



# MES IMPLEMENTATION FOR A GLOBAL FMCG COMPANY-AN INSIDE STORY!

Process Standardization and Integration, Operations Benchmarking and Cost Reduction, Product Integrity and Traceability, and building a foundation for IoT Solutions Implementation



## Introduction

A large scale global IT transformation program comes with its own challenges and is never easy to manage. The complexity increases if it involves deployment of solutions in factories, that too in different parts of the world. The factory environment is quite different than what's visible from outside, and one needs to spend time on a factory floor to appreciate and acknowledge the daily challenges of operating a factory. The challenges faced by plant manager and his/her team could be unique around the globe, even though they are part of the same organization. How does one conceptualize, design and deploy a large-scale MES program in this scenario to ensure all stakeholders are aligned, onboarded, and benefit from this implementation? It becomes easier to manage the project with in-depth planning, buy-in of stakeholders, well-designed solution and a robust implementation plan. Project managers must handle the unforeseen challenges that crop up every now and then to keep the project on track. Revisiting and modifying the implementation strategy are an integral part of the process. This case study attempts to highlight the approach, challenges, solution design, benefits, and key success factors from a large scale MES implementation at a Global FMCG client.

## Client

A leading CPG company with operations in six continents and products sold in more than 100 countries. The organization has 50+ manufacturing plants comprising of large and automated plants as well as small and manually operated plants. Manufacturing Excellence has been a way of life for this organization and new initiatives are rolled out at regular intervals to improve plant performance. Technology has been a key enabler of operational excellence for this client.



## Business Case for a Global MES Program

A few manufacturing plants had advanced MES systems, some had legacy systems, while many others operated manually. As a result of this, there were inherent challenges and opportunities for the client to manage, some of which were –

- In most factories, other than the ones that had MES systems, processes were managed using excel sheets and paper-based documents. Data capturing was largely manual and hence consolidation and analysis was a challenge. This led to a low level of process control, resulting in rejections and rework. This also became a roadblock in leveraging the next-generation IoT technologies.
- Different IT systems across plants resulted in high IT support and maintenance costs.
- Plants could not be benchmarked on common KPIs which would have then resulted in identification of improvement opportunities.

The organization realized the potential of technology enablement and process standardization across all its manufacturing plants and embarked on the journey of a global MES program. Through this program, the team wanted to ensure that all processes are executed in a standard way across all its plants. Standard KPIs are tracked and reported, and technology is used to enable efficiency and cost reduction programs. This initiative was expected to make “Common Systems, Processes, and Information” across all its operating plants a reality. The organization wanted its internal processes to be robust enough to ensure regulatory compliance. The investment was expected to pay back in 3-5 years, depending upon the maturity of each plant. Baseline on identified metrics was created to measure year on year success of the program.

### Key Objectives of the Program

**Global Processes:** Uniform System and Processes across all Manufacturing Plants.

**Inter Plant Benchmarking:** Monitoring and Reporting standard set of KPIs to enable global performance benchmarking.

**Continuous Improvement:** Enable CI through use of technology to improve visualization as well as track and improve performance.

**Foundation for Industry 4.0:** Uniformity of systems will help design and deploy I4.0 solutions at a faster pace



## Program Design

The organization has a mix of large automated plants to small and manual plants. A wave approach was conceptualized to roll out MES across its 50 manufacturing plants. The solution was designed and validated in one plant and then extended to a few other plants to incorporate plant and geo-specific challenges. Based on the deployment in five strategic factories spanning four continents, global templates were designed for rollout to other factories.

Implementation in each factory began with orientation and onboarding of the core team. While a top-down approach was followed and top management mandated implementation of MES, factory head and his/ her team were given enough opportunity to get their queries and concerns resolved, get aligned, and onboarded. A well-defined and structured orientation program was developed to accomplish this objective. Plants were engaged by the central team at an early stage to share inputs and address their queries and concerns.

