Energy Mangement Solution

DeltaGrid® Carbon Emissions Tracking Solution

• Carbon emissions tracking and energy consumption monitoring with production line and product-level analysis

• Visualization of key data using AI for real-time insight into abnormal energy consumption

• Periodical planning and setting of carbon emissions reduction goals for plants and production lines

Electronics
Manufacturing

Cement
Industry

Steel and
Metallurgy

Power and
Heat Generation

Industrial and
Commercial Buildings

ΔELTA

Comprehensive Carbon Footprint Tracking,
## Leaving no Missed Opportunities to Reduce Emissions

Integrating AI diagnosis, energy-saving, and green energy solutions for a sustainable future

In response to international trends such as carbon border management and green supply chains, the DeltaGrid® carbon emissions tracking solution integrates work orders and SAP BOM systems to help track an organization's carbon footprint inventory at product, production line, and plant levels. This simplifies ISO 14064-1 and ISO 14067 compliance reporting, identifying opportunities for energy saving by combining AI and machine learning (ML), and developing carbon reduction strategies based on periodical targets. DeltaGrid® makes equipment energy-saving and PV and ESS integration easy and helps reduce carbon emissions through PV self-consumption, peak shaving and valley filling, and load shifting.

Top 5 Solution Features

- ✅ Visual interface shows all levels of energy consumption and carbon emissions at a glance
- ✅ Integrates work orders and SAP BOM system simplifies product-level emissions tracking
- ✅ Leverages AI/ML to monitor for abnormal power consumption and energy-saving opportunities
- ✅ Generate ISO 14064-1 and ISO 14067-compliant reports
- ✅ Optimizes power efficiency with PV, ESS, and energy-saving solutions
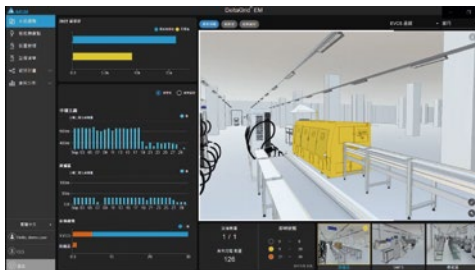
Visualization of energy consumption

- Real-time visualization of energy consumption and carbon emissions
- Track consumption and emissions at plant, production line, and product levels
- Real-time visualization of abnormal power consumption

Abnormal power consumption detection and energy-saving opportunities

- Use AI/ML to establish power consumption models
- Identify abnormal power consumption and energy-saving opportunities
- Algorithm optimization through human feedback

Annual carbon reduction plan

- Compare current carbon emissions and targets
- Carbon emission targets for single production lines
- Annual, quarterly, and monthly targets can be set

Electricity consumption trend graph

- Select time interval and equipment/production lines
- Electricity consumption trend of individual pieces of equipment
- Comparison of electricity consumption trends for multiple devices

Solution Outlines

Visualize electricity usage, set carbon reduction goals, and provide compliance reports

Challenges

- Determines energy consumption at the plant level, but analysis is difficult at production line and product levels.
- Manual records are prone to error and using paper makes consolidation difficult.
- Carbon reduction targets cannot be compared with current carbon emissions, making carbon reduction strategy formulation difficult.

Delta's Solutions

- Statistical charts for plant-level carbon emissions, power consumption, and abnormalities.
- Real-time view of energy consumption and production line/machine status.
- Periodical carbon reduction target planning at plant and production line levels.
- Compare emissions targets at plant and production line levels with statistical values.
- Provide ISO 14064-1 and ISO 14067-compliant reports on carbon footprint inventory.
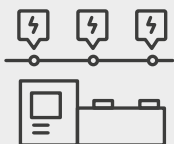
Use AI/ML to identify energy-saving opportunities

Challenges

- Massive data makes it difficult to manually identify opportunities.
- Inconsistent determination criteria, a lack of key data for support.
- No immediacy means problems are identified after the electricity bill arrives.

Delta's Solutions

- Use AI/ML to establish models based on machine power consumption data.
- Employ homogeneity analysis of power usage abnormalities among machines of the same type and perform real-time troubleshooting.
- Analyzing historical power usage of machines and issuing alarms when anomalies are detected.
- Manual feedback can be provided to optimize subsequent AI algorithms.

