

# Real-time Production Monitoring

Enable advanced monitoring for your manufacturing system.

**Customer/Company:** Fortune 500 Contract Manufacturer | **Division:** Advanced Research & Automation Systems

## Background

The customer is a leading contract manufacturing company that delivers design, engineering, manufacturing and logistics services to a range of industries and end-markets. This particular division builds production and assembly lines for their customers. The company had designed a new automated system that can be configured to build and assemble several different types of products continuously with the use of robotic arms. It was important for them to be able to provide advanced analytics, monitoring and reporting on top of this new automated assembly system.

## Problem

Quality assurance has always been a core challenge in the manufacturing industry and there were a few key problems the company faced in order to optimize the assembly process. First, there were many different subsystems in a single assembly line, and they had to figure out how to collect real-time data coming out of different sensors and PLCs. Second, once this data was available they had to find a way to standardize this data so they could visualize it both at the OT level (Floor Supervisor), and in the cloud/IT level (Plant Manager). Finally, once this data was available in the Cloud, they wanted to be able to enforce higher quality control over the assembly process, in order to give better assurance of the final product to their customers to minimize disassemble and warranty costs.

## Solution

Litmus Automation provided a combined solution for both OT and IT by leveraging LoopEdge and Loop. At the factory floor level, LoopEdge was installed on a Kontron-based Industrial PC. Once LoopEdge was installed, serial and TCP based communication drivers were used to collect data from different sensors.

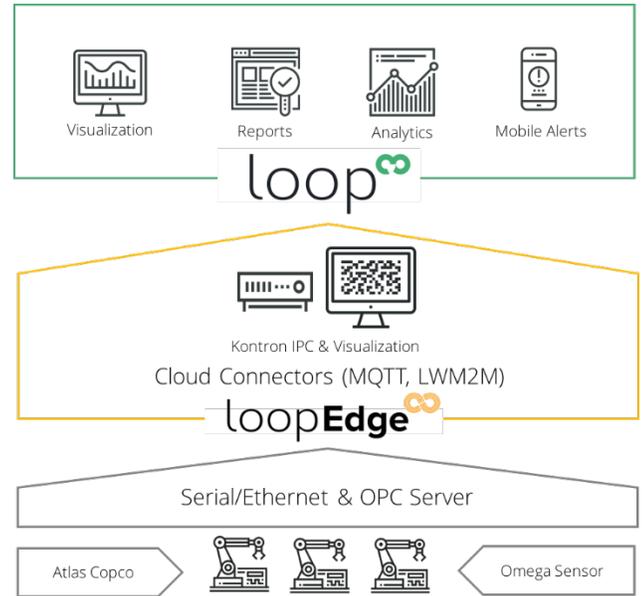
A force sensor from ATI Industrial Automation was sending robotic arm coordinate values continuously via a serial protocol. The Omega sensor was collecting temperature, humidity and dew point along with a timestamp, and data was sent via a standard serial protocol. LoopEdge was also collecting robot specific details like torque, angle and rate from Atlas Copco sensors. And finally, the robot movement details were collected via OPC protocol by LoopEdge. To handle the high velocity and volume of the various data types, an algorithm was deployed in LoopEdge to normalize, analyze and parse the data at the edge.

Once the processed data was available, it was visualized on a local dashboard at the operator level and pushed to the Loop platform with sub-second latency. The real-time processed data was passed to LoopInsights for further analytics and advanced visualization at the cloud level. Reports and mobile notifications were then generated after each cycle for the plant manager to be able to review specific parameters in the assembly process.

Once a sufficient amount of data was available over time to discover anomalies within the data, rules were set at specific threshold levels in order to generate alerts. Alerts were sent out via text message when these specific anomalies took place, in order to warn the operator that the system is not performing efficiently.

## Solution Journey

- LoopEdge installed on Kontron IPC.
- Data collection from robotic systems.
- Data pushed to LoopEdge via Ethernet/IP.
- Data combined and normalized at the Edge.
- Data pushed to Loop via MQTT.
- Data made available on LoopInsights for analytics, alerting and root cause analysis at both the local and cloud levels.



## End Benefit to Company

The company was able to decrease the cost associated with assembling and disassembling products with their robotic production system by 30%. As a result, they are now able to provide better quality control over final assembled items, along with real-time monitoring capabilities. In addition, their customer will receive quality assurance and be able to provide better SLAs around their final produced products.

## Is This Solution Replicable?

Yes. A client who is looking for robotic system uptime, downtime, as well as quality analysis and assurance, will be able to replicate this solution based on standard interface and visualization techniques.