Transforming To A Green And Digital Port

Description

PSA's Singapore port is one of the largest and busiest ports in the world with 24/7 operations. To optimize the way the port produces, consumes and stores energy as part of its sustainability goals, PSA requires technology innovation to scale and transform to the port of the future.

Envision Digital's Involvement

Envision Digital helps PSA become a smart and sustainable port by building a smart grid management system that is intelligent and autonomous:

- Deploying 5 smart energy applications – micro-grid control, energy efficiency management, virtual power plant (VPP), power trading and renewable energy certificate (REC) trading.
- Achieve energy load optimization through the orchestration between Solar PV, BESS and flexible loads in the port terminal.
- Improve port operational efficiency by integrating with PSA's operations systems to monitor the energy consumed per TEU against benchmark.
- Create new revenue streams through energy market participation on frequency regulation, demand response and price arbitrage.

With this solution, PSA will be able to achieve the following benefits:

- Reduction in energy cost per container with Energy Optimisation.
- Improved port operations with Machine Optimisation.
- Created new revenue possibilities with System Optimisation.

Envision Digital Solutions

- EnOS™ (Cloud and Edge)
- Solar & ESS EnOS™ Monitoring
- GSSC Services
- SGMS
- EnWeather & Forecaster

Enabling Microsoft's Journey to Net Zero

Description

Enabling transformation of building energy management through IoT and renewable energy technologies.

Envision Digital's Involvement

Envision Digital is responsible for the installation, development and operation of the Smart Building solution across 6 Microsoft campuses in China Mainland, Hong Kong, and Taiwan. Across these sites, Envision Digital provides the hardware for distributed energy storage systems as well as the AIoT platform, EnOS™ to connect these assets. EnOS™ provides an IoT data platform that is capable of integrating data from smart meters, building management systems, energy storage systems, EV charging stations, HVAC, solar generation, and indoor environmental quality sensors. This data can be analysed using advanced analytics tools (CEMS - Connected Energy Management System) to identify opportunities for energy arbitrage and improve employee's EV charging experience. In addition, Envision Digital provides an Intelligent Digital Twin for Indoor Environmental Quality Management for the 3-floor building, including indoor air quality condition analysis, thermal comfort analysis, etc, to balance the comfort and energy consumption based on AI algorithms.

Furthermore, to help Microsoft to achieve its net zero ambition, Envision Digital provides Envision Ark, the one-stop carbon management system to monitor, abate, and offset carbon emissions efficiently, and with confidence.

As a result, Envision Digital delivered the following:

- Installed **2.07 mWh** distributed energy storage system and **220 kWp** solar rooftop capacity.
- Increase of **40 EV charging station** without investing in extra transformer capacity using distributed energy storage systems.
- Reduced energy cost by **$100K/year (2%)** through building energy management and energy storage arbitrage.
- Generated **220MWh** green electricity and cut 219t CO2 emissions per year.

Building Management Solutions

CAMPUS	Distributed Energy Storage System	Connected Energy Management System	Indoor Environment Quality Mgmt. System	HVAC Optimization System	Rooftop Solar Farm Project	Smart EV Charging Services	Envision Ark Carbon Management
China HQ, Beijing	○	○			○		○
Shanghai Huaxin		○					
Shenzhen		○					
Hong Kong			○				
Asia Pacific R&D Center, Shanghai	○	○				○	
Taiwan		○					

Envision Digital Solutions

- EnOS™ (Cloud and Edge)
- CEMS
- Charging by EnOS™

