



SELECT CASE STUDIES

General Dynamics - Scranton, PA



Summary

- ✓ GD required a capacity uplift of their current product and a fully staffed, experienced launch team that could work effectively under a compressed timeline.

Scope

- ✓ Full layout development, automation design, throughput analysis, equipment vendor management and buy-off as well as the introduction of modernization and advanced technology

Success

- ✓ Program currently in process and on schedule for start of production in Q4 2025.

General Dynamics - Mesquite, TX



Summary

- ✓ Mesquite required manufacturing SME support to launch new equipment that had been installed for production of their M795 product. They requested a team of experts to quickly assemble onsite to get the equipment running at rate and producing quality products.

Scope

- ✓ Co-developed by GD and TPT, which included added safety equipment and controls, bottleneck analysis and resolution, optimizing machine cycle times and improving overall throughput to meet production requirements. In addition, quality optimization was key to ensure that First Article Testing could be successfully achieved.

Success

- ✓ Project is currently ongoing and is meeting project milestones.

General Dynamics OTS



Summary

- ✓ Double throughput for 155mm artillery shell production

Maintain operations inside a constrained WWII-era facility

Address limited floor area, long material and WIP travel paths, and process conflicts

Scope

- ✓ Developed multiple layout concepts for equipment, material flow, WIP, personnel travel, forklift routes, staging, maintenance access, and inspection points

Evaluated concepts against travel reduction, backtracking elimination, operator access, safety, and phased implementation

Shifted quality checks upstream and automated inspection where practical

Success

- ✓ Delivered a practical, decision-ready layout strategy to increase output with minimal disruption

Identified bottlenecks and optimized equipment placement, material handling, operator movement, and quality verification

Demonstrates direct relevance to Capability 2: optimizing workflows in constrained legacy facilities while supporting throughput growth

L3Harris: Aerojet - Camden



Summary

✓ An internal review indicates the following short-term improvements would be beneficial:

- Line balancing
- Developing standard work
- SQDIP
- 5S
- Rapid response / quality clinics
- Visual factory and ANDON
- Leader standard work

Scope

- ✓
1. Increase production system performance by removing existing constraints and bottle necks from the current system.
 2. Measure current workstation utilization and ramp it up to meet the demand of 32 a day.
 3. Increase production flow by studying current flow and adjusting to meet the new demand.
 4. Measure production performance at the workstation level – Track down time.
 5. Workstation Readiness, Identify gaps in 5S standards, visual factory and needed facility upgrades.
 6. Map out a Building-to-Building schedule.
 7. Establish clear communication channels.

Success

- ✓ These improvements cut 57 minutes out of the Production system

All GMLRS Production is now segregated and in a one direction of flow

971 feet less production movement per cart of 4 then previous state, 7768 less feet of travel when running at 32 a day, TPT monitored New layout for over 3 weeks to ensure process is sustainable

L3Harris - Malabar



Summary

- ✔ Material flow process to reduce time and steps by creating a current and future state map

Scope

- ✔ The team goes through the facility and evaluates current state cycle times; TPT then collects the Current state flow in AutoCAD. As a team, we adjust everything for a more efficient Flow which cuts down on cycle time.

Success

- ✔ With the Layout change we cut 6.87 hours a day out of there Production Day
- Future state proposal will save 38,358 walk steps per day which equates to a savings of 412 minutes a day/6.87 hours a day

AM General



Summary

- ✓ AM General launched a new U.S. Army and Marine Corps vehicle program requiring over 4,000 Level 3 & 4 PPAPs across 400+ suppliers, all subject to U.S. Government review. The Productivity Team (TPT) was engaged to lead supplier PPAP execution, ensure compliance with AIAG 4th Edition standards, and provide audit, training, and program management support.

