

Digitizing the Factory floor

Overview

A leading automobile component manufacturer, with multiple plant setups across India, wanted to get more visibility into operations of its production floor and analyze planned versus actual plant efficiency.

Execution Strategy

EnrichAI formed a core team of system integrators, solution architects and data analysts to work with the client throughout the entire project journey from scoping to deployment to monitoring to ROI analysis.

First Phase

A detailed inspection of the plant site was carried to understand the existing networking topology, connectivity, make and functionality of 30 CNC and robotic machines with their PLC systems, and most importantly interviews with machine operators, foreman and production manager.

Second Phase

Post the inspection, EnrichAI's dedicated hardware partner was contracted for setting up gateway devices to convert serial data from machine sensors to TCP/IP. EnrichAI agent SDK was embedded in each of the gateways to support the protocols of all the machines. The SDK also contained code to incorporate appropriate security layer.

Third Phase

Within a few days of deployment, the machines started streaming real time sensor data to the EnrichAI cloud platform. Some of the machine digital and analog parameters that were being captured and monitored were – cycle time, pressure, temperature, speed, position, flow, level, power, energy usage etc.

Fourth Phase

The EnrichAI cloud platform provides REST APIs, which allowed for integration with other external data sources such as ERP – production and operator. A statistical summary of each individual machine's performance in real time as well as over a historical period was captured through a mobile and web based visualization interface, and presented to client stakeholders. Since machine parameters were monitored in a real time basis, any irregularities against expected numbers were automatically flagged and notifications were sent to operators to take action.

Results

A user interactive mobile application and web dashboard allowed the client to monitor efficiency of his plant from a remote location at all times without having to check with the operator. The plant manager could also analyze how the running condition of an individual machine and correlate it with others in the line. Some other tangible benefits observed from the deployment were :

- a. Identification of the fact that a spindle attached to the bottle neck Press Injection Molding machine was inhibiting the entire assembly line to operate at full efficiency. This increased OPE (Overall Plant Effectiveness by 5%)
- b. Difference in productivity and energy usage across day and night shift was also observed. This was later attributed to difference in machine usage style by operators in different shifts. Savings to the tunes of 3% of overall energy consumption in the plant was achieved.

The plant owner was able to get all these benefits for a minor one time set up cost and a monthly subscription fee.