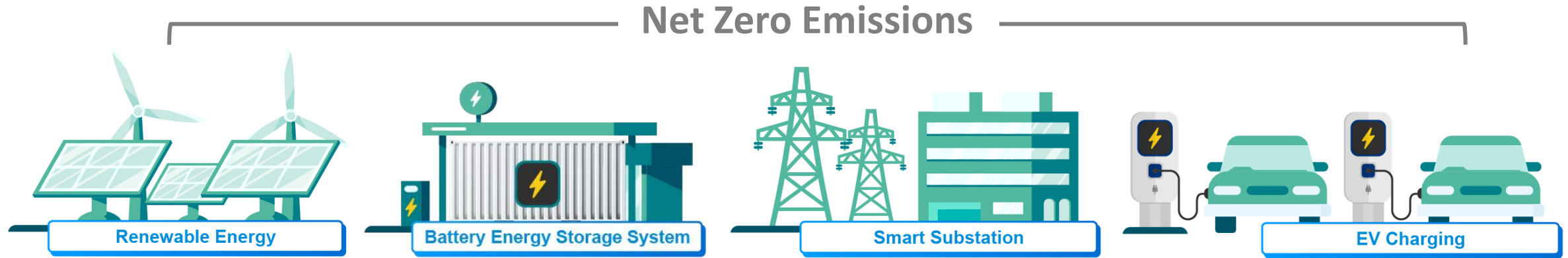


Real practice in Solar Power Industry

Scott Sun
Industrial IOT, Advantech



Empowering Energy Transformation with IIoT Technologies



- Distributed energy management
- Reliable network redundancy
- Energy stability monitoring
- Energy efficiency monitoring
- Reliable network redundancy
- BESS performance management
- Environment control
- BESS safety & security
- Smart substation standards: IEC 61850, HSR, PRP, VPR
- Virtualized substation
- Standardized OCPP protocol
- Distributed charging station management
- Condition monitoring

Remote O&M system integrator

DER Equipment maker



Operation
PRIORITY



Instant
RESPONSE



EFFICIENT
MANAGEMENT

Application of solar power and battery energy storage system

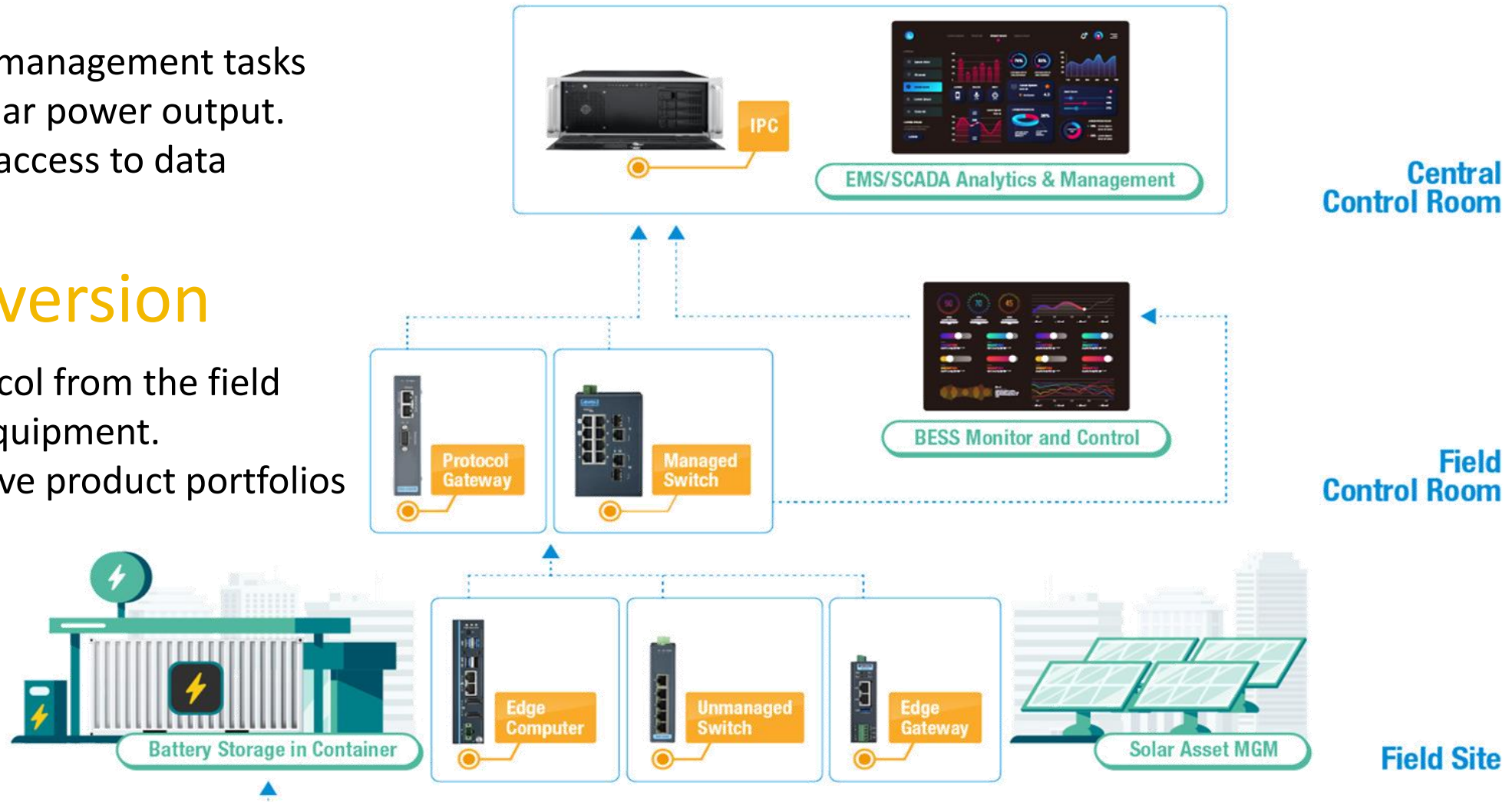
Data collecting and Information gathering