Scope

- ✓ Led 400+ suppliers in PPAP compliance and on-time submission.
- ✓ Reviewed all 18 PPAP elements for accuracy and compliance.
- ✓ Managed PPAPs for both vehicle and trailer units, covering CFAT, Non-CFAT, COTS, kits, and sub-components.
- ✓ Audited and corrected 2,500+ previously completed PPAPs.
- ✓ Oversaw the QMS portal transition, migrating data and onboarding suppliers.
- ✓ Provided supplier training (PfMEA, Control Plans, GR&R, MSA, portal use).
- ✓ Deployed on-site SQEs for escalation and constraint resolution.
- ✓ Delivered detailed progress reporting, performance tracking, and launch readiness support.

Success

- ✓ Completed 4,000+ PPAPs in compliance with AIAG and U.S. Government standards.
- ✓ Corrected 2,500 prior PPAPs to ensure audit readiness.
- ✓ Achieved high First-Time Quality through layered audits and supplier development.
- ✓ Successfully transitioned all PPAP activity to a new QMS portal without disruption.
- ✓ Strengthened supplier performance through training and direct support.
- ✓ Ensured on-time vehicle and trailer launch readiness.

General Motors



Summary

- ✓ TPT was awarded a strategic partnership contract with GM in 2016. We are GM's single source engineering partner to support direct and indirect Industrial Engineering requirements for all GM facilities throughout North America
- ✓ TPT also provides support to GM for rerates, line balancing, materials optimization and process/productivity initiatives at virtually every GM North America facility

Scope

- ✓ Vehicle processing and scroll development
- ✓ Vehicle rerates and line balancing support
- ✓ Material flow, kitting, and Kanban planning/implementation
- ✓ Process and productivity improvement initiatives
- ✓ Fork truck utilization and optimization studies
- ✓ Process validation and process documentation development

Success

- ✓ TPT is currently supporting all of GM's program launches throughout North America



Summary

- ✓ Chrysler had decided to re-launch the Dodge Viper in the Conner Avenue Assembly Plant and engaged TPT to review station human factors including documentation of assembly flow and MODAPTS for the pilot run of the 2013 Dodge Viper
- ✓ TPT also developed and implemented improvements for ergonomics, improved material flow and direct labor savings

Scope

- ✓ Review current work instructions and prepare MODAPTS analysis of all work being performed in chassis build-up and final assembly
- ✓ Review station layout and make suggestions to improve flow and decrease waste
- ✓ Make suggestions to increase production repeatability of good quality

Success

- ✓ Completed MODAPTS analysis of all work stations, implemented over 20 assembly change suggestions for a net savings of 7% in direct labor



Summary

- ✓ TPT is the preferred supplier for Manufacturing and Quality Engineering support
- ✓ TPT is engaged with Ford Motor Company on multiple process optimization and cost reduction projects around the world
- ✓ TPT provides Quality Engineers to both assembly plant and Tier I suppliers to reduce R's per 1000

