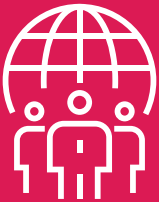# Enabled *IIoT powered remote monitoring* of construction machine's efficiency parameters

A Mindtree Case Study

Mindtree NxT

Client overview

The client is one of the largest Asian construction companies. They were looking for a digital solution, which could provide real-time insights into machine utilization, parts servicing requirements, energy consumption, and more.

Challenge

The client was facing various business challenges that included:

- Real-time monitoring of OEE (Overall Equipment Effectiveness) and equipment effectiveness
- Analyzing productivity trends in order to handle breakdown alert management
- Monitoring the conditioning of the key machines
- Functionality to monitor energy consumption per operation for each factory remotely from the headquarters
- Reducing unplanned downtime
- Maintaining consistent quality of components

Moreover, most of the machines were working under extreme conditions, and maintaining their health along with monitoring energy consumption was something that was a top priority for the client from the digital solution.

Mindtree solution

Our solution consisted of the below key solution components:

- The solution enabled data acquisition of machines by using sensors (level, temperature, and pressure) and from machine controllers (through OPC, MODBUS, and OEM's (Original Equipment Manufacturer) Proprietary TCP/IP protocols) and wireless data transfer from machine controllers/sensors to the central data store
- Local interactive HMI (Human-Machine Interface) - for operators to trigger alerts (through Kaizala) to dedicated groups for production/maintenance related issues for immediate action
- Andon display board - for consolidated plant information, the measured data was visualized at a local Andon in real-time for quick decision making at the shop floor
- Intuitive dashboards - Visualized trends for utilization, energy consumption, operation efficiency, etc.

Benefits

The business impact of our solution was sudden and visible with the below achievements:

- The night shift productivity was increased by 2.5 times through insight-based intervention
- The first output from the start of the shift was drastically reduced from 1.5 hours to 30 minutes
- Our insights-based solution resulted in higher power saving, and the post breakdown response was brought down from 30 mins to 5 mins through digitizing the process
- The most significant result was the streamlining of root cause analysis by replacing manual paper-based record keeping with HMI enabled recording of breakdown causes