Connectivity

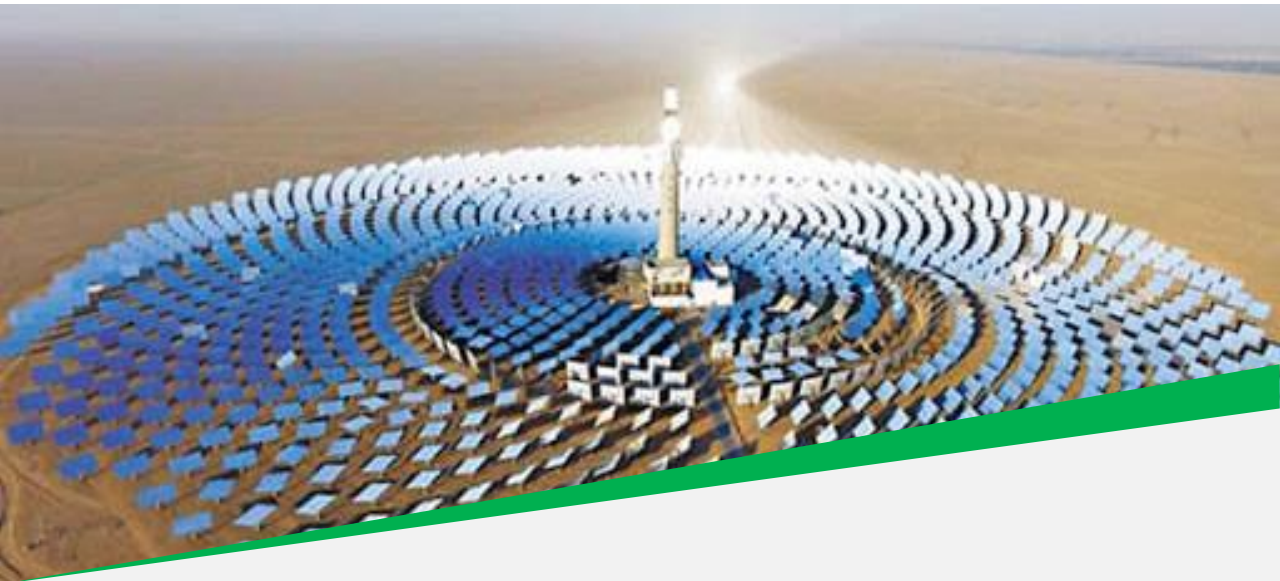
- Allows key energy management tasks and maximizing solar power output.
- Makes immediate access to data possible

Protocol conversion

- Unify the OT protocol from the field devices and DER equipment.
- Offer comprehensive product portfolios at the edge.



China Builds Its First Hundred-Megawatt Molten Salt Solar Thermal Power Plant



Background

Project Background & Requirements

- The control center will send instructions to the heliostats arranged in a circular configuration around the tower.
- To fully absorb the maximum amount of solar energy, mirrors are angled according to the sun's movement.
- A highly stable network solution for transmitting control instructions is essential for operation.

