

# REACH NET ZERO CARBON EMISSIONS WITH FULLY INTEGRATED AI + IoT

Envision Digital smart energy solutions provide everything you need to transform—field hardware, prebuilt applications, and an IoT toolkit—all based on the trusted EnOS™ AIoT Platform.



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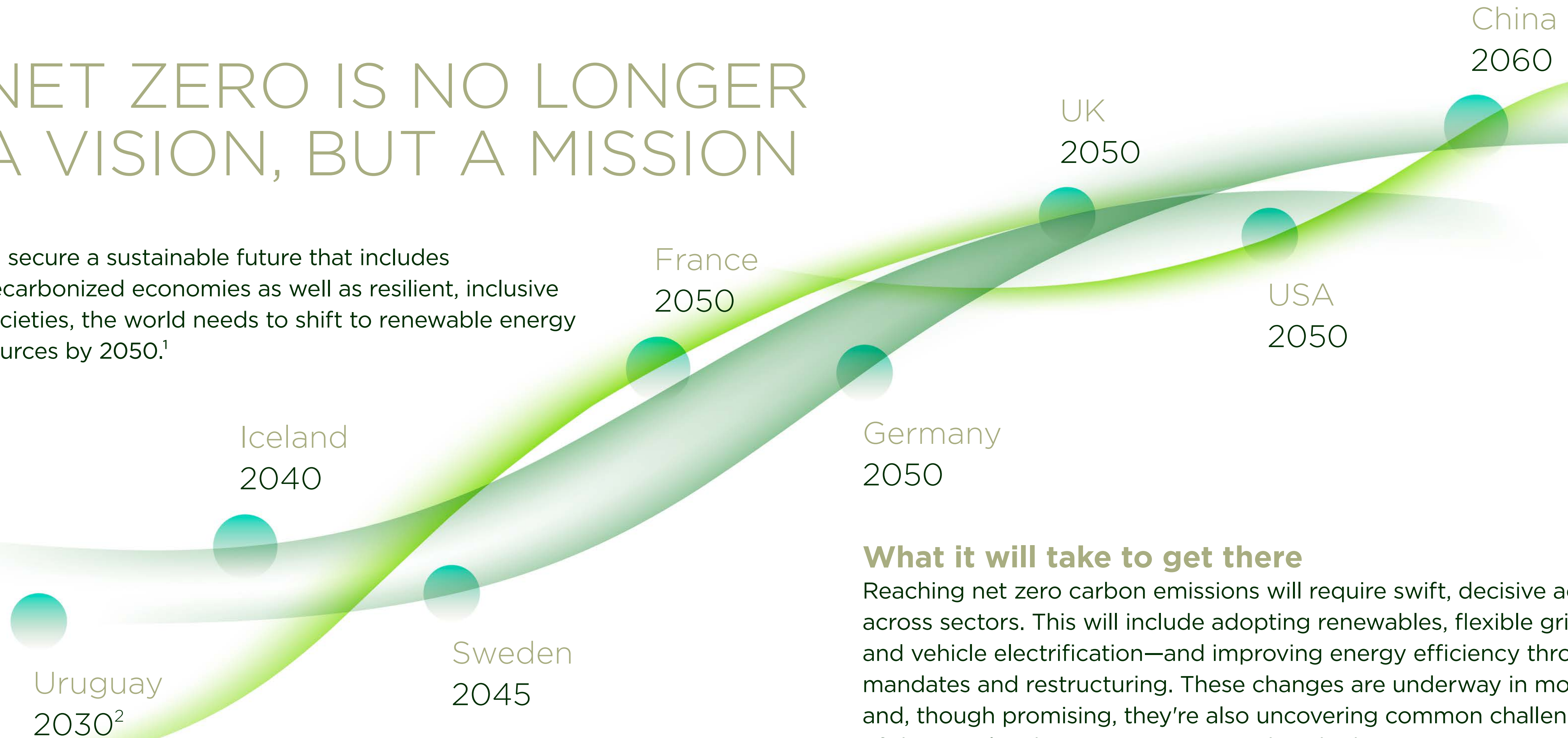
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# NET ZERO IS NO LONGER A VISION, BUT A MISSION