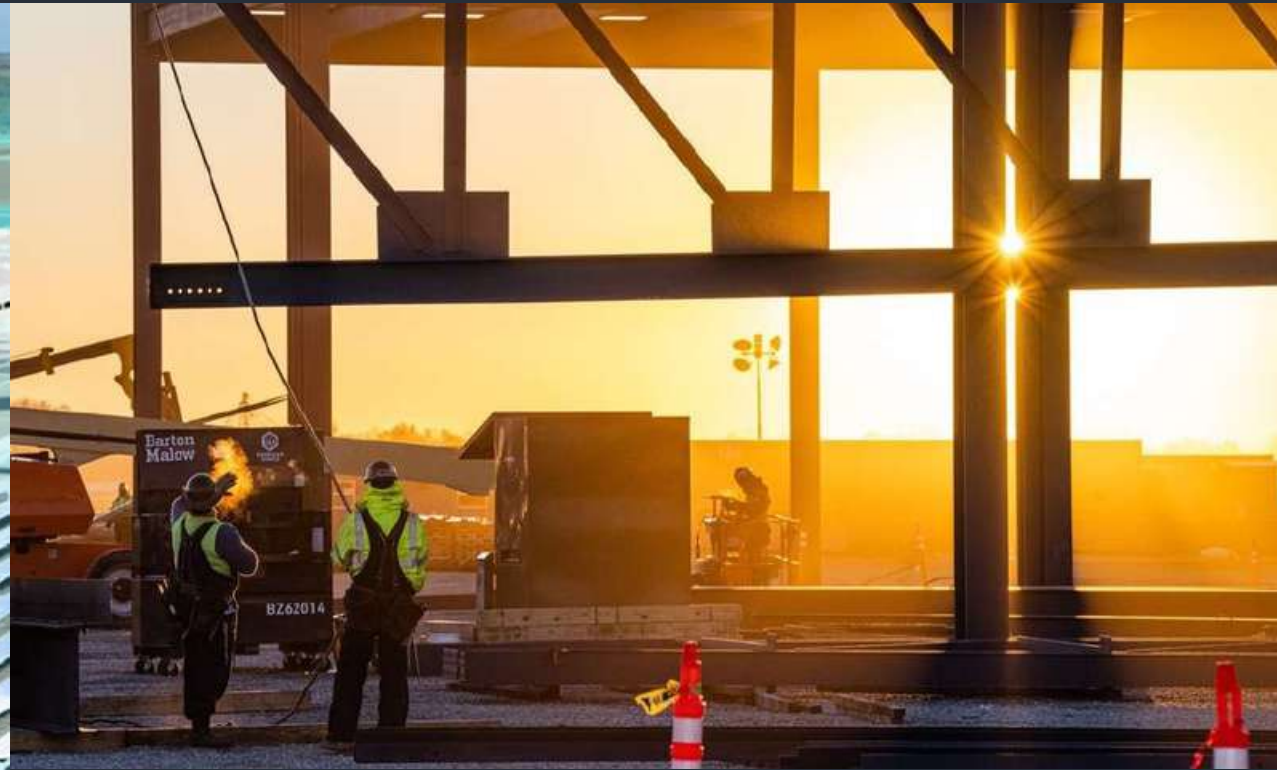
Scope

- ✓ Join the launch team 16 months before Job #1 and fully engage
- ✓ Create new man assignments and supporting documentation
- ✓ Create "From/To" reports to document work allocation changes
- ✓ Create/Revise work standard MODAPTS studies for the Assembly Plant
- ✓ Develop work station 1-A CAD drawings for all facility rearrangements
- ✓ Implement the new work assignments and ensure support of line rat

Success

- ✓ Over \$200,000,000 in documented cost reductions through line balancing activities

Ford Blue Oval SK



Summary

- ✓ Ford Motor Company's Blue Oval SK is a joint venture between the Ford Motor Company and SK Battery of South Korea.
 - This joint venture is Ford's first venture into Electric Vehicle Battery manufacturing.

Scope

- ✓ Early in this venture Ford reached out to TPT to provide Industrial Engineering expertise with the requirement of providing optimization to the initial labor status.
 - TPT assigned 3 Industrial Engineers and a Senior Project Manager to work with Ford's BOSK Manufacturing team in the development of labor opportunities as well as overall process optimization.

Success

- ✓ TPT developed and implemented an SKBA (Georgia SK Battery Mfr. Site) plant floor labor and process optimization blitz.
 - TPT was instrumental in establishing the two-week team assessment where approximately 20 plus Ford/BOSK/SK Korea Engineers deployed to develop and validate labor optimization plans.
 - TPT's leadership in this endeavor has been highly praised by Ford and SK Mgr.
- ✓ TPT's 3 embedded Engineers have developed over 500 booked labor saves to date, and they have also been instrumental in the repositioning of an additional 500 labor save opportunities through the BOSK Labor PAT process.

Ford - Glendale



Summary

- ✓ The TPT team was responsible for overseeing the construction, installation, and commissioning of 1.3 million square feet of lithium battery production equipment and supporting utilities

Scope

- ✓ TPT' led a cross-functional team consisting of Ford Engineering, Plant Engineering, OEMs, and more than a dozen trade organizations, coordinating a workforce of over 1,200 skilled tradespeople.
- ✓ Directed on-site logistics and installation activities to ensure efficient project execution.
- ✓ Prepared daily leadership reports focused on schedule performance and key delivery milestones.

