



Business-friendly Solutions



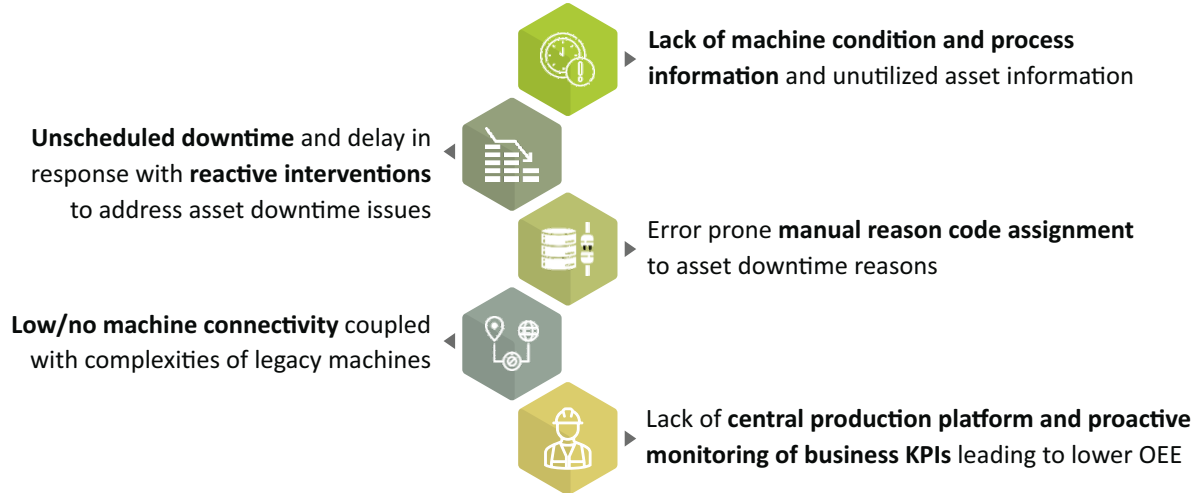
Factory Performance Intelligence (FPI)



Factory Performance Intelligence (FPI) Overview

Manufacturing is heading towards rapid automation with the advent of industry 4.0 and traditional manufacturing practices are being steadily replaced with mass-scale digitization in all nodes of the value chain with Operational Intelligence as the new mantra.

Despite the digital advancements, manufacturing organizations are increasingly facing the challenge of suboptimal operational performance and lower agility. These are commonly attributed to the below reasons:



Persona based pain points and solution goals



John
Plant Manager



Rick
Line Supervisor



Michelle
Line Operator

	John Plant Manager	Rick Line Supervisor	Michelle Line Operator
Pain Points	<ul style="list-style-type: none"> No real-time view of Plant Performance and roadblocks in plant operations Time consuming data curation for Senior management reviews Low visibility and control over performance improvement 	<ul style="list-style-type: none"> Non visibility of real-time line performance, roadblocks and root causes Data error with manual data entry Latency in resolving issues 	<ul style="list-style-type: none"> Non visibility of real time asset performance and throughput Manual asset monitoring Lack of actionable insights
Solution Goals	<ul style="list-style-type: none"> Integrated Plant scorecard providing KPIs across Performance, Quality, Delivery, Cost and Morale Aggregated view for Line level KPIs and downtime reasons 	<ul style="list-style-type: none"> Automation of downtime reasons with identification of culprit asset Real time monitoring of operations from anywhere Audit trail availability of manual reason change and action history 	<ul style="list-style-type: none"> Automation of asset downtime reasons Real time monitoring of asset operations using TV screens on shop floor Alarms & notifications for agile operations

The Solution

ITC Infotech's Factory Performance Intelligence (FPI) helps organizations drive operational excellence through maximizing the performance of business-critical operations. It is a structured approach to provide visibility into manufacturing operations performance based on personas, bring attention to the right things, help prioritize and take necessary steps to improve the performance. Its ability to connect to other shop floors and enterprise applications such as ERP enables better horizontal integration and data integrity.

