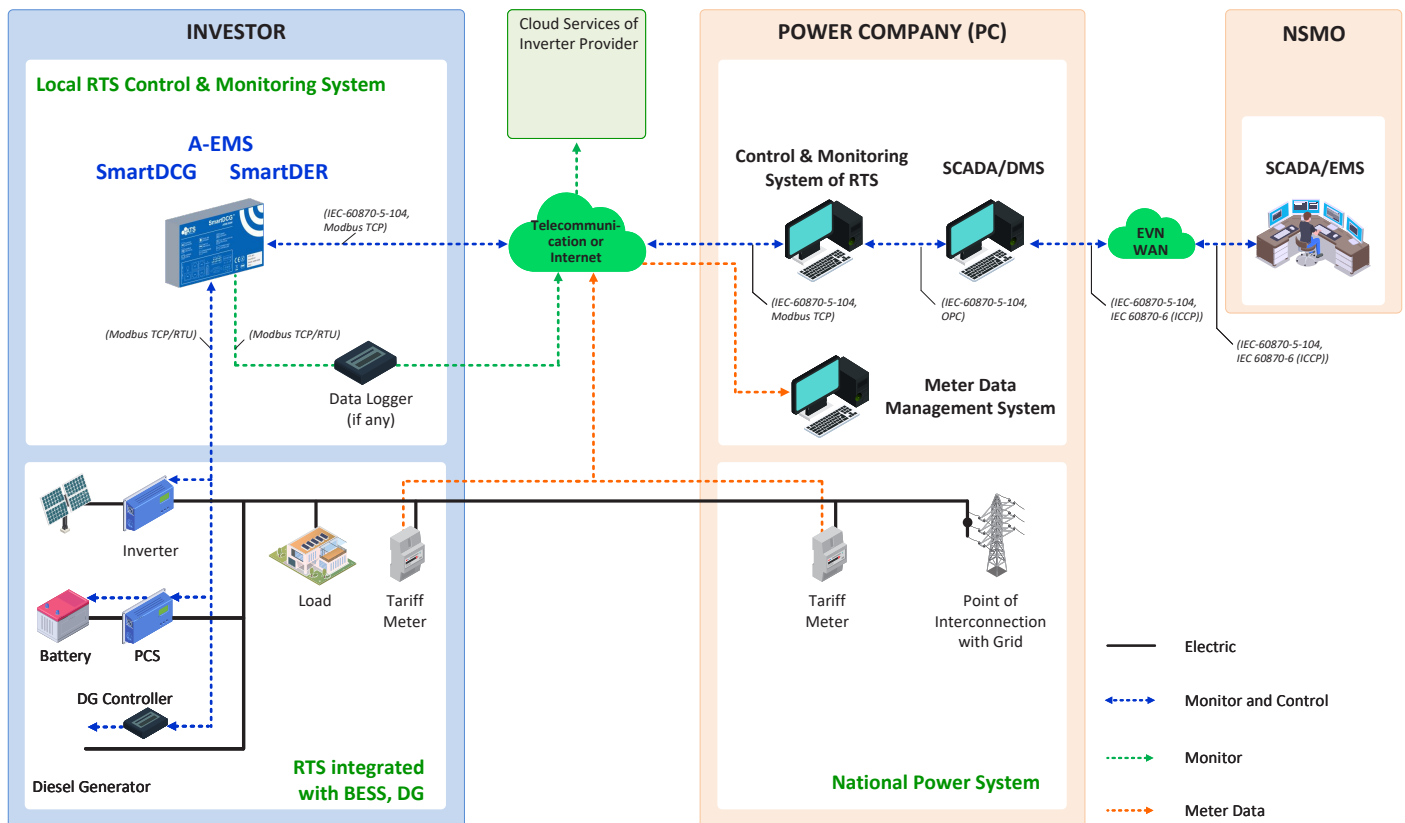
- ◆ Support multiple communication protocols (IEC 60870-5-104, Modbus TCP/RTU, IEC 61850, DNP3, ...) for monitoring and control of Battery Energy Storage Systems BESS, Diesel Generators, EV Chargers.

2 | Energy Management System

- ◆ Integrate advanced EMS functions such as Time-of-Use, Energy Shifting, Peak Shaving, and Optimization.

3 | Microgrid Controller

- ◆ Integrate Microgrid Controller in compliance with IEEE 2030.7 to optimize the system operation in On-grid and Off-grid controls.



Flexible Integration Capability

- ◆ Integrated Monitoring and Control System: Solar + BESS; Solar + DG; Solar + BESS + DG
- ◆ Compatible with multiple manufacturers such as Huawei, Sungrow, Kehua, Vinfast, Sigenergy, SMA, Solis, and others.

Advanced Control Technology

- ◆ Designed in compliance with IEEE 2030.7 standards
- ◆ Coordinated control for On-Grid and Off-Grid operations
- ◆ Optimization Generation Control.

Safety - Reliability - Optimization

- ◆ Standard Design: IEEE and IEC standards.
- ◆ Taylor-Made Design: Flexible design tailored to the project's scale.
- ◆ Ensures safe, reliable and optimized operational processes.