During the orientation, program structure, benefits achieved by other plants, and implementation plan were discussed to get their buy-in. Quantified benefits from the program (Key KPI Improvement and Financial Gain) were estimated based on the experience with other plants and shared with plant personnel to demonstrate the power of the tool and its relevance to their plant.

Very consciously, global templates were not enforced, but an adoption approach was followed, wherein the local teams had a say in the changes required to the global template, and if the change request was logical, it was incorporated. A 3-tier approval committee was instituted to review the change request and make decisions. If the change request mandated a global rollout, the same was managed during the next release. This ensured that the stakeholders had a say in the process, and this resulted in total buy-in and participation from stakeholders. Risk assessment exercises were conducted, and contingency plans were built to ensure an uninterrupted supply of goods from the plant. This was one of the major concerns that plant heads had and was aptly addressed by having backup plans in place.

### Key Characteristic of the Program

**Team Orientation & Onboarding:** Alignment of the core team to program objective and benefits to get aligned and onboarded. The program was not deployed by force but by choice of plant managers.

**Benefits Demonstration:** Calculating and sharing potential KPI improvement and financial gain for the plant based on previous experience.

**Global Processes with Local Flavor:** Incorporating plant level requirements in global templates without creating separate systems for each plant.



## Solution Design

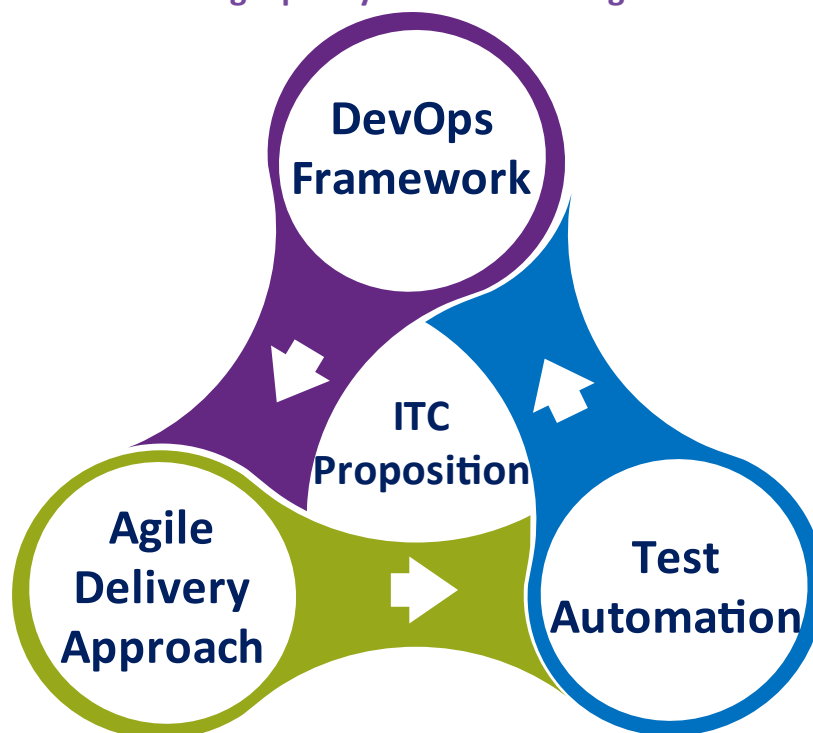
The larger objective of this program was to ensure that all plants operate in a similar way. They had to use standard processes, monitor similar KPIs, ensure 100% regulatory compliance, and implement the same technology stack that could be leveraged for implementing IoT solutions. While these objectives were at the core of this program, the solution was designed in a way that the larger objectives of the program were met. At the same time, plant performance also needed to improve significantly so that the project could pay back the investment.

