

Simulation Study to Validate the EMS Loop & Gantry System for a Tyre Manufacturer - Case Study

Summary

One of India's leading tyre manufacturers expanded its existing facility to double its production rate. New EMS (Electro Monorail System) loops, ASRS (Automated Storage & Retrieval System) facility, conveyor systems and gantry cranes were set up to streamline flow and automate handling of tyres.

Aims/Objectives

- To validate the new EMS loops, ASRS facility, conveyor systems, Gantry to achieve the required throughput
- Identify the Bottleneck in the system
- Provide recommendations to alleviate the same

Client's Challenge

- Identify capacity of existing system
- Find out reasons for production loss
- Investigate excessive inventory build-up
- Define optimal strategies for efficient operation

PMI's Approach.

We carried out static analysis, 2D and 3D simulation to study in detail:

- EMS Loop with loading and unloading stations along with operating logics
- ASRS, inlet and exit stations with 7000 tyre capacity
- Gantry system of 1500 sq. meters area and 6000 tyre capacity

Finding & Recommendations

Unloading stations of EMS Loop was the bottleneck

- *Using additional station improved the performance*

Operating pattern of EMS carriers was blocking the tyre supply from building machines

- *Using 2 tyres per EMS carrier improved the capacity by 25% and halved the carrier requirement*

ASRS handling partial loads due to unavailability of two back-to-back tyres of same type

- *Ensuring that no order is left unattended at unloading station ensured the partial loads can be processed without affecting ASRS performance*

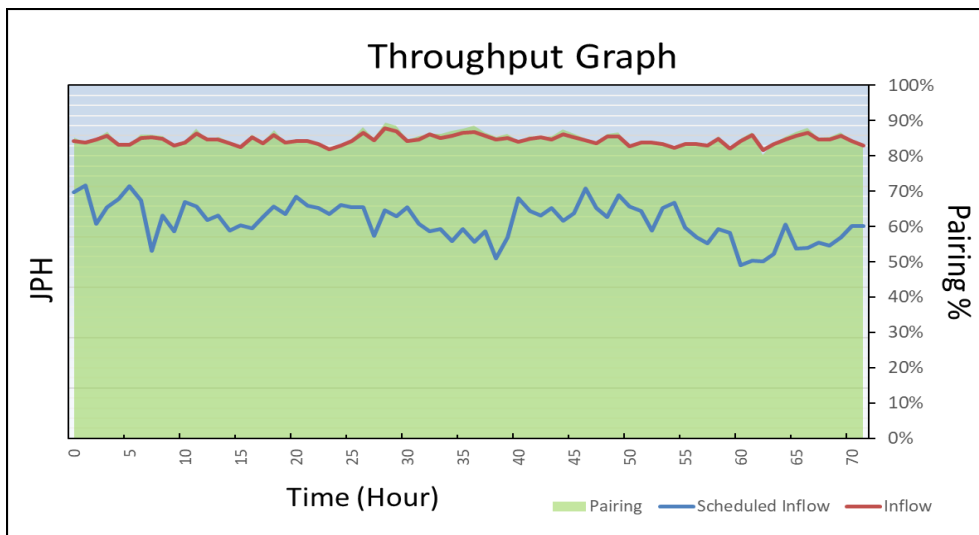
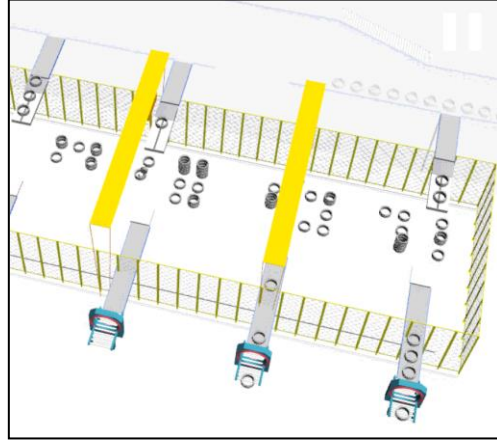
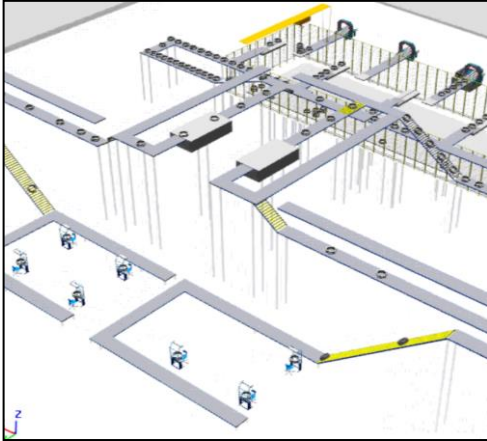
Inspection station and conveyor flaps led to mixing of tyres causing gantry to wait for back-to-back tyres of same type

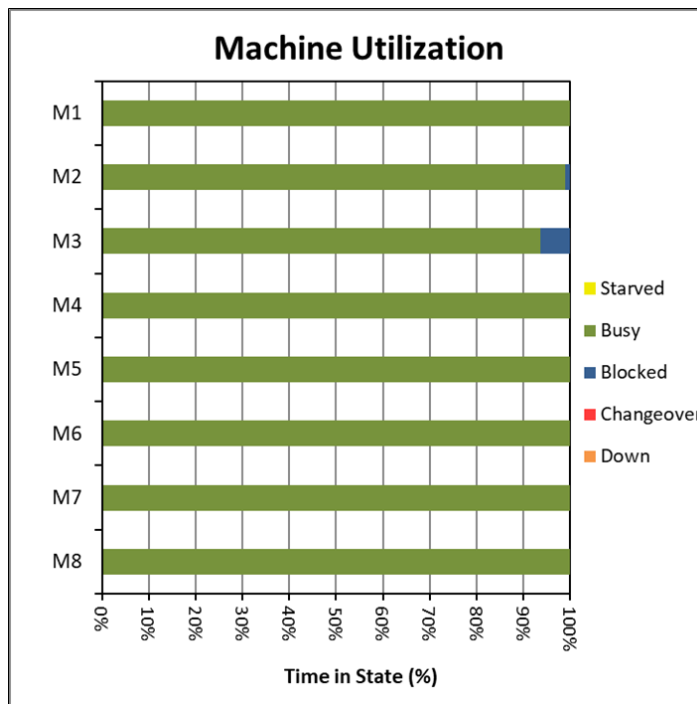
- *Optimized working of conveyor flaps and proposed new buffer near inspection to send out similar tyres together*

Supporting Videos and Images -



Media1.mp4





Contact Details

Name of Organisation	Production Modeling India, Nagpur
Contact Name	Gopal Sharma
Email Address	gsharma@pmcorp.com
Links	www.pmicorp.in