

# Sequential Supply of Parts by Leveraging IT System

By Tata Motors | Category: Implemented Innovations

In alignment with the organization's vision to be among the top 3 global brands, the team focused on productivity & quality improvement. Part supply process was identified as the key area to be worked upon. Leveraging Information Technology, production sequence of variants is communicated to Suppliers in advance and a Pick-to-Light system is employed to eliminate human error in manual selection of parts. Now, the correct parts are supplied directly at the point of use for efficiently manufacturing a defect free product. Through these initiatives, the team accomplished targets in the journey towards Manufacturing Excellence & Industry 4.0.



## The Context

Being a multiple variant production line, the number of parts needed to be handled is very high. This results in high inventory, manual selection of parts and waste of motion, ultimately leading to high complexity of automobile manufacturing.

20 high impact projects were accordingly identified. The key areas of focus were productivity and quality improvement. Part supply process was essential to improve the key focus areas.



Impact of the Innovation  
 revenue impact  
 ₹101.6 mn



## Overcoming Challenges

### Challenge #1

Implementing changes within a very tight time-frame without disrupting the quality and productivity requirements during the transition phase.

### Challenge #2

Kitting trolleys had to be designed which were optimized in size to handle these bins as well as other bulky parts. An exhaustive model matrix of more than 200 models had to be prepared to program the Pick-to-Light Software.



## The Innovation

Sequential supply is an IT-enabled solution for manufacturing lines. Two hours prior to body shell dropping on assembly line, every individual body shell is assigned a unique Assembly Sequence Number (ASN). This ASN is broadcasted to kitting zones and internal & external suppliers who supply the required parts to the assembly line sequentially.

Kitting areas employ Pick-to-Light System that was installed and programmed in-house for preparing trolleys filled with parts corresponding to the multiple variants that are made on the same line. Pick-to-Light system is integrated with the material storage racks. More than 600 types of parts are stored to cater to over 200 vehicle configurations assembled in assembly shop.

The Pick-to-Light system is programmed based on a model-matrix that calls for specific parts corresponding to the particular model. When the barcode corresponding to ASN is scanned, the lights corresponding to the required parts start flashing along with a display of quantity required.

The kitting trolleys are then attached to the corresponding body shell on the conveyor by identifying the ASN. This technique provides all the required parts at the very point of use, thereby eliminating the need to keep all different parts adjacent to the work-station. Also, at the end of zone, if some part is still present in the kitting trolley, the Line keeper is alerted that the fitment of that part has been skipped by the Operator and an alarm is raised. Hence, the defect does not leave that zone.

Further, large sub-assemblies are also made corresponding to the ASN which helps in supplying the correct part to the main line the first time around. This automation in part selection ensures that model-wise correct parts are supplied every time. Additionally, a closed-loop system was developed that recognizes the model of body shell at any stage on the assembly line to which the fitted parts are scanned.