LTIMindtree | aws partner network

Case Study

IoT-driven Predictive Maintenance for Leading Automotive Player

Client

Our client is a Fortune 100 Automobile manufacturer that combines the power of robotics, AI, and energy solutions to bring the freedom of mobility to over 150 countries and territories around the world.

Challenges

Automotive industry has been facing many challenges since the last few years such as declining sales, CO2 penalties, rapidly changing customer demand, and challenges raised by the recent global pandemic. Hence, there is a strong focus on controlling costs and maximizing value from existing investments. Automotive production facilities are leveraging Industry 4.0 to digitize operations for increasing operational efficiencies.

The client wanted to move from a calendar-based maintenance schedule, which was manual and error-prone to a predictive maintenance schedule for efficiency improvement and cost benefits. Hence, getting insights on machine health and performance was paramount. It was required to:

Acquire data from the shop floor systems and sensors; establish remote monitoring, automate data collection, data processing, and generate insights through analytics capabilities

Establish an automated maintenance work order through integration with the asset management system

Make a future-ready solution that can be integrated with cloud for advance analytics at a later stage
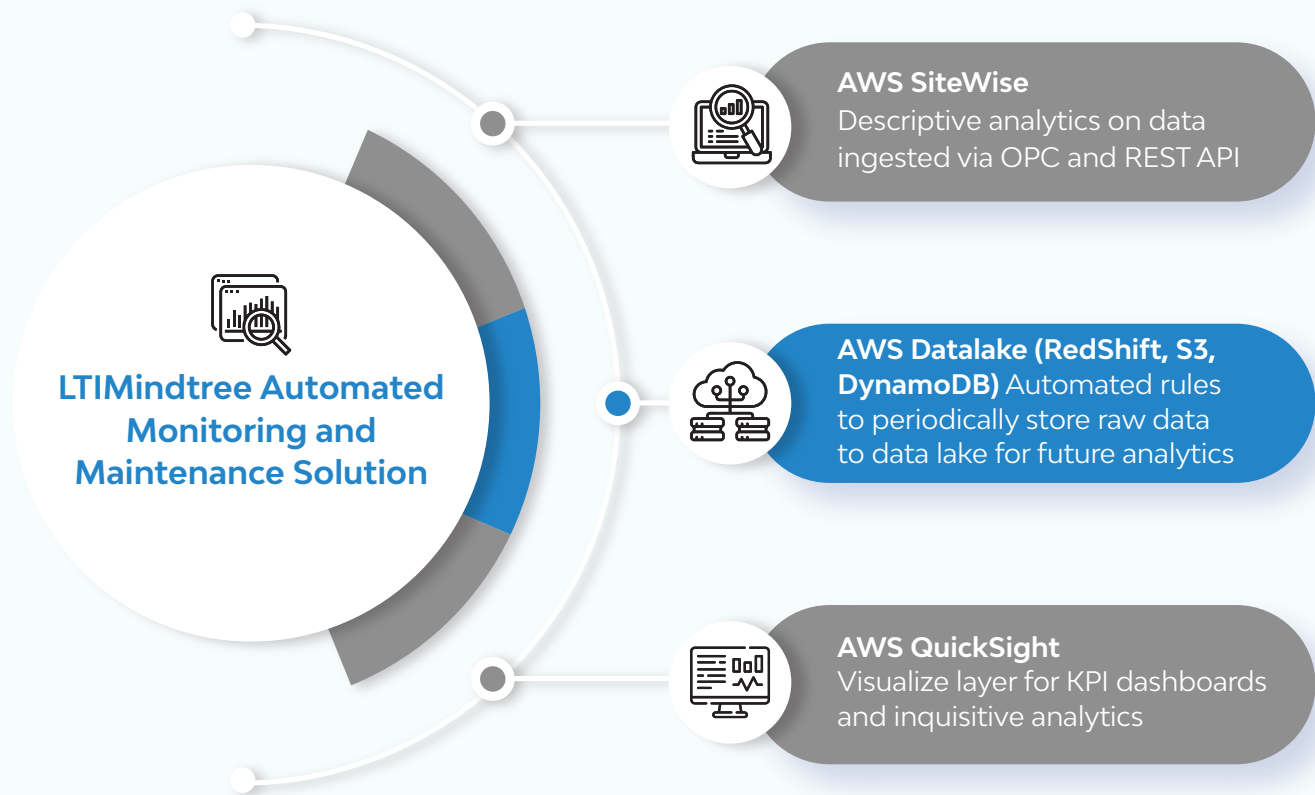
LTIMindtree Solutions

LTIMindtree has been at the forefront of bringing the right digital interventions for transforming manufacturing units into factories of the future by implementing industry 4.0 solutions.

To meet Client's objective of Predictive Maintenance, we

- Developed a solution to ingest data from machine controllers and sensors.

- Established an architecture for automated monitoring and maintenance of shop floor assets using AWS services like IoT Greengrass, IoT SiteWise, IoT Core, Lambda, Glue, and Athena, which was repeatable and scalable across multiple sites.

- Enabled descriptive and inquisitive analytics for identifying thresholds and anomalies.

- Enabled integration with IBM Maximo to trigger alerts and notification and automated work order creation.

- Identified a threshold value breach by utilizing AWS QuickSight and plotting profiles for good values and anomalous values.

- Classified all the data; machine data, the raw data stored in AWS S3, and the processed in Amazon RedShift for privacy and democratization.

- Created customized data flow structure for varied set of assets. For the motor torque, due to the array like structure of the data, the data flow was from Kepware to IoT Core and then to S3. For the wireless condition monitoring and asset meter reading, the data flow was from Kepware to AWS SiteWise and then to AWS S3.

AWS Component Play

AWS SiteWise
Descriptive analytics on data ingested via OPC and REST API

AWS Datalake (RedShift, S3, DynamoDB) Automated rules to periodically store raw data to data lake for future analytics

AWS QuickSight
Visualize layer for KPI dashboards and inquisitive analytics

LTIMindtree Automated Monitoring and Maintenance Solution

Business Benefits

Improved machine health through predictive maintenance

Reduced unplanned downtime and unwarranted maintenance

Enhanced overall operation efficiency by automating the entire maintenance process

LTIMindtree is a global technology consulting and digital solutions company that enables enterprises across industries to reimagine business models, accelerate innovation, and maximize growth by harnessing digital technologies. As a digital transformation partner to more than 700 clients, LTIMindtree brings extensive domain and technology expertise to help drive superior competitive differentiation, customer experiences, and business outcomes in a converging world. Powered by 84,000+ talented and entrepreneurial professionals across more than 30 countries, LTIMindtree — a Larsen & Toubro Group company — combines the industry-acclaimed strengths of erstwhile Larsen and Toubro Infotech and Mindtree in solving the most complex business challenges and delivering transformation at scale. For more information, please visit **www.ltimindtree.com.**

LTIMindtree Limited is a subsidiary of Larsen & Toubro Limited