Success

- ✓ Delivered the successful installation, integration, and commissioning of lithium battery manufacturing equipment
- ✓ Coordinated complex construction and manufacturing activities across multiple organizations and trades while maintaining project schedules.
- ✓ Led large-scale field operations supporting more than 1,200 skilled tradespeople.
- ✓ Provided site leadership

Ford - Marshall



Summary

- ✓ TPT's team is responsible for commissioning the manufacturing equipment for Ford's Marshall site, which has a target production capacity of approximately 20 GWh annually, supporting battery supply for roughly 230,000 EVs per year.

Scope

- ✓ Commissioning focus is to automate manufacturing equipment operating in controlled clean-room and dry-room environments.
- ✓ Key equipment being commissioned includes:
 - Electrode slurry mixing, coating, drying, calendaring, and slitting systems
 - Prismatic cell stacking/assembly, laser welding, casing, and electrolyte filling equipment
 - Formation, aging, electrical testing, leak testing, and quality inspection systems
 - Robotic module/pack assembly lines, including cooling, busbar, enclosure, and final pack integration processes

Success

- ✓ TPT is currently in commissioning activities and has several key staff onsite, including:
 - 5 Agile Build Engineers
 - 2 Logistics SME
 - 3 Special Kitting Support Experts
 - 2 MPL SME's
- ✓ Currently meeting or exceeding schedule and budget requirements

Sub-Zero



Summary

- ✔ Plan material flow and layout for a new assembly facility in Cedar Rapids, IA, and a new warehouse in Wisconsin
- Maximize use of available footprint and vertical space
- Improve material movement efficiency while minimizing labor and maintaining safety

Scope

- ✔ Evaluated BOMs and developed PFEPs to support facility planning
- Created layout concepts for dock locations, racking, offices, and automation
- Analyzed rack densities, take rates, and material paths using spaghetti diagrams
- Compared material movement methods such as fork trucks and tuggers

Success

- ✔ Developed efficient facility layouts and material flow strategies
- Reduced labor requirements while supporting safer logistics operations
- Established new material handling and logistics engineering standards and specifications



Summary

- ✓ Our Project Director, is imbedded with Lucid Leadership to optimize quality and throughput

Scope

- ✓ TPT has put senior level resources in place to help drive throughput and quality over the past 6 months including:
 - Controls Engineers
 - SQE's
 - Industrial Engineers
 - Supervisors
 - Project Managers/Directors
- ✓ Manage a team of 10 IE's working on identifying and eliminating bottlenecks in general assembly. We also have two employees supervising and managing EOL throughput on both shifts.

Success

- ✓ We've become integral to Lucid's operations and have been their single source supplier for skilled engineering and operations resources.

Pierce



Summary

- ✓ Industrial and Manufacturing Engineering Support to support vehicle launches in 2012