Advantech Solution

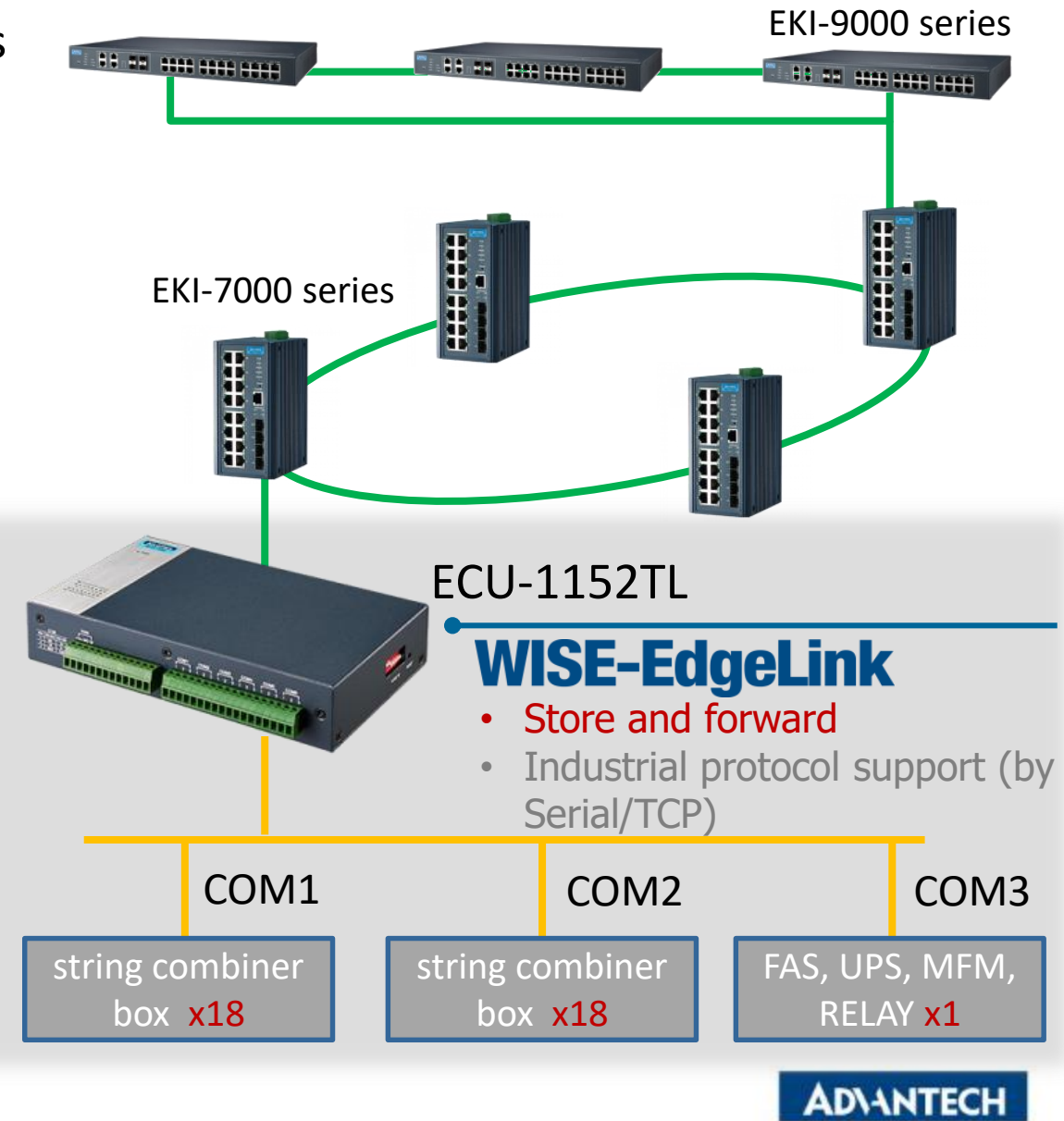
- Industrial managed switches with backup and management functions are applied for stable and data transmission.
- Network management software updating data to cloud platform enables users to remotely control network devices in real time.

System Diagram



Single location solar power plant Project of 1177MW in Abu Dhabi

Reducing Abu Dhabi's CO2 emissions by 1 million metric tons
The largest single project operation, 3.2 million solar panels



General Energy Solution (GES) and Advantech Share The Solar Power Monitoring Success with The World



Background

Project Background & Requirements

With many solar generator equipment providers operating in a highly competitive market, communication protocols tend to vary between products. Data collection and transmission thus requires a multi-protocol gateway that unifies energy data on a cloud platform for remote monitoring.

