

MEET YOUR **NET ZERO**
TARGETS WITH

EnOS™ ARK

INTRODUCTION

The transition to a low carbon future is a complex, multi-year journey. This journey starts at measuring your organisation's operational carbon emissions. Only by having an in-depth, **forensic** understanding of the amount of CO₂ generated and its sources, can your organisation develop the optimal abatement strategy and set realistic emission reduction objectives.

Forensic understanding of operational carbon emissions means that the data from the energy-generation assets (such as wind turbines or solar photovoltaic systems), energy-measuring devices (such as power meters) and energy consumption assets (such as buildings) across your network is gathered and analysed at a granular level.

However, organisations still struggle with connecting large numbers of different devices and meters while available energy monitoring software can't scale beyond its initial monitoring purposes. As such, the data is only used for carbon and energy expenditure reporting.

But reporting is just the beginning. On the journey to net zero, your organisation needs a roadmap outlining exactly where you come from, where you are heading and how to get there, while identifying issues and opportunities as soon as they crystallise. Having access to granular data provides you with the forensic understanding of your energy expenditure and operational carbon emissions. This, subsequently, opens the door to operational insights beyond just reporting, such as energy optimisation, carbon abatement and offsetting opportunities, and improving operations.





Challenges Faced in Collecting Data Today



Inefficiency

The current methods of acquiring the large amount of data for annual ESG reporting are labour-intensive, limited and unreliable. An average MNC will have >100 individuals involved in data acquisition.



Complicated Protocols

Even the world-leading energy service providers still struggle with protocols when collecting data from multiple sites and devices of different brands and types.



Complex Data

The process of collecting and connecting amounts of data from multiple sources is complicated and prone to errors.



Missed Opportunities

Annual energy and carbon data for ESG reporting is not detailed enough to identify operational savings opportunities or assess the effectiveness of individual improvement measures.



THE SOLUTION

EnOS™ Ark Carbon Management System acquires, processes and reports energy and carbon-related data in real time.

Leveraging AIoT (Artificial Intelligence of Things), EnOS™ Ark seamlessly connects with all the different devices and meters across your organisation's infrastructure.

It gives the devices the ability to understand data, observe the environment around them, and decide what to do best – with minimum human intervention. By learning through data from multiple sources, AIoT is the brain that makes decisions which help refine your organisation's performance evaluation and optimise emissions predictions. This enables you to not only develop effective abatement strategies but also track your abatement progress and deviations in real time. At any given point of time, you know exactly where you are and what you need to do to adjust your abatement strategy and offset the residual emissions.

Powered by AIoT, EnOS™ Ark is an intelligent and connected system that is continuously learning and self-correcting. It is your most reliable guide on the net zero journey.

PROPOSITION

EnOS™ Ark creates a guided journey to help organisations measure, abate and offset carbon emissions. It is a cost-effective solution for improved efficiency in automated data acquisition through smart meters and sensors, and IT and business system integration.

EnOS™ Ark enables organisations to close their carbon loop through the following steps:



Measurement



Abatement



Offset



Certification

Ark supports one-stop linking of authoritative certification bodies at home and abroad to certify the carbon neutrality data of enterprises. Complete the carbon management closed loop.

Other key functionalities include:



Enabling a "future-proof" carbon reporting solution with increased regulatory requirements in data granularity and reporting frequency



Enabling 24/7 carbon-free energy monitoring



Enabling granular third-party measurement and verification of energy and emissions. This allows for **immediate** valorisation of lower cost of capital in sustainability-linked loans rather than only after the first full year of reporting

ACHIEVING NET ZERO

As you progress on your journey to net zero, EnOS™ Ark not only tracks your energy expenditure and GHG emissions, but also provides a host of options for all the subsequent decarbonisation use cases beyond monitoring. For example:



The need for **visibility of energy consumption interval data** which is essential in identifying the operational savings.

- Tracking the interval data helps organisations to understand how much energy they use as well as its capacity and price.
- Obtaining the interval data can also help organisations to understand the effectiveness of their energy efficiency measures.



The need for **visibility of carbon emission footprint** across multiple assets in multiple countries from multiple sorts of activities with multiple different carbon emission factors AND monitoring the effectiveness of carbon emission reduction measures.

CREATING VALUE

EnOS™ Ark creates opportunities for organisations to identify cost-saving areas by:



Adjusting power usage



Predicting future emissions



Optimising abatement strategies



Providing options to directly purchase green electricity



Creating carbon reduction roadmaps for future reduction and offset planning



Fast-forwarding the cost of capital reductions through sustainability-linked loans



Helping you identify GHG reduction opportunities and engage suppliers at a corporate level



Identifying the right timing for procurement of RECs (Renewable Energy Certificates) and carbon credits

WHOM WE WORK WITH

Enabling a Smart and Sustainable Port for PSA International

Aiming to become a smart and sustainable port, PSA has committed to reducing absolute greenhouse gas emissions by 50% by 2030 and achieving net zero emissions by 2050.

Hence, PSA has been ramping up electrification efforts across the port by implementing electric cranes and prime movers, solar photovoltaics, and Battery Energy Storage System (BESS), to move away from fossil fuel-based towards renewable energy sources such as solar or hydrogen. EnOS™ Ark is supporting PSA on its net zero journey by providing a guided path for energy and carbon data monitoring, carbon abatement and offsetting.



