Use Case-Driven Operation Monitoring with AI-Based Predictive Analytics

A modern rapid prototyping approach to operational dashboard authoring to accelerate adoption of AI-based anomaly detection, production optimization, and operation monitoring across all production sites

INTRODUCTION

Manufacturing and energy operators need real-time operational data fully integrated with business asset metadata to make better and faster data-driven business decisions, without disturbing the mission critical plant operations. Such decisions leverage the insights on industrial assets across the enterprise derived by computationally intensive ML models. Modernizing legacy operational tools, applications, and systems is a foundational step to innovation because the plants infrastructure is built on an highly heterogenous IoT infrastructure that is not integrated and ultimately limits the value that can be extracted from the data by leveraging the capabilities of AWS cloud services.

CHALLENGE

Today, real-time inference from ML models requires considerable computational resources for insights to be readily available at the OT level. These resources are readily available in the cloud, but many separate tools are needed to process real-time and batch data. In addition, current visualization products lack the capability to add ML/AI trained time series in the visualizations along with plant operational data displays, limiting the access to real-time insights to IT engineers in control rooms.

SOLUTION

EOT Twin Sight™ is a SaaS application that supports the visualization and reporting of large-scale analytics and machine learning (ML) models. The ML model results are embedded in the use-case driven modern, low-code, AI-powered visualization platform for the operational user to make data-supported decisions that drive operational efficiency across their enterprise. With Twin Sight™, industrial users can now leverage the power of low-code AI-driven software to modernize how asset information and data is visualized and drive the rapid creation of use-case specific visual dashboards, templates and reports. The flexibility and ease of use of Twin Sight enables any individual inside the company to access enterprise-wide operational data with a self-service model and develop dashboards and reports that support their specific use case and business needs.

SAMPLE USE CASES

Partial list of use cases where applying modern data science and machine learning across all operating assets returns the highest level of cost savings and efficiency gains:

Anomaly Detection

- Equipment choking
- Leakage
- Erratic valves
- Blowout event
- Output
- Tank levels
- Frequencies

Optimizations

- Cycle Optimization
- Pressure Optimization
- Frequency Optimization

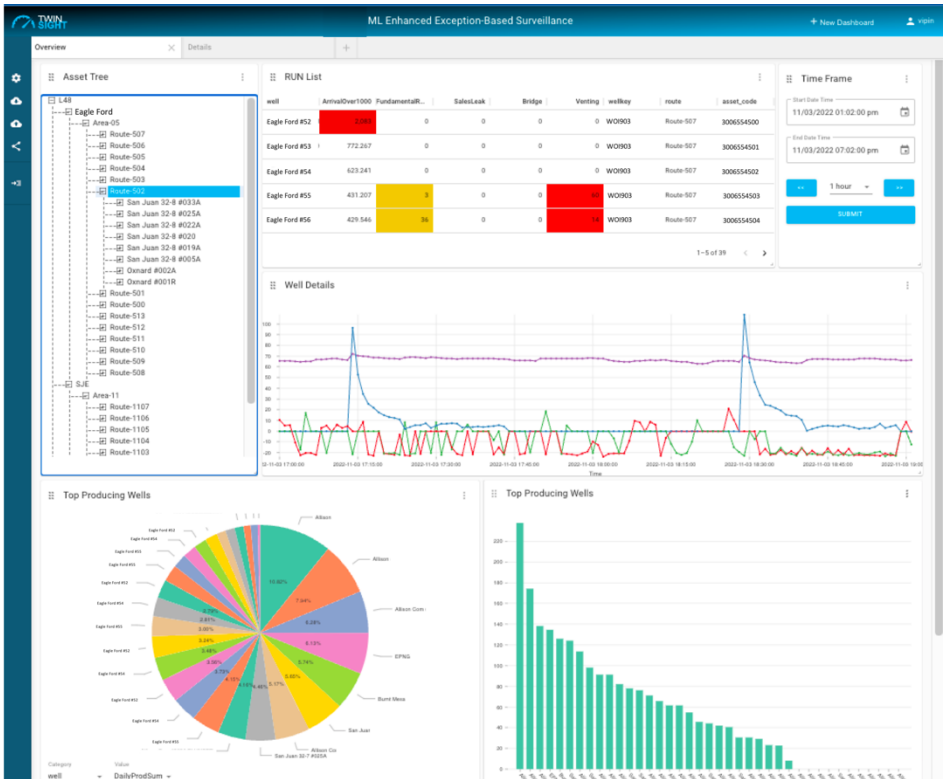
WHY ON AWS

- AWS global cloud provides IIoT services, such as IoT SiteWise and IoT TwinMaker that are at the core of EOT Twin SightTM
- EOT Twin SightTM is the best-in-class SaaS application that supports seamless visualization and reporting of large-scale analytics and machine learning (ML) models

BENEFITS

For operational executives in the energy and manufacturing industries who need their real-time operational data integrated with business data and visualized in dashboards to monitor assets and determine operational hazards/failures across all production sites, the EOT Twin Sight™ is a SaaS application that supports the visualization and reporting of large-scale analytics and machine learning (ML) models. Unlike its direct competitors, Twin Sight enables

- Low-code AI-driven rapid prototyping and creation of use-case driven operational dashboards
- Self-service selection of use-case specific visualizations by authorized users



ML-Enhanced Exception Based Surveillance Dashboard built by Hilcorp using EOT Twin Sight™

MAIN FEATURES

Monitor

Define optimal processes and set limit bands to monitor production. Tolerance bands can be trained on real data and used for automated early warnings in case of deviation, or to capture feedback and leverage knowledge across sites

Contextualize

Context can be captured via API integration to the AWS IoT Twin Maker graph database. Hovering with the mouse on a time-series data line shows the rich context derived by business and EAM data, otherwise siloed away in other enterprise apps

Search

Search historical data as easy as using a Time Machine. Extend the dashboard visualizations to similar assets by searching by geographical areas, logic grouping, or template similarity

Predict

Integrated ML models can be trained to predict behavior and tolerance bands can be configured for early warning discovery and predictive maintenance runs, with significant downtime reduction

About AWS

Amazon Web Services has been the world's most comprehensive and broadly adopted cloud platform with than 200 fully featured services for compute, storage, databases, networking, analytics, machine learning and artificial intelligence (AI), Internet of Things (IoT), mobile, security, virtual and augmented reality (VR and AR), and application development, deployment, and management. To learn more about AWS, visit aws.amazon.com

About EOT

Embassy of Things, Inc. (EOT) provides Twin Talk a secure, scalable, and intelligent Data Integration and Curation Platform designed to liberate operational data from historians and SCADA systems for cloud analytics and using insights for enabling self-optimizing industrial plants. EOT is helping customers in energy, manufacturing and transportation to capitalize on production, asset and resource optimization, and cost savings by enabling event-driven, real-time architectures in the cloud and operational intelligence at the edge. EOT's customers represent more than $160 billion in revenue, $45 billion in fixed assets and 60,000 employees. To learn more about EOT, visit https://www.embassyofthings.com