Advantech Solution

Working together, GES set up distributed solar power generators at the Advantech Linkou Smart Campus as a demo cast. Implementing the energy maintenance system (EMS) Cloud, deploying the ECU-1152 gateway, and installing EKI-5624P and EKI-5728 unmanaged Ethernet switches to transfer data to the MIC7500 central monitoring system enabled remote monitoring with immediately visible data.

System Diagram



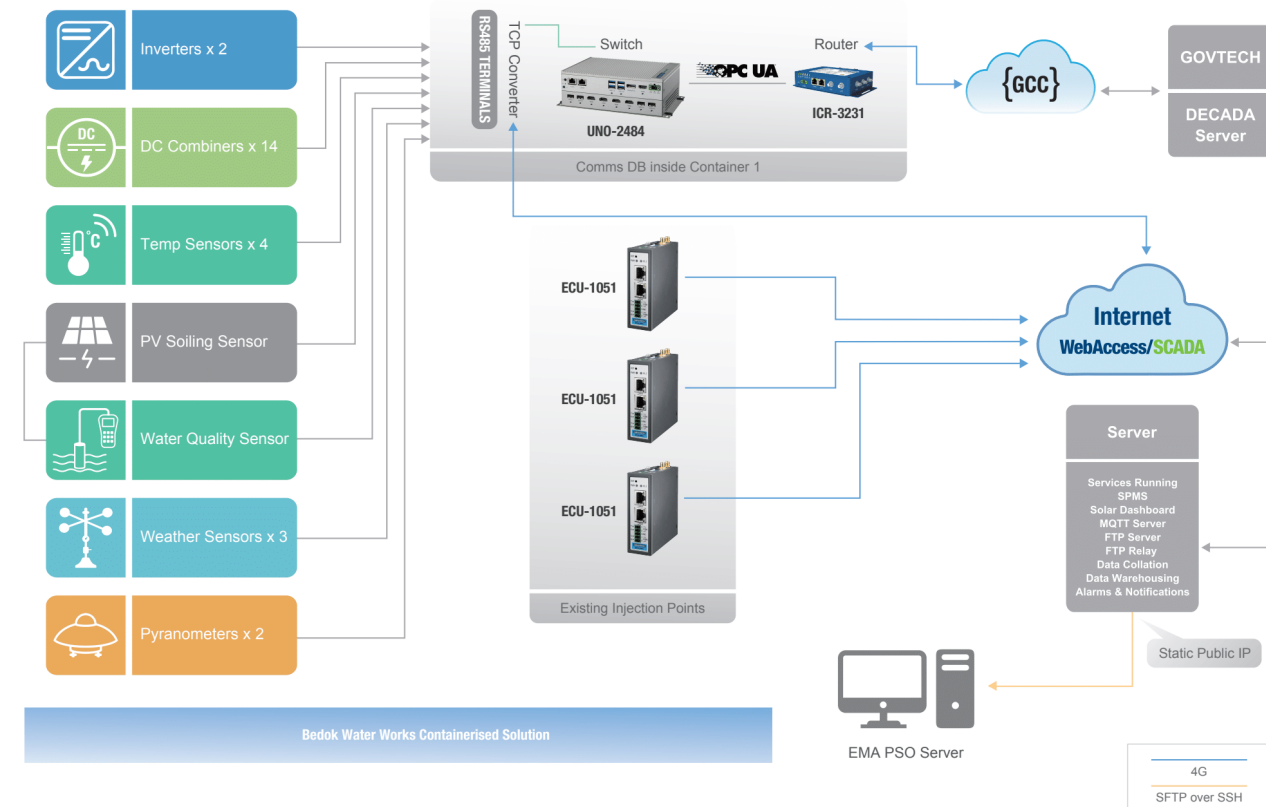


Cost-Effective, Scalable, Smart Energy Management Systems

Background

The live monitoring technology allows key energy management tasks such as timely scheduling of electrical systems, detecting energy use anomalies, and maximizing solar power output efficiency.

System Diagram



Project Implementation



ECU-1051
Lightweight Industrial Gateway



UNO-2484
Embedded box PC



ICR-3231
LTE router

Solar power key opportunity

1

Cellular Router is the key device to help operator to do the remote operation and maintenance.

2

The **protocol gateway** can enhance the communication performance, Modbus/RTU, CANBus, 61850, DNP3 are key ones.

3

The power and environmental monitoring is the necessary, UPS, HVAC are the critical equipment. **Remote I/O module, RTU** can do monitoring 24/7.

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A circular inset image showing three people (two men and one woman) looking at a tablet together in a collaborative setting.

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A large QR code that, when scanned, likely leads to the Advantech IoT Academy registration page. The Advantech logo is visible in the center of the QR code.

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Co-Creating the Future of the IoT World