To secure a sustainable future that includes decarbonized economies as well as resilient, inclusive societies, the world needs to shift to renewable energy sources by 2050.<sup>1</sup>




## What it will take to get there

Reaching net zero carbon emissions will require swift, decisive action across sectors. This will include adopting renewables, flexible grid systems, and vehicle electrification—and improving energy efficiency through mandates and restructuring. These changes are underway in most sectors and, though promising, they're also uncovering common challenges of decentralized energy systems, such as higher operation costs and system instability. Addressing these will require linking diverse machines and datasets, deploying new energy systems, and centralizing asset management—all requiring integrated solutions.

<sup>1</sup>Global Renewables Outlook: Energy Transformation 2050, International Renewable Energy Agency, 2020

<sup>2</sup>Which countries have a net zero carbon goal? Climate Home News, June 2019



**Renewables will make up  
86% of total electricity  
generation by 2050.<sup>1</sup>**

## AIoT IS THE WAY FORWARD

With net zero driving action, integrated AI and IoT are not only streamlining but reimagining the energy industry at all levels—from suppliers to downstream customers.

### **Enabling energy systems of the future**

IoT provides the connectivity and digitalization of supply and demand systems, and AI brings better understanding, managing, and balancing of these systems. Collectively these capabilities mean more stability across whole systems and better energy efficiency for consumers.

<sup>1</sup>Global Renewables Outlook: Energy Transformation 2050, International Renewable Energy Agency, 2020

# TRANSFORM FASTER WITH COMPREHENSIVE SOLUTIONS

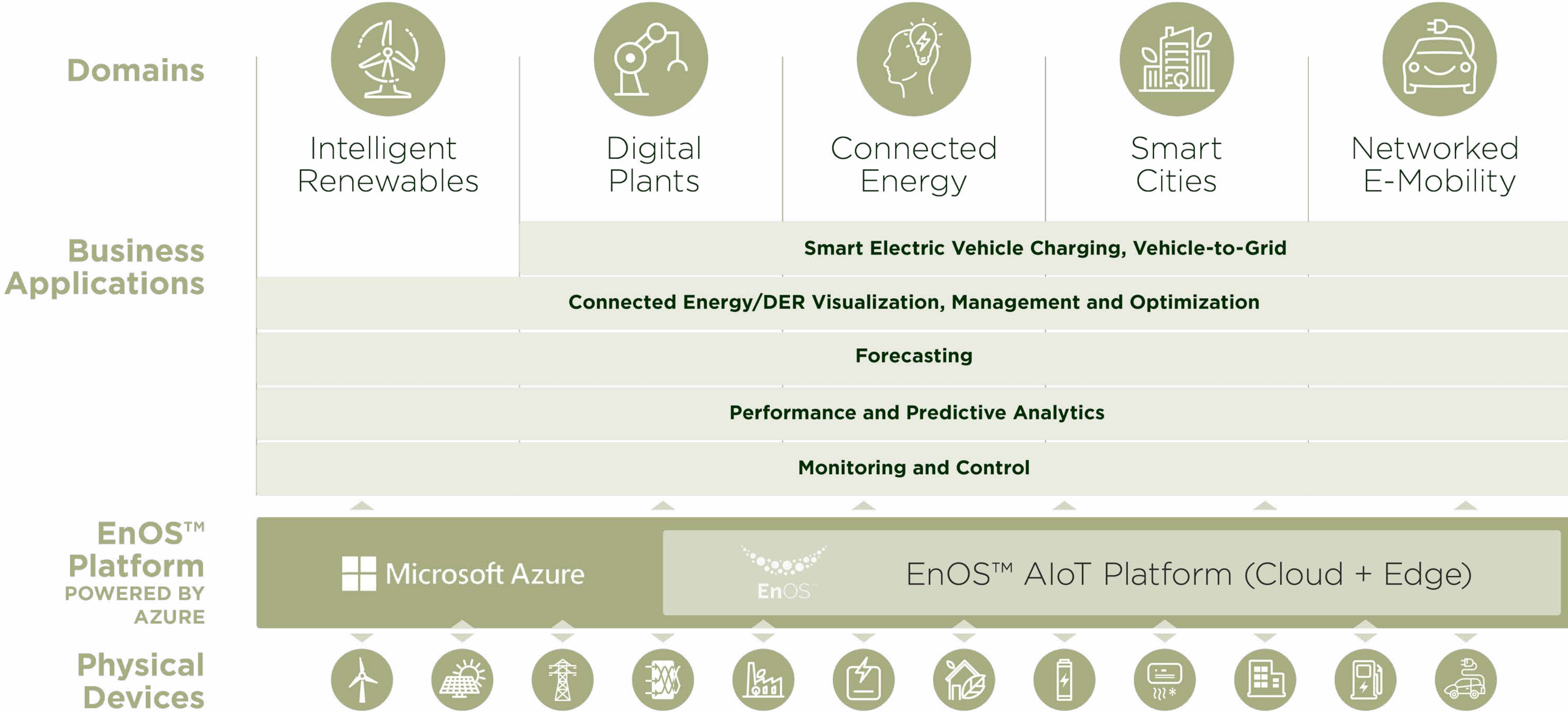
Envision Digital solutions are designed for complex needs. Get field hardware from Envision and our partners, prebuilt applications, and an easy-to-use IoT toolkit for continuous integration and innovation. Monitor, analyze, and optimize your solar and wind energy systems and ensure the quality and security of data with end-to-end data governance. Deploy storage for load balancing and grid optimization for demand-respond energy flow (microgrid). Accelerate solution building with EnOS™ and Microsoft Azure IoT Hub.

