

Faurécia: A Successful immersion in Industry 4.0 – France

Abstract

FAURECIA has undertaken a digital transformation through a wide project called "Digital Enterprise" initiated in 2016 in order to optimize its industrial processes and improve its performance and innovation. The aim was to spread 12 technologies of industry 4.0 over 300 factories in the world. The strategy of implementing technologies of industry 4.0 was far from " radical transformation", the group leads step by step implementation. This showcase demonstrates an interesting approach and findings.



Introduction

Faurécia is a leading technology company in the automotive industry, with 115.000 employees at around 300 production sites worldwide (more than 37 countries). The Group rose to the top 10 of automotive technology suppliers in the world. Faurecia is organized into three activities: Seating, Interiors and Clean Mobility. Faurécia is considered among the most modern factories in France. It received more than 40 awards in 2018 for all of its performance, industrial excellence, cost reduction approach and its innovations. The Group was notably awarded in the Innovation category at the "2018 Group Renault Suppliers" and won two awards at the German Innovation Awards. Faurecia – Caligny also holds the prize for "Best Digital Factory 2016".

Challenges

Ensuring quality: Ensuring the quality of components and reliable functionalities of the final product is an absolute priority in automotive industry. The expectation is also the same quality level all over the world production sites. Reducing the defect rate and non compliant components can be sustained by new technologies.

Productivity and Operational excellence: FAURECIA EXCELLENCE SYSTEM called FES is created based on Lean management approach. The FES has been renamed FES X.0 with a deployment throughout 2019, FES X.0 contributes to the success of the Total Customer Satisfaction program and improves operational performance.

Digitalisation and connectivity: The target is to achieve zero paper and ensure the connectivity everywhere to optimise the productivity and quality.

“FAURECIA's challenge is to figure out the best matching technologies of industry4.0 with its objectives of quality, performance and innovation. The "Test and Learn" approach allows to check the relevance and maturity of the technologies.

Test and Learn: All technologies of industry 4.0 are not enough mature for deployment in all production sites. This approach of « test and learn » allowed to fit the challenges by adopting the relevant technologies.

Competencies development: Beyond digital transformation project initiated in 2016 aiming to improve industrial methods and organizational transformations, Faureica invests in training managers team through Faurécia University. More than 9000 employees were trained to new technologies 4.0 in Asia, Amercia and Europe. More than 3000 employees use moocs. The competency's increase becomes a priority launched in 2014 with « being Faurécia ».

How will solve the problem?

Faurécia selects 200 use cases over the different production plants and only 50 POC (Proof Of Concepts) were retained at the end. The approach of implementation was to "Test and Learn" for checking the technologies relevancy.

It consists on pilot phase deployment and testing in real condition. **3D printing** for instance was excluded because judged not enough mature technology to ensure the quality level required for the **products**. Among the range of technologies retained, are quoted:

Big data: used for predictive maintenance, the machines are equipped with sensors 24/24 and 7/7 to monitor the performance variable. The use of big data was essential to transform a huge quantity of volatile and important data into actionable and useful information. Predictive maintenance, augmented reality and business intelligence became very useful.

Connectivity and automatisation : Cobots - AGV - Digital Dashboards :The emergence of new solutions, such as collaborative robots (cobots) or Autonomous Guided Vehicles (AGV) has enabled a breakthrough in the automation of assembly. In 2017, digital transformation entered a phase of massive deployment. At the end of 2018, more than a thousand AGV and cobots were installed on Faurecia production sites. The connection of the means of production to clouds makes it possible to analyze many parameters in real time, to prevent the occurrence of certain failures and to avoid the production of non-compliant parts. Today, over a hundred factories have digital dashboards sharing information in real-time. Thus, the reaction of operational teams is immediate in case of shutdowns of the production chain.

Artificial intelligence: The introduction of artificial intelligence for visual inspection of parts improves the quality and reduces the variability of the processes.

Digital Pull Production: The digitization of the manufacturing system takes a new step with the launch of digital pull system (automatic signal with e-Kanban) which will strengthen operational performance and answer to the challenge of productivity and operational excellence.

University of Bordeaux had a project with Faurécia Caligny to support the Digital Pull System deployment. That was an innovative concept to digitize the physical kanban cards. At Faurécia, production lines are organised and managed by Lean principles (FES). The interest of this project was to optimize the internal components flows thanks to a digital system for triggering the supply of missing components in production lines. Traditionally,



operators use kanban cards. The operators place the kanbans with the references they need at the edge of the circulation aisles. Thus, the train driver recovers them during his loop and delivers the parts during his next supply cycle. A desire to use digital kanban aims to reduce the loops, reduce paths of kanban cards and increase the rate of replenishment at the edge of the line in just in time.

A digital system using NFC technology has been developed, with the final objective of reducing supply interruptions on lines while optimizing the load and the circuit of the train transporting components. This train is equipped with a digital tablet and operates by a digital system with augmented kanban cards. The implementation of digital management tools, combined with "Big Data" for even more in-depth control of manufacturing processes, opens up new perspectives in terms of optimizing production lines.

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