MEETING STRINGENT CONSTRAINTS WHILE INCREASING PAINT BATCHES & MANAGING TWO-TONE SEQUENCES

eyelit TECHNOLOGIES

KEY TAKEAWAYS:

- **Increased Paint Batch Sizes:** Using Optessa APS, a VFL (Virtual Flow Line) sequencing solution was implemented for the client, which led to a significant increase in paint batch sizes, from an average of 3 to 6 and sometimes up to 10 vehicles per batch.
- **Enhanced Two-Tone Sequence Management:** The solution successfully addressed the challenge of managing two-tone sequences while meeting stringent constraints in the trim shop, notably improving operational efficiency.
- **Improved Quality and Cost Savings:** By optimizing the sequencing process and meeting critical constraints in the primary zone, the overall quality of the body shop operations was notably enhanced. Additionally, cost savings were achieved through reduced paint purging expenses and increased efficiency in paint batch utilization for the client.

PROBLEM:

The client faced several challenges related to their group performance, extended supply chain, and the development of new business ventures. Specifically, they encountered complexity in their manufacturing processes, especially in plants with multiple cross flows aimed at ensuring flexibility and minimizing stock levels. These complexities included managing sequences across various production areas such as body, paint, and trim, each with its own set of production rules.

Additionally, the introduction of Virtual Flow Line (VFL) systems posed challenges due to complex topologies with merge and divide points, extended lead times (ELT) for quality checks and additional processing, and the need to model buffers for local optimization without impacting sequence quality in other areas. Other complexities included managing partial routes, multiple passes through an area, and increasing demand for two-tone vehicles across multiple plants. Furthermore, the sequencing process needed to accommodate additional lead times for second passes in the paint shop and provide specific consideration for vehicles with extra lead time due to re-entrant flows. The client also required the flexibility to prioritize ELT constraints as needed. Despite the assembly zone being the main reference point, special vehicles that bypassed this zone still needed to be considered in the overall sequencing calculation. Additionally, various project vehicles, exchanges, after-sales activities, SKD operations, end-of-production processes, and quality control measures further compounded the complexity of the customer's challenges.

SOLUTION:

The solution implemented for the client involved the deployment of a **Virtual Flow Line (VFL)** sequencing system, which led to a significant increase in paint batch sizes, raising them from an average of 3 to 6 vehicles per batch, and sometimes even up to 10. This optimization was instrumental in meeting critical constraints within the primary zone and resulted in a notable enhancement of the overall quality of the body shop operations.

The implementation process followed a structured approach consisting of seven chronological steps, beginning with Carnet import and concluding with the export of the newly calculated sequence for the 8th calendar day for firm confirmation.
A user-friendly interface was developed and deployed in four structured steps, complemented by effective training to ensure smooth adoption and utilization of the new system.

RESULT:

The results of the project were significant and multifaceted. Firstly, the project's funding by the pilot site was achieved through cost reductions in paint purging expenses, made possible by the increase in paint batch sizes from an average of 3 to 6 vehicles per batch. This financial benefit contributed to the overall success of the project.

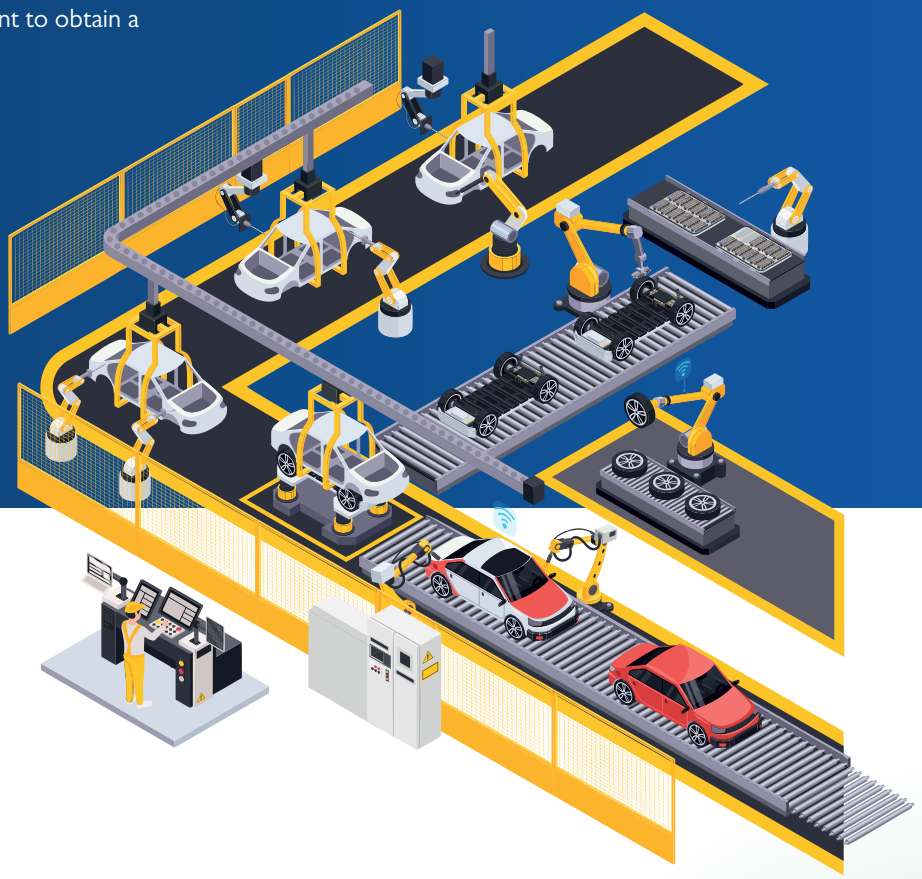
Furthermore, measures were taken to ensure maximum compliance with the sequencing requirements. Reconstruction buffers were initially limited during the start of new vehicle production and gradually increased over time to stabilize batch sizes.

The utilization of the solution enabled the client to obtain a highly optimized sequence, with the flexibility to recalculate multiple times from previous results as needed.

Finally, the project upheld **five key commitments:**

1. Strong project closure
2. Smart people
3. Careful risk management
4. Smart planning
5. Open communication

These commitments ensured the success of the project and its alignment with the client's objectives and expectations.



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.