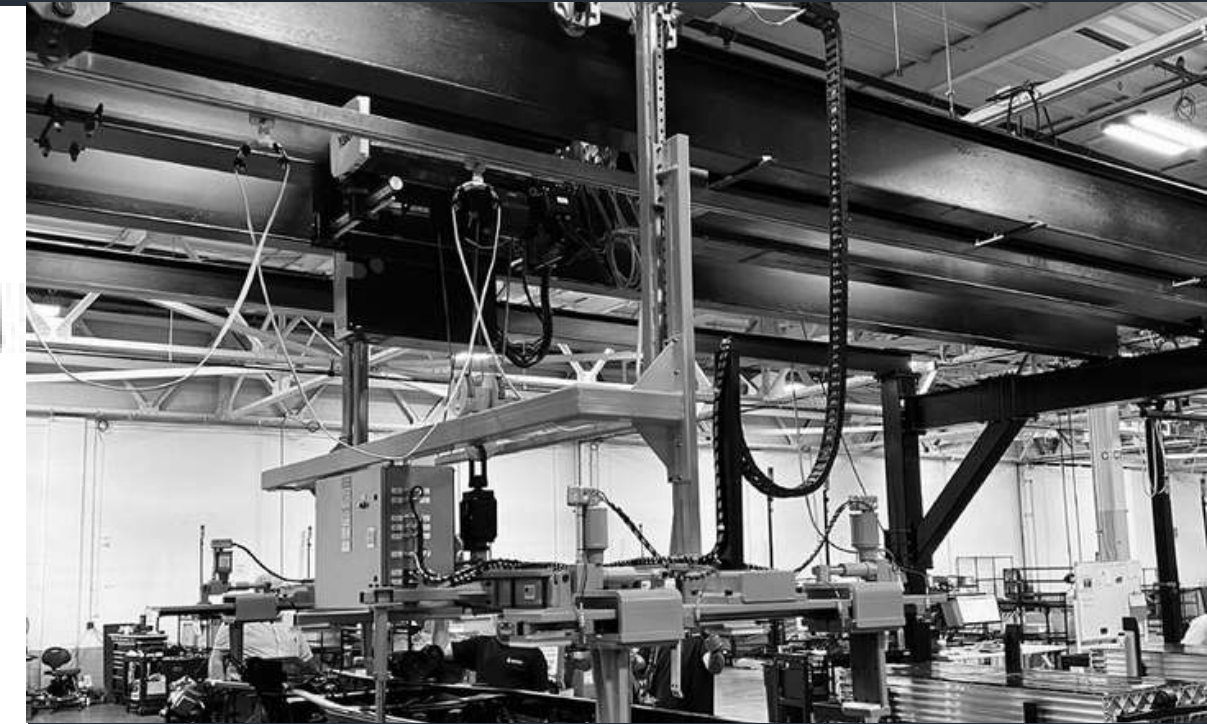
Scope

- ✓ Development of business case for pump consolidation
- ✓ Project management and mentoring
- ✓ BOM collection and analysis for the Ambulance & Fire Truck
- ✓ Fabrication Assembly required pull system - PFEP (Plan For Every Part)
- ✓ Station Readiness evaluation
- ✓ Paint Throughput and Flow improvement
- ✓ Labor staffing requirements

Success

- ✓ Successful completion of all deliverables within the 12 week project period

Bollinger Motors



Summary

- ✓ Started in 2014, Bollinger Motors is a US-based company headquartered in New York State. Revolutionizing truck and SUV design by creating the B1 - the world's first all-electric, on-and-off-road sport utility truck (SUT).
- ✓ TPT was asked to provide vehicle program support, quality and manufacturing engineering support to analyze the current state and create a relationship with the engineering, supply base and vehicle assembly suppliers.
- ✓ By implementing resources, providing partners and staffing for engineering, manufacturing and supply chain resources, TPT will help set up Bollinger to a successful production launch.

Scope

- ✓ Participate as partner for Bollinger to go from prototype to production and program management and manage costs.
- ✓ Engage experienced engineering partners to take on and manage all the requirements of a Vehicle Development CAE program for a full electric truck.
- ✓ Support development of technical and performance specs of production vehicle, including benchmarking.
- ✓ Assess FMVSS and Compliance for multi county homologation requirements.
- ✓ Deliver a complete sub system to detailed part engineering plan for interior and exterior design support, BIW optimization, electrical design, battery pack design and DFEMA.
- ✓ Provide EBOM, testing, prototype, tooling, manufacturing plans.
- ✓ Engage Supply Chain sources to initiate, manage and lead sourcing of BOM.
- ✓ Review manufacturing assessment of PFEMA and DFM/DFA.

Success

- ✓ To go from conceptual CAD prototype package to a production release including BOM, Test Plan, Supply Chain, Manufacturing, etc
- ✓ Optimization and full FEA/DFM and simulation analysis to accelerate timing.
- ✓ Aggressive timing of 9 months from CAD to 100% engineering release for testing, prototypes and pre production.

