HCLTech | Supercharging Progress™

Net Zero Intelligent Operations (NIO)

Intercomparable energy and emissions insights driving sustainable business

Introduction

HCLTech is committed to enabling our clients to achieve their net zero emissions goals by 2030 and beyond. Nearly 85% of manufacturers consider key insights from across enterprises as critical to realize net zero, but almost 42% of them cite a lack of data analysis knowledge within their business as a barrier to implementing change.
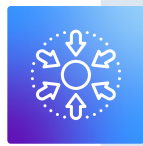
This is where **Net Zero Intelligent Operations (NIO) by IoT WoRKS™** comes in. The solution enables clients to monitor, assess and reduce enterprise energy consumption and carbon emissions through its unique inter-comparability and normalization approach across multiple equipment, processes and facilities. It delivers a set of functionalities to optimize energy consumption in a manufacturing environment at the enterprise level. NIO can help organizations reduce associated carbon emissions which contribute to net zero goals.

Key Features in reference architecture

AWS IoT Core, AWS IoT SiteWise, AWS IoT Greengrass Core, AWS IoT Sitewise Gateway, AWS Lambda, Amazon Kinesis, Amazon MSK, AWS KubeMQ, Amazon EKS, Amazon RDS, Amazon S3 and Amazon Sagemaker

Key Features

NIO helps clients reduce carbon emissions by optimizing the energy intensity of assets and processes and gives unparalleled insights into an organization's energy consumption and carbon emission metrics such as Energy Efficiency Ratio (EER), kilo watt per tonnage and inter comparability between plants or equipment which is its unique proposition.The solution can look at the total energy consumption across all the facilities and can highlight the plants as well as assets basis efficiency.
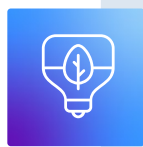
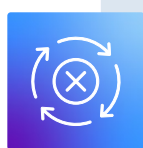**Centralizing uncompressed energy consumption data** from various sources

Mapping received data into an unified energy data model

Creating **inter-comparability of energy consumption at the enterprise level**

Identifying **energy optimization** candidates

Closing the loop with control information back to shop floor

Benefits

01.
Data Collection

02.
Multiple protocol support

03.
Meta-data about facilities and equipment

04.
Energy consumption, weather, event/alert, production data

Normalization Production-based energy data normalization

Weather-based energy data normalization	Normalize energy consumption across
• Multiple units of similar equipment within the same facility • Similar equipment across facilities • Multiple similar lines within the same facility	• Across multiple similar lines across facilities • Across similar sites

Aggregation

Total energy consumption	
• Per equipment/machine • Per line – Aggregated view of all equipment in the line	• Per plant • Across region/area • Across enterprise

Dash boarding/Visualization

Energy consumption by	
• Equipment, equipment types • By line • By Plant	• By Area/Region • Across enterprise

Equipment to Equipment energy comparison	Plant to Plant energy comparison
Plant Carbon Emissions in CO2 KG	Plant Carbon Emissions intensity in CO2 KG/kWh
Plant Carbon Emissions per Asset in CO2 KG	Best performing, worst performing equipment, lines and plants

Customer References

Customer 1

NIO is envisioned as a key element for the Sustainability initiatives of a leading Automotive Manufacturer

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