Quickly innovate with the EnOS™ IoT toolkit, based on Envision domain expertise. The toolkit provides:

- Built-in protocol adapters covering 90% of industry standard and mainstream proprietary protocols.
- A comprehensive device model library to support fast device twin modeling; includes industry standard libraries to enable standard data schemes and easy integration.
- A built-in AI model library for frequently used advanced scenarios like production forecasting and structural damage detection.



# SMART ENERGY SOLUTIONS POWERED BY AIoT



# APPLICATIONS FOR CLEANER ENERGY



**Monitoring and control applications** for remote fleet monitoring, performance analysis, and alarms



**Analytics applications** for underperformance detection, diagnosis, and predictive maintenance using advanced data mining, filtration, and machine learning



**Forecasting** for industry-leading, machine learning-based weather and power forecasting



**Connected energy management** for monitoring and balancing generation and load sides of an energy system, such as microgrid or virtual power plant



**Smart charging and vehicle-to-grid** for optimizing energy generation, EV charging, and energy consumption in buildings and factories—Integrating EVs into the smart energy network balancing demand and supply in real time



# PUTTING THE SOLUTION TO WORK INTEGRATING IOT ACROSS A SUPERSIZED INDUSTRIAL PARK

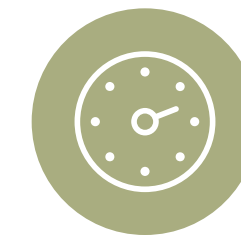
Suzhou Industrial Park (SIP), China, wanted to connect and coordinate distributed energy resources across its enterprise and facilities.

## Solution

EnOS™ AIoT Platform digital twin capabilities provide 4D energy network mapping and a range of other features.