As a first step, the technology landscape was outlined and the functionality boundary for each application was decided, based on each technology's strength and the total cost of ownership. Some processes could be handled by multiple IT applications available (for example – Warehouse Management System can be executed using ERP as well as an MES application), and hence it was important to decide on the IT application for each process. This activity helped significantly in drawing boundaries, defining functionalities of each IT application and resolving conflicts.

The integration of IT applications was another critical element of the solution design that was planned in the initial stages. The client used an ERP application, Lab Information Management System, a Global Track and Trace System, a specially designed application for recording Machine Downtime, and multiple other IT systems on the shop floor.

The implementation leveraged innovative approaches to ensure there was continuous development and deployment of solutions. This resulted in development of reliable solutions, shorter delivery lead time and first time right solution deployment. Combination of Agile Delivery approach, DevOps, and Test Automation helped achieve the above objective. Some of the solutions developed to solve specific problems have been listed below:

**A collaborative approach to design, develop, test & deliver high quality and first-time right solutions**



**Rapid delivery of application in complete functional components**

**Reduction in regression testing effort & lead time enabling shorter delivery lead time**

## Process Control & Mistake Proofing

Using MES in conjunction with other systems to build process control and mistake proof them was one of the key characteristics of the solution design. For example, the supply of material from upstream process was linked to the SKU being manufactured in the downstream process, to manage product integrity and eliminate wastage. Recipe-based manufacturing was controlled through integration with SCADA which ensured 100% process compliance. Brand change management through MES ensured that the right materials were being used for manufacturing, including wrapping and packing materials. This also improved the plant's ability to manage a higher number of changeovers while keeping rejections within the permitted limits. Plants that operated manually had product integrity as a key concern during SKU change, due to flux in multiple raw materials and wrapping materials. This was addressed by use of MES. Equipment calibration was managed using MES and work orders could not be dispatched to an equipment that was out of calibration resulting in better quality procedure compliance. Many such processes were mistake proofed using MES leading to much higher process compliance and performance improvement.

## Track & Trace

The nature of the industry required an end to end traceability of products. MES along with ERP was used to trace the product at a packet-level across the value chain. This helped in checking product authenticity and control counterfeit products in the market resulting in higher revenues. The solution was useful in managing controlled product recall from the market and in investigation of customer complaints. Information related to the raw material, batch number, product quality and manufacturing process could be retrieved using MES and ERP.

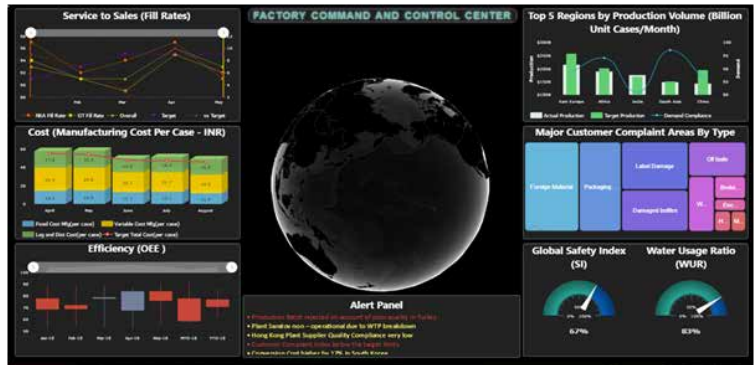
## Enabling Operations Excellence Journey

MES was also used for enabling the execution of specific processes and tasks related to the World Class Manufacturing system. Global defect handling form, preventive maintenance card and shift handover form were built in the MES and managed through it. Data capturing was done in the system and automated wherever possible. This eliminated errors in data recording, manual logbooks, and delays in reporting performance. All operational level reports like production, quality, and inventory were configured in MES for easy accessibility and tracking.



# Global Dashboard and Real-Time Performance Monitoring

Benchmarking performance across similar plants and identifying improvement opportunities was a key objective of this program. ITC Infotech's **Factory Command and Control Center(FCCC)**platform was leveraged to build performance visibility at the machine, section, plant, country, and global level. Key KPIs were tracked and analyzed using FCCC. Real time information availability was useful in analyzing trends and initiating corrective actions for performance improvement.