Integrate green energy and energy-saving equipment to improve power efficiency
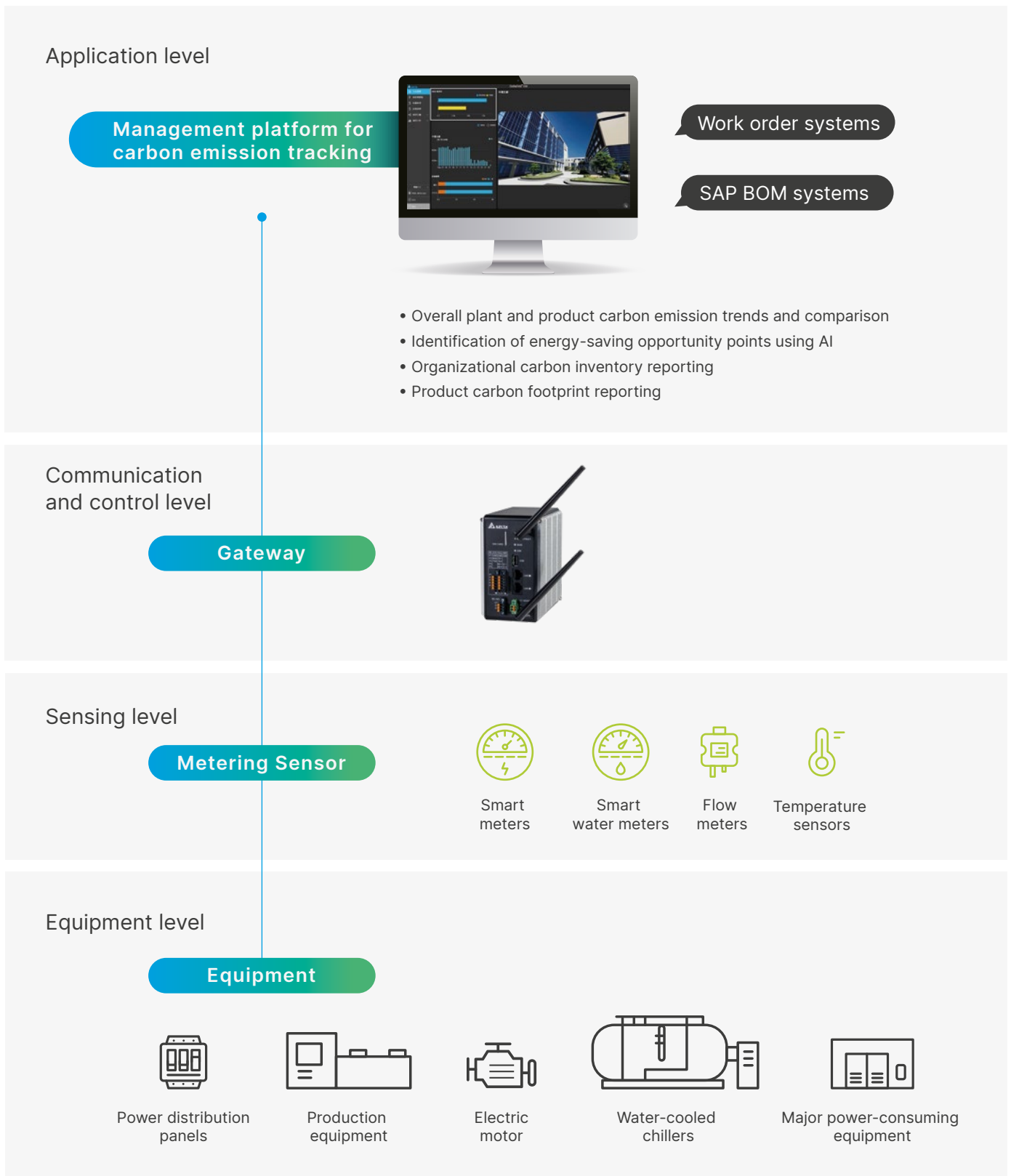
Challenges

- Excessively high power consumption and contract capacity.
- Inefficient use of renewables due to instability.
- Lacks a complete management system for power management and dispatching.

Delta's Solutions

- Establish PV, ESS, and energy-saving equipment based on factory needs.
- Introduce management systems to achieve PV self-consumption, peak shaving and valley filling, and load shifting.

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System Architecture

Application level

Management platform for carbon emission tracking

Work order systems

SAP BOM systems

- Overall plant and product carbon emission trends and comparison
- Identification of energy-saving opportunity points using AI
- Organizational carbon inventory reporting
- Product carbon footprint reporting

Communication and control level

Gateway

Sensing level

Metering Sensor

| Smart meters | Smart water meters | Flow meters | Temperature sensors |

Equipment level

Equipment

| Power distribution panels | Production equipment | Electric motor | Water-cooled chillers | Major power-consuming equipment |

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