BAE Systems



Summary

- ✓ Industrial Engineering Support
- ✓ Analyze current state and implement cost savings based on future state plan
- ✓ Develop, train and implement Production System

Scope

- ✓ Developed Lean Training Program (included all salaried and hourly personnel)
- ✓ Developed manpower reduction plan and reduced hourly direct labor from 232 heads to 95 equaling \$4.8 million in savings
- ✓ Went from 4 shifts to 2 shifts at 4 days/10 hours
- ✓ Developed new layout and material flow plans and reduced internalWIP by \$5 million
- ✓ Launched new automated paint system

Success

- ✓ Savings for the customer totaling over \$5,000,000

Orbital Sciences



Summary

- ✓ Orbital Sciences was selected as the US assembly partner for the Iridium 2 Satellite project
- ✓ This included an aggressive launch schedule which facilitated the need to go from a stall build environment producing one satellite every two-three months to the ability to produce four satellites in a single month
- ✓ TPT was asked to provide as assembly plan including plant floor layout, manning, station readiness and material flow concepts in order for Orbital to make this happen

Scope

- ✓ Work with manufacturing engineering to develop the required standard work for a new satellite build project
- ✓ Create concept floor layout to align with new standard work
- ✓ Create new man assignments and supporting documentation
- ✓ Create work standard MODAPTS studies based upon the man assignments and the floor layout
- ✓ Using the MODAPTS studies and the layout to create simulations for "proof of concept"

Success

- ✓ Through simulation and line balancing, TPT helped Orbital achieve the goal of producing 4 satellites per month within the same manufacturing footprint

Eclipse Aviation



Summary

- ✓ Eclipse Aviation, a start-up manufacturer of very light jets, had many critical supply chain issues which continually impacted productivity including parts shortages, traveled work, and non-conforming materials
- ✓ Eclipse's management realized that they were not capable of predicting supply chain capabilities and capacity with any degree of certainty and asked TPT to come in and set up the necessary, daily procedures to achieve proper material flow

Scope

- ✓ Set up detailed production schedule definition and communication of schedule to suppliers
- ✓ Perform supplier audits and set up a regular schedule
- ✓ Create supply chain portal including dashboard and scorecards
- ✓ Select (4) suppliers for red-to-green development
- ✓ Configuration management support for suppliers

Success

- ✓ Reduced line-down conditions from an average of over 4 per week to < 1 per week in a period of 3 months increasing production by > 40%

Diamond Aircraft



Summary

- ✓ This established, piston engine, aircraft manufacturer produces three different aircraft at the London, Ontario Facility
- ✓ They are a vertically integrate manufacturer with multiple sub-assembly areas to handle producing the carbon reinforced body, avionics, metal parts and painting