- Real-time visualization of energy and emissions, enabling demand-side efficiency monitoring and optimization
- Energy infrastructure alerts and alarms for managing asset health and performance
- Benchmark tenants based on energy usage
- Open data platform for providing energy data as a public resource

## Results



Real-time data across  
**3K+** businesses,  
**50+** service providers,  
and **8+** GW of assets



**20%**  
Increase in asset  
performance and  
utilization across  
operations

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## Components

- Connected energy management system
- EnOS™ AIoT Platform
- Ecosystem applications based on the open data platform



# PUTTING THE SOLUTION TO WORK TAKING A SINGAPORE HIGH-RISE TO NET ZERO

Keppel Land sets out to transform Keppel Bay Tower into Singapore's first super-low-energy commercial high-rise.

## Solution

Envision Digital delivered a smart HVAC edge-to-cloud solution that operates securely, automatically—24/7.

- HVAC air and water auto-optimization for continuous efficiency improvement
- Chiller plant and air handling unit cross-communication
- Integrated smart facility management
- Fault detection and diagnostics of assets
- Indoor environment monitoring and comfort tuning
- Demand response in the smart building microgrid

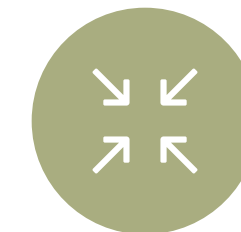
## Results



**100%** renewable energy resources



**10-15%** improvement in chiller efficiency



**5-10%** reduction in overall energy utilization



Building and Construction Authority Green Mark Platinum certification

## Components

- Connected energy management system
- Smart building solution suite
- EnOS™ AIoT Platform

# PUTTING THE SOLUTION TO WORK RETROFITTING ONE OF THE WORLD'S LARGEST PORTS

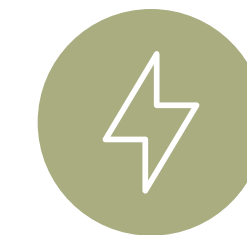
A major shipping port enlisted Envision to implement distributed energy AIoT across its operations.

## Solution

The EnOS AIoT Platform-based solution was rolled out in phases.

- Phase 1: solar panel monitoring and control and under-performance detection, diagnosis, and predictive maintenance
- Phase 2: deploy energy storage systems, provide load optimization, and enable peak shaving and frequency regulation
- Phase 3: vehicle-to-grid optimization engine and energy management

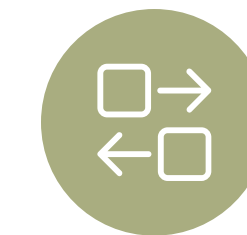
## Results



**2 MWh**  
of energy  
storage



**45% ROI**  
Breakeven in  
5.5 years



Replacement of  
diesel generation  
sets & recycling of  
offshore energy

## Components

- Monitoring/control and analytics applications for solar
- Forecast applications for weather and power production
- Connected energy management system
- EnOS™ AIoT Platform

# WHY ENVISION DIGITAL?

## We're **Adaptive**

Delivering fast, reliable, extensive connectivity to complex industry devices and systems at low cost

## We follow **Best practices**

Accumulating in-depth domain expertise in models, toolkits, and best practices

## We deliver **Common services**

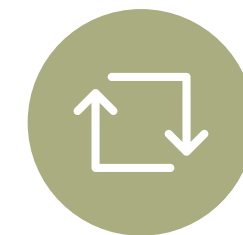
Focusing on globally accessible tools to enrich data value and accelerate innovation



**200** GW  
assets managed



**100** Million  
connected sensors



**44** Billion  
daily data  
transactions

# PARTNERING FOR POWERFUL, RELIABLE IoT

Together **Envision Digital** and **Microsoft** are leading in clean energy transformation with solutions built on enterprise-grade security, scale, connectivity, and advanced AI and analytics.



## Cloud infrastructure from Azure

- Comprehensive IoT portfolio
- AI and machine learning
- Mixed reality capabilities
- Hyperscale for high availability
- Built-in security
- Industry-leading compliance



## Integrated Azure services

- Azure IoT Hub
- Azure Blob Storage



# GET STARTED ON YOUR CLEAN ENERGY JOURNEY

Contact [Envision Digital](#)

Learn more about [EnOS™ AIoT Platform](#)