## Lite-MES

A full-fledged MES implementation made business case for large plants but the same was not true for smaller plant operations. These plants neither needed all the functionalities of an MES platform nor could they justify the investment. A lighter version of the solution was built for these plants and christened as "Lite MES", to meet the functional requirement and justify the investment. This approach also reduced the development lead time and financial investment required for MES implementation in these plants.

## Implementation Benefits

The organization benefited from Process Standardization & Efficiency Improvement that led to an improvement in operational KPIs, resulting in financial gains. Plants will be able to recover the investment in a 3-5 year span depending on the process maturity. In addition to this, intangible benefits of employee motivation and customer satisfaction enhancement were achieved.

### Key improvements achieved in processes and systems as a result of Global MES implementation are –

One single source of truth on the shop floor	End to end data integrity achieved
All legacy systems were eliminated or integrated through GMES	Manual scheduling activities are eliminated completely at factory level
Easy access to all relevant information to the shop floor team	Visibility into the entire manufacturing process, shop floor inventory, and plant performance
End to end traceability into the entire supply chain operation	Targeted product recalls and market returns can be managed more efficiently
Improved process adherence as a result of control through the GMES system	Reduction in product integrity violations & market returns. Reduction in quality complaints

## These improvements resulted in the following quantified benefits for the client -



## Success Factors for the Project

This was one of the many large-scale projects executed by ITC Infotech. The project brought new learning to our team and members of the client team. According to us, some of the critical success factors for this project are:

- The investment made with respect to time and energy for onboarding the plant teams went a long way in handling day to day challenges and keeping the project on time. The IT execution team and the plant's project team were aligned to the larger objective. They were convinced about the benefits of the program and worked together to resolve day-to-day issues and moved ahead. Demonstrating the quantified benefits from the project helped in getting the team onboard quickly.
- Addressing concerns of plant managers and having a contingency plan for uninterrupted supply from the plant came handy in multiple situations. Many a times, projects of this scale are impacted by internal and external factors and the contingency plans were useful in keeping the production running during these situations.
- Planning for the financial spent and having a formula of sharing investment and gains between plants and the corporate IT team was very useful. The corporate IT team made the initial investments, and a portion of the gains was shared by the plants with the corporate IT team to payback for the project and fund rollout in other plants.
- Designing the solution keeping the plant operations and its employees at the core of it demonstrated our "Customer First" philosophy. The involvement of the plant team early into the project and having their concurrence on the global template, with provisions to incorporate changes, got us their full participation and cooperation.

## Conclusion

Technology is becoming the backbone of manufacturing organizations and MES is the building block of a Future Ready Factory. MES adoption across the globe is growing at a rapid pace. The role of technology partners in identifying the right MES platform for you, designing and deploying the right solutions, and managing the program through a structured change management approach is crucial. A robust planning process, onboarding key stakeholders, demonstrating project benefits and addressing their key concerns, building contingency plans, robust solution design and planning financial investments are critical elements for a successful MES implementation. Manufacturing shop floors are evolving rapidly as well. Smart Products, Smart Processes, and Smart Factories are the new norm for the manufacturing sector enabled by continuous improvement in the field of Information & Operations technology.



# Author Profile



Nitin Kalothia is an Associate Partner in the Business Consulting Group of ITC Infotech India Limited. In his current role, he works closely with technology teams to conceptualize, design and deliver solutions to improve manufacturing & business process efficiency. He has close to 18 years of total work experience in operation excellence and technology consulting. Nitin has been instrumental in driving manufacturing transformation through use of Technology and Lean Manufacturing Principles. He has also developed and deployed Smart Factory Framework for manufacturing organizations.

## 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 fully-owned subsidiary of ITC Ltd, one of India's foremost private sector companies and a leading multi-business conglomerate.

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