20%
reduction in energy
cost per container with
Energy Optimisation



Improved
port operations with
Machine Optimisation



Created
new revenue
possibilities with System
Optimisation

With our AIoT technology, Distributed Energy Resources (DERs) such as solar photovoltaics, BESS and electric prime movers can be aggregated together with other port assets such as cranes and orchestrated, allowing PSA to improve its port's energy efficiency and even participate in the electricity market, thus increasing its revenue streams.

Through energy data monitoring, PSA is able to gain insight into the energy consumption of their assets, allowing them to orchestrate the data on a granular level to improve operational efficiency.

For example:

When one crane is consuming more energy than the other cranes, the anomaly can be immediately detected and optimised, thus improving its efficiency.

By leveraging our AIoT capabilities, PSA is able to automate the maintenance scheduling of their quay cranes with real-time collaborations across the machines, without impacting day-to-day operations, thus improving port operations.

To further reduce PSA's overall port energy demand, we have implemented an energy management application to optimise the energy consumption of their buildings and offices, such as PSA Horizons and Alongside. By leveraging our proprietary weather and load forecast services to drive the core algorithm for the application, PSA is able to manage the energy consumption of its buildings effectively and optimally.

EnOS™ Ark also helps PSA track their scope 1 and 2 GHG emissions, allowing them to gain insights into the amount of carbon emission reduced against their baseline, so they can be on track in their net zero goal.



Empowering The Starbucks Greener Store with EnOS™

Announced in 2018, the Greener Store Framework is an environmental initiative developed by Starbucks in partnership with the World Wildlife Fund (WWF). Starbucks has pledged to reduce carbon emissions, water use and landfill by 50% by 2030, working towards a “planet positive” goal.

Starbucks has long been committed to sustainability with initiatives such as using 99% ethically sourced coffee and bringing to market fully recyclable and compostable paper cups. With the Greener Store Framework, it aims to accelerate global movement towards a more sustainable future by building and retrofitting 10,000 Greener Stores globally by 2025.

The first Starbucks Greener Store in China was established in Shanghai in 2021. As Starbucks is aiming to build 60 Greener Stores this year in China, it needs to adopt innovative energy and carbon management solutions to better manage its stores.

Envision Digital is developing an integrated and holistic energy and carbon management system with its EnOS™ AIoT platform. The platform will connect the operational, support and utilities systems from over 20 facilities; including electricity, water, water filtration, indoor air quality monitoring and air conditioning. With centralised control, it will then enable real-time monitoring and intelligent remote control of the systems.

In addition, the platform's AI capabilities are continuously learning and self-correcting. Hence, this feature allows for the Greener Stores to constantly improve its energy efficiency and operations, while simultaneously improving customer experience.

With a shared purpose, Envision Digital is looking forward to support Starbucks in its journey towards net zero, by creating more net zero stores supported with AIoT technology.



Driving Sustainability Ambitions for Boehringer Ingelheim with Net Zero Plants

Boehringer Ingelheim is one of the largest pharmaceutical companies in the world, with more than 52,000 employees serving over 130 markets in three business areas — Human Pharma, Animal Health, and Biopharmaceutical Contract Manufacturing.

Continuing a journey that has started more than 135 years ago, Boehringer Ingelheim is building upon its track record in tackling global health and environmental challenges by committing to become carbon neutral in its operations by 2030 (Scope 1 and 2 emissions). In addition, it has started to transform its fleets to electric vehicles and implemented an internal carbon price of EUR 100 per ton of CO₂ emissions, as part of the 'More Green' pillar under the 'Sustainable Development — For Generations' (SD4G) framework.



The SD4G framework was formed to drive Boehringer Ingelheim's global sustainability strategy and includes 3 pillars — 'More Health', 'More Green' and 'More Potential'. Through these pillars, Boehringer Ingelheim will implement 20 initiatives around the globe to address issues in health, society and environment, in alignment with the United Nations 2030 Sustainable Development Goals.

Committed to its sustainability goal, Boehringer Ingelheim is aiming to build net zero plants in China, with the Boehringer Ingelheim Shanghai Pharma Logistics site (BISPL) as one of the SD4G pilots. The net zero plants will leverage Envision Digital's EnOS™ Ark

and AIoT (Artificial Intelligence of Things) technology which will enable the plant to connect multiple devices and meters. Hence, the net zero plants can ingest and aggregate all the data on one platform; while analysing them on a granular level with AI to draw insights that can enhance energy saving, energy efficiency and carbon reduction.

In addition, EnOS™ Ark provides Boehringer Ingelheim access to the Renewable Energy Certificates (RECs) marketplace to reduce the carbon emission from purchased electricity, whilst providing access to carbon credits (VCS) to offset the residual carbon emission from the plant.

AIoT Software Leader for Net Zero

To learn more about EnOS™Ark, please contact enquiries@envision-digital.com.



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About Envision Digital

A global AIoT software leader in Net Zero, Envision Digital is committed to becoming the world's leading net zero technology partner for enterprises, governments, and cities to accelerate progress and improve their citizens' quality of life.

EnOS™, Envision Digital's proprietary AIoT operating system, connects and manages more than 200 million smart devices and 400 gigawatts of energy assets globally. Envision Digital's growing ecosystem of close to 500 customers and partners spans 10 industries and includes Accenture, Amazon Web Services, GovTech Singapore, IBM, Keppel Corporation, Microsoft, PTT, Solarvest, ST Engineering and Total. The company has more than 1000 employees and 13 offices across China, France, Germany, Japan, Malaysia, Norway, Thailand, the Netherlands, the United Kingdom, the United States, with headquarters in Singapore.

For more information, please visit www.envision-digital.com.