TenthPlanet

How to Reduce maintenance cost and service quality using IoT data analytics

Description

Sensor Data Analytics predicts the behavior of devices in service allowing manufacturers to track the usage and performance of their products in nearly real time.
Data Analytics can predict when your equipment is likely to need maintenance before it may be evident to operators, allowing you to proactively schedule preventative maintenance and repairs before a failure occur to prevent costly equipment downtime and improve operational efficiency and productivity.

Challenge

- Data is collected from various sensors deployed in machinery and equipments is challenging to accurately process and analyze a variety of data formats from different sensors in real time.

- Predict when maintenance is needed before the machine breaks down or if there is a drop in productivity and analyze data in real-time from different device to monitor and act quickly to resolve critical problems.

- Equipment downtime can be costly, last minute repairs are often difficult to schedule, and replacement parts may be difficult to find, so customer required a real time dashboard for monitoring and analysis to determine the conditions of the equipments in order to evaluate when maintenance should be performed.

- Currently there was manual intervention required to determine when the equipment should be maintained however it cannot be considered as accurate. Therefore, if a predictive maintenance technique is used, then permanent damage of the device may be prevented.

Solution

- Data is collected from various sensor devices cleansed and transform data in real-time and analyzed for deviations and failures. The data is further stored in data warehouse and used for analysis and this helps to improve the maintenance process through fault diagnosis.

- The dashboard provides a quick overview of all the machines status installed in the shop floor in reatime, like the conditions of the machineries with various thresholds defined based on the criticality. This helps the floor manager to quickly attend to the most critical machine to be addressed and resolved quickly and has option to even back track to earlier times in day to view the status.

- Can further drill down to filters like department, machine to view the details of health of the machinery. This includes the different sensors present in the machinery which generates the alerts based on the thresholds set. This helps in identifying values key influencing parameters pattern for frequency of failures and choose necessary actions.

- Displays the frequency of failures of each sensors and actions taken in the past hence allows choosing the best action based on previous diagnosis mentioned to quickly resolve the problem. Have options to key in the required actions taken or needed to resolve the problem.

Benefits

- Determine the conditions of the equipment in order to evaluate when maintenance is needed thus minimize the unexpected machine downtime, lowers the maintenance cost and extends equipments life time. Allow workers to see exactly how their machines are performing in real-time, and alert them to any issues that might be arising.

- Process high-volume sensor streams by a variety of connected devices, to generate useful insights and can correlate multiple data formats from multiple sensors to determine the operation situation before unexpected device anomalies occur.

- Sensor data sets that may have a varied structure and there may also be a significant difference in the data formats and types. Data analytics will allow the business executive to analyze all of these varying sets of data.

- Monitor the behaviour and track the usage and performance of the device in nearly real time. Sensor reading crossing threshold values for normal operating conditions can trigger alerts and enable intervention by operators.