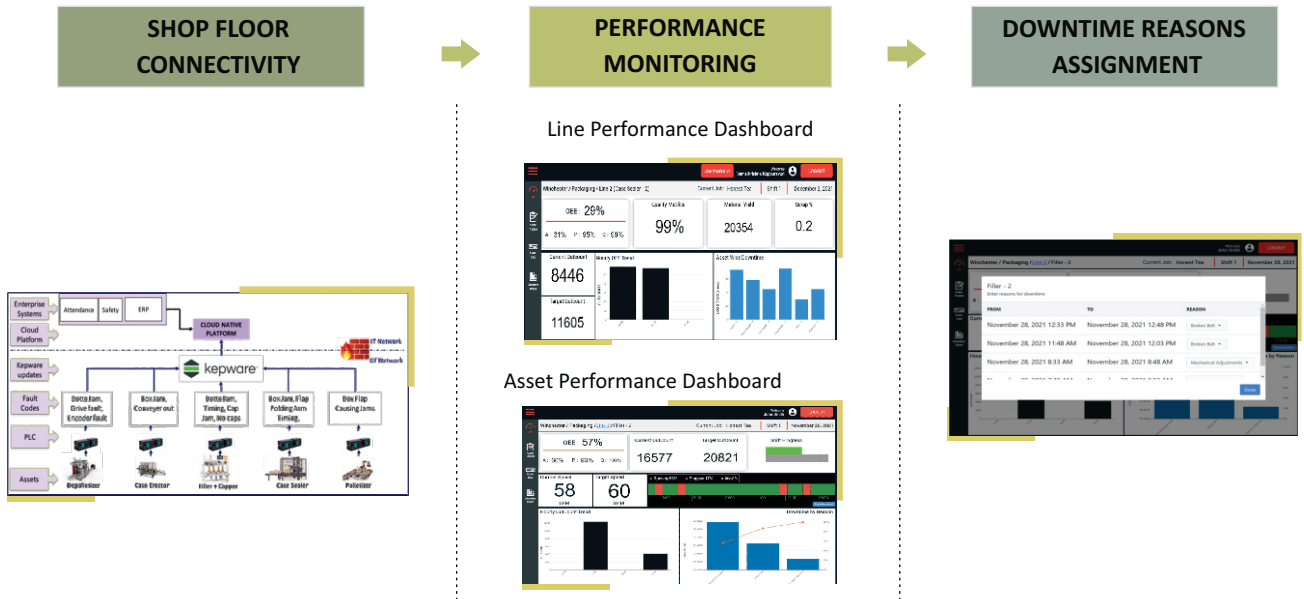
It comprises of the following solution elements:

- ❖ Real time production visibility (OEE, Quality, Sustainability)
- ❖ Real time asset condition tracking

Shop floor connectivity:

Machine connectivity is at the core of the data acquisition and analysis to generate business-critical insights enabling data-driven decision making. ITC Infotech's Connectivity-as-a-Service solution helps automate the capture of shop-floor machine downtime reasons from PLC fault codes. These fault codes are sent through gateway device solutions such as Kepware to the cloud platform. The entire solution is built using a cloud-native IoT platform using an out-of-the-box starter pack from ITC Infotech. The following figure illustrates the components of the solution.

Solution Workflow:



Performance Monitoring

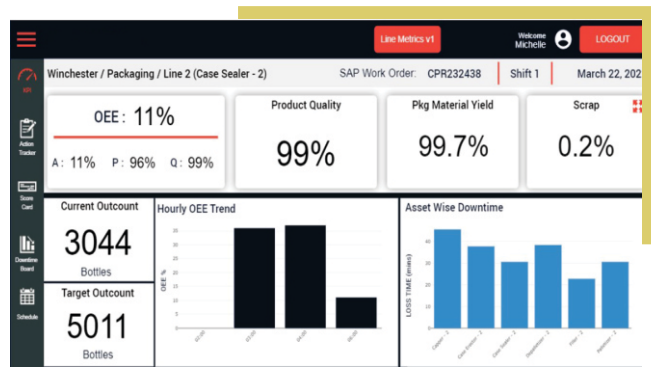
In the context of digital manufacturing, line and assets are monitored at a shift level for key performance indicators (KPIs).