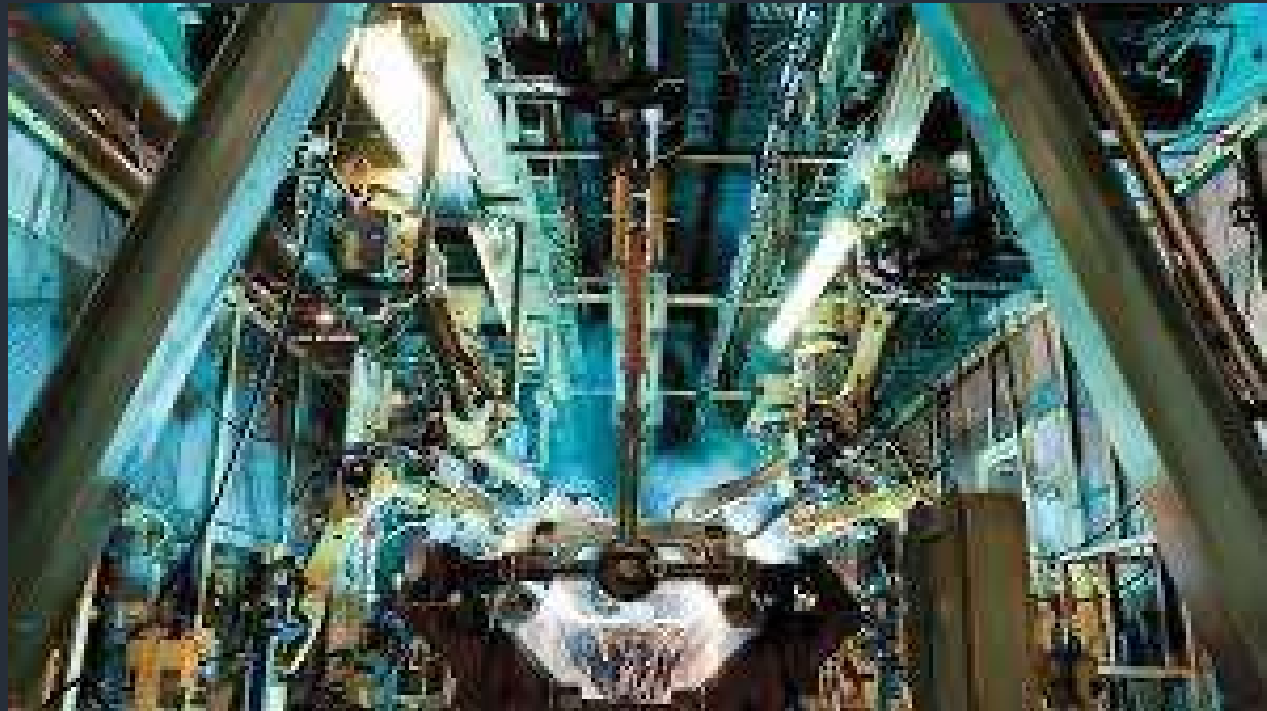
Scope

- ✓ Implementation of Quality Mapping
- ✓ Create proper quality gates
- ✓ Create look back mechanism
- ✓ Integration of Quality Mapping into existing processes
- ✓ Implementation of Microsoft Dynamics Warehouse and Logistics Management

Success

- ✓ Reduced WIP inventory by 28% in 5 months
- ✓ Reduced QR's > 25% in first 3 months

International Automotive Component



Summary

- ✓ IAC, a global Tier I Automotive Supplier in interiors, was experiencing significant quality rejections which resulted in high PPMs and cost to their facilities
- ✓ TPT was asked to provide operational, and quality engineering support to analyze the current state and create a relationship with their customer, Ford; to implement proposed changes; provide communication/ feedback to IAC and Ford to sustain a solid relationship and to meet the quality goals of IAC

Scope

- ✓ Participate with IAC Quality team during investigation of emerging quality concerns
- ✓ Conduct surveillance audits in the assembly plant for incoming quality to the assembly line
- ✓ Participate with Ford IQ, PVT and STA meetings to address and assure quality standards are met and report back to IAC
- ✓ Train plant QREs on manufacturing process and problem-solving skills
- ✓ Review current work instructions and prepare manufacturing assessment of all work stations in plant operations
- ✓ Identify constraints and develop containment and root cause analysis
- ✓ Make suggestions to increase production repeatability of good quality
- ✓ Create quality tracking system used by

Success

- ✓ Reduced written quality rejects from 20/week to < 10/week in a period of 3 months
- ✓ 50% reduction in written concerns
- ✓ Increase IAC quality rating of PPM and cost savings over \$400,000 in supplier charge backs



Summary

- ✓ TPT was awarded a major contract in 2018 to provide quality engineering support for the following plants on all three shifts:
 - Emporium, PA
 - St. Mary's PA
 - Dubois, PA
 - Germantown, WS
 - Salem, IN
- ✓ We worked with GKN Leadership to provide teams of experienced quality engineers to each of the above plants simultaneously. We reported to plant leadership as well as GKN's VP quality throughout this engagement.

Scope

- ✓ We were asked to provide two (2) experienced Quality Engineers for each shift at the Emporium and Salem plants, one (1) quality engineer on each shift for Germantown and St. Mary's plants. A total of 18 engineers.
- ✓ conducting root cause analysis
- ✓ 8D problem solving
- ✓ implementing corrective actions

Success

- ✓ GKN was able to make rapid improvements at each of their plants within a 3-month timeframe. Since this initial engagement, TPT was called back to Salem, on several occasions to support the plant with both Quality and Industrial Engineering service.

Magