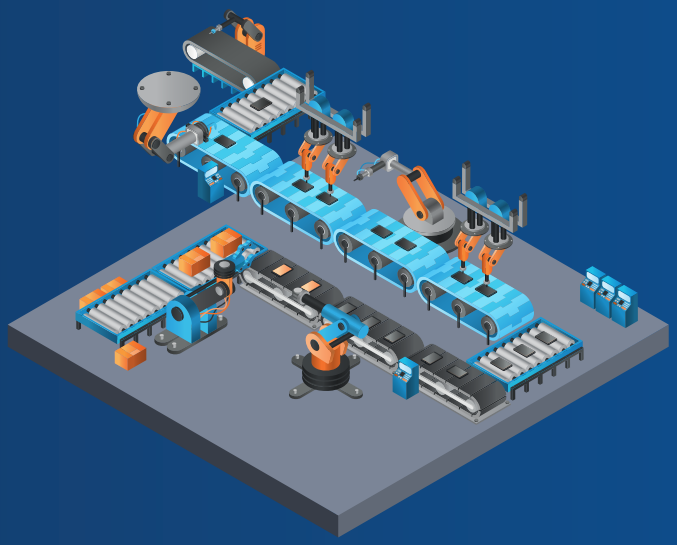

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TECHNOLOGIES

[PRODUCTION PLANNING USE CASE - KEEPING PROMISES]

PROBLEM WITH ON-TIME DELIVERY

A global manufacturer, with a strong brand and reputation for producing quality high-value products, started losing market share. The operations teams quickly discovered that customers were leaving because they could no longer depend on the timely delivery of the manufactured goods. The delivery date provided by the manufacturer was often inaccurate by as many as several weeks.

Operations performed an audit to investigate why the order fulfillment rate was so low and discovered that there were a several significant challenges:

International Footprint with Many Geographically Distributed Manufacturing Facilities

The manufacturer had dozens of different manufacturing facilities spread throughout the world. This made order selection and allocation, or simply figuring out which products to make, when, and in which facility, very challenging.

Complex Order Allocation Rules and Constraints

Many allocation rules or constraints had to be taken into consideration, not only for each facility but in aggregate. Such constraints within the factory include:

- Existing sales commitments & priorities
- Supplier production limits per period, per manufacturing location
- Production capacity per period, per plant
- Proximity to end-users and other transportation logistics considerations
- Substitution rules if case allocation limits were maxed out

The current planning system was unable to take all of these constraints into account and approximations had to be made. The outputs produced sub optimal plans.

The Planning Process Took Too Long

Considering all the allocation rules or constraints, assigning the orders to the various manufacturing facilities was a very time intensive process for the planning team. Each week 26 models were each subject to 3 hours of planning effort. In total, it took 78 hours every week to plan production and this left no time for the frequent re-planning that was required.

The market demands and dynamics, like order priorities and logistics changes, would fluctuate daily. Unfortunately, the planning team could not adjust the production plan in a reasonable amount of time to keep up. The result was an outdated plan that no longer reflected reality and the broadcast of inaccurate delivery dates to customers.

Production Inefficiency & Unallocated Orders

The legacy planning & scheduling (APS) system was also not able to consider all the allocation rules and constraints. The result was a reduction in cost efficiency. One manifestation of this problem took the form of unallocated orders. A significant number of orders could not be allocated to facilities because the plans were not fully utilizing the factories' production and supplier capacities while taking logistic preferences into consideration.

For example, the supplier limits showed that enough materials were available to build all the orders in the desired time frame. However, due to suboptimal allocation, these materials could not be utilized effectively, and orders remained unscheduled. The result was committed orders not being delivered while using unnecessarily substituted orders without confirmed demand.

MODERN CONSTRAINT BASED, OPTIMIZATION DRIVEN PLANNING SOLUTION

The operations team realized they needed a next generation planning system that would allow their planners to:

Fully model the complex manufacturing ecosystem with geographically distributed production facilities

Easily adjust allocation constraints through configuration, allowing users to test new rules without custom coding

Apply modern optimization techniques to produce plans that guaranteed the best possible allocation

Generate outputs quickly and respond to changing market conditions by replanning on demand.

What-If Analysis

The run speed of the modern APS system would need to be fast so that users could adjust allocation rules and run what-if scenarios. This would allow them to test their assumptions rapidly and iteratively.

They would also need KPI visualization tools to help them compare the quality of the scenarios and understand the consequences of their decisions.

Finally, it would be beneficial if the system had built-in algorithmic assistance to help guide the users when making quick, last minute order moves before testing the new scenarios.

ABOUT EYELIT TECHNOLOGIES

Eyelit Technologies is the parent company for Eyelit, MESTEC, and Optessa who are leaders in Manufacturing Execution (MES), Advanced Planning and Scheduling (APS), Manufacturing Operations (MOM), Quality Management (QMS) and Factory Automation solutions. The Company is headquartered in Holmdel, New Jersey; with additional offices located worldwide.

Eyelit Technologies has delivered unmatched results for a global customer base in the manufacturing industry using cutting edge technology and advancements in AI, ML, and optimization.

Learn more: https://www.eyelit.com

Proof of Concept Results - Modern APS vs. Legacy Planning System

The manufacturer initiated a proof of concept to determine if a modern planning and scheduling system could help them solve these challenges. The same order set and production rules were run through the legacy system and the Eyelit Technologies' APS software (APS). When the plans were compared, the outputs generated by the APS system were estimated to significantly increase the order fulfillment rates.

Managing Complexity Allows Manufacturer to Reduce Number of Unscheduled Sales Orders by 300%

One of the challenges had been the complexity associated with the large numbers of geographically distributed factories and the large number of allocation rules. The superior solver powered by patented optimization algorithms was able to process all the order allocation possibilities and generate the best combination. As a result, the plan generated by the modern planning & scheduling system was estimated to reduce the number of unscheduled sales orders by 300%!

Fast(er) Planning and On Demand Replanning

The second key objective was to improve agility, by allowing the manufacturer to react to changes in their supply chain quickly. The legacy system could only generate a plan once a week because it took so long to run.

The automated, next generation planning system, EyelitTechnologies' APS, reduced the planning time by 95%! This allowed the system to be run on-demand to cope with changes in demand, order priority, allocation limits and production capacities daily. The ability to respond to changing production conditions with the APS allowed planners to keep the planned output current, while giving sales the flexibility and confidence at time of changes.

The significant increase in order fulfillment rates, driven by the ability to manage order allocation complexity and react quickly to changes with on-demand replanning, made the proof of concept a success. The plans created by the APS system would allow the manufacturer to improve the retention of customers and reduce logistics related costs by allocating orders with superior accuracy.