There are 2 key personas using this solution

- Supervisor
- Machine Operator

Line level KPIs include:

- Overall Equipment Effectiveness (OEE) with machine availability, performance, quality
- Machine status such as *Running/Stopped/Idle* with visual representation using color code
- Material Yield, Scrap %



Asset level KPIs include:

- Overall Equipment Effectiveness (OEE) with the Machine Availability, Performance, Quality
- Target and Current Outcount of the product SKUs with a shift progress
- Current and target speed
- Machine status



Performance Analysis

The application provides easy-to-consume analysis in the form of the below widgets. A trend can be set programmatically to shift, day, week, month, or beyond based on the business need.

Line level:

- Hourly OEE trend for the line with the bifurcation of availability, performance, and quality metric to pinpoint the area of attention quickly. Hourly data provides granular information for a quick turnaround on the issues
- Asset wise downtime for the shift to prioritizing the focus on the right asset

Asset level:

- Hourly out count trend
- Pareto chart for the downtime reasons

Machine Downtime:

The machines could be down due to reasons such as broken belts, mechanical adjustments, bottle jam, clutch kicked out, door open, and more. The sensors on the machines detect these conditions and send the error code to PLCs. The application has these fault codes automated to not only show the list of machine downtimes but also assign the reason automatically to them based on the fault code automation.

The application also provides a way to correct the machine-assigned downtime reasons if there is a need. All these corrections are tracked for auditing purposes and can be accessed programmatically

Once the information is analyzed and root cause analysis is performed, supervisors may identify the appropriate actions and assign them to the concerned operators, including CAPA (corrective and preventive actions). The application provides a functionality for the supervisors to assign the actions to the operators.



Solution Features



Real-Time Asset Tracking

- Real-time tracking of asset status and throughput



Real-Time Performance Monitoring

- Real-time asset performance monitoring in the form of OEE and quality metrics
- Ability to connect to shop floor and enterprise applications such as ERP



Comprehensive solution taking care of shop floor connectivity as well

- PLC logic implementation to capture the asset status, fault codes and alarms and movement to cloud platform



Fault Code Automation

- Asset downtime reasons are automated from PLC to Gateway to the application



Inbuilt Analysis

- Pareto and donut charts for efficient RCA of downtime



Built on a low code-no code cloud native IoT Platform

- Reduce overall cost of ownership and faster ROI
- Ease of scale of solution with additional use cases and across plants



Support variety of devices

- Mobility based application access (Mobile devices /Tablet)
- Displays on televisions/monitors on the shop floor

Business Benefits

Shop-floor Production

- Improve overall equipment effectiveness (OEE) by 10-15%
- Reduce Cost of Poor Quality (COPQ) by 8-10%

Operational Efficiency

- Seamless monitoring of operations from anywhere
- Realtime data-driven decision making



About ITC Infotech

ITC Infotech is a leading global technology services and solutions provider, led by Business and Technology Consulting. ITC Infotech provides business-friendly solutions to help clients succeed and be future-ready, by seamlessly bringing together digital expertise, strong industry-specific alliances, and the unique ability to leverage deep domain expertise from ITC Group businesses. The company provides technology solutions and services to enterprises across industries such as Banking & Financial Services, Healthcare, Manufacturing, Consumer Goods, Travel and Hospitality, through a combination of traditional and newer business models, as a long-term sustainable partner.

ITC Infotech is a wholly-owned subsidiary of ITC Ltd, one of India's foremost private sector companies and a leading multi-business conglomerate. For more information, please visit: www.itcinfotech.com