



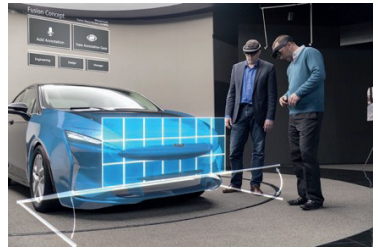
Pilot Demonstrator

XMANAI
MAKING AI UNDERSTANDABLE

Ford Motor Company is a global automotive and mobility company. The Company's business includes designing, manufacturing, marketing, and servicing a full line of Ford cars, trucks, and sport utility vehicles. XMANAI is focused on the Valencia Engine Plant (Ford Spain) that has an average annual production of 324K engines that are shipped worldwide. In addition to engines, Ford Spain also ships mechanized engine components like Cylinder Blocks, Cylinder Heads, Crankshafts, and Camshafts (600K sets/year) to the Cleveland engine assembly plant in the USA.

Supporting Partner

tyris.ai
Vision & Analytics



Problem Addressed: The Valencia Engine plant is working with weekly batches, managed manually using the expertise of MP&L (Material Planning & Logistics) and production staff. The assembly line is currently manufacturing 25 different types and several components such as the engine crankcase, fuel pump, oil pump, clutch. This is introducing a wide variability in the production and leaving performance of the entire plant dependent on the correct planning of the batches and the "MIX" that the planning engineer schedules based on customer demand and his experience. Furthermore, line production depends on the shift foreman's decision to minimize planned stoppages and failures during the shift.

Pilot Objectives

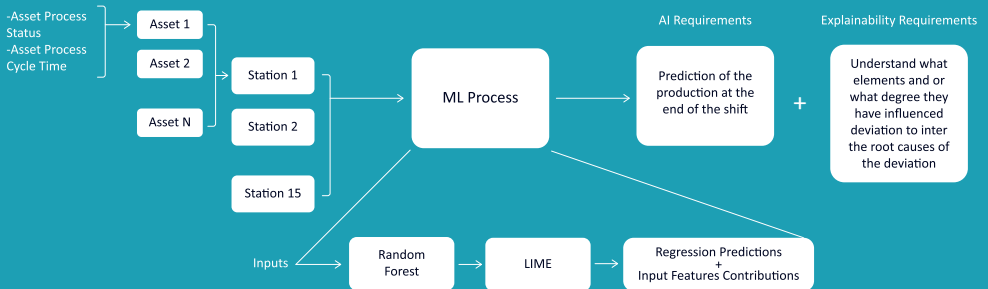
Achieve better plant performance, improving line availability and efficiency

Reduce study time to predict what will happen in the upcoming shifts and understand the reasons behind these occurrences

Inclusion of an Explainable AI system with capabilities to help operators and engineers choose the best decision at any given moment (e.g. size, mix, and schedule of batches)

Implemented Use Cases (UC)

1) **Holistic Overview of the Production**, which seeks to obtain a representation in real time of the production line status, receive unwanted situations alerts, and enable the possibility of testing workload simulations.



2) **Automated Production Planning**, to recommend which batches should be made on which lines considering the production plan, customer plant demand, available components, and current production status of the different lines.

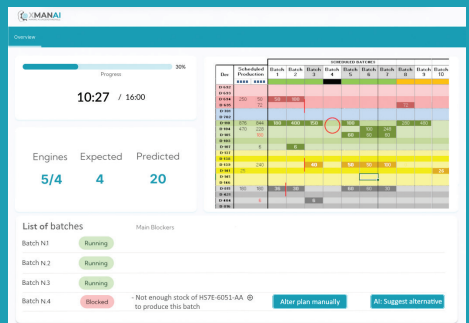
XMANAI Added Value

UC 1 - XAI to overview the production

Understand what is the reason for not achieving the production targets?
 What is the factor with the greatest impact?
 Do any noticeable trends or patterns exist?
 Potential impact of what-if scenarios?

UC 2: XAI to production planning

Nowadays, there is substantial dependence on the expertise of engineers.
 What constraints must be considered for an optimal production plan?
 Why is this the best manufacturing plan?



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