TAAL TECH
Accelerate Your Success

# CONVEYOR IN AUTOMATED ASSEMBLY LINE

## About Our Client

Our client is a significant player in the field of custom automation equipment and robotic systems, with operations based in North America. The client specializes in designing and manufacturing automation equipment that is tailored to the specific needs of customers in the Automotive, Aerospace, Construction, Consumer Products, Food Processing, Furniture, Medical and Pharmaceutical industries.

## Scope / Challenge

The project scope encompassed the design and development of a conveyor system, specifically tailored to transfer an engine pallet in an automated assembly line. The system was expected to be able to transport the pallet seamlessly without the need for human intervention. This required a thorough analysis of the transportation needs, which were then translated into technical specifications and functional requirements.

In addition, the project involved creating a comprehensive library of standard parts. This had to be done to ensure that the design team had access to commonly used parts and components, reducing the design cycle time and minimizing the need to create custom components from scratch. The library also facilitated the standardization of design, leading to the efficient use of resources.

# Solution

The TAAL Tech team operating offshore undertook an extensive review of the project's PDF Layout Drawing, AutoCAD drawing, Design Standards & References. The team critically analyzed the available data and generated multiple concepts while carrying out a thorough due diligence process on all the proposed alternatives using Inventor.

The team conducted a concept design study to explore various approaches and solutions that met the project's functional requirements. Furthermore, the team used Finite Element Analysis (FEA) to perform a comprehensive analysis of the proposed concepts and selected the optimal design.

The detailed design phase involved the selection of standard parts and components, which were meticulously chosen to ensure that the design was efficient, cost-effective, and met industry standards. The team also created manufacturing and assembly drawings that specified the dimensions, tolerances, and material specifications of individual components. These drawings were generated using Inventor, a powerful 3D CAD software.

The conveyor design was subjected to rigorous analysis for manufacturability and standardization. This was done to ensure that the design was not only practical but also cost-effective and could be manufactured within the specified time frame. The analysis involved consideration of the manufacturing process, materials used, and tolerances to ensure that the design could be produced with precision and consistency.

Throughout the design and development process, there was constant communication between the onsite engineer and the offshore team. The onsite engineer provided critical feedback, clarifications, and requirements, which were integrated into the design to ensure that it aligned with the project's scope and objectives.

Finally, the offshore team created a comprehensive Bill of Materials (BOM) detailing all the necessary components and materials required to manufacture the conveyor system. This BOM was created in line with the project's design standards and customer specifications, ensuring that the production process was streamlined and efficient.

## Results Delivered

The project underwent a thorough validation process for all mechanical, electrical, pneumatic, and control systems to ensure that all components were functional and working optimally. This validation process was critical to the overall success of the project as it ensured that the final product was reliable and met all design requirements.

TAAL Tech also ensured the successful completion of a comprehensive optimization process, which involved fine-tuning the design for strength, cycle time, ease of assembly, and cost of manufacturing. By optimizing the design for these critical factors, the team was able to create a solution that was both efficient and cost-effective. This optimization process allowed the team to identify and address potential design flaws early on, reducing the risk of errors and minimizing the need for costly redesigns.

Furthermore, the design team implemented a unique sheet bending technique for Titanium sheets. This technique was proven to be effective in achieving the desired bending angles and reducing the risk of sheet cracking or failure during the manufacturing process. The team's expertise and innovation in implementing this technique contributed significantly to the overall success of the project.

## About TAAL Tech

TAAL Tech is a niche Engineering and Technology solutions provider serving global corporations in their pursuit for faster innovation. Our vision is to be a leader in providing innovative, high value engineering & technology services to global corporations. Meet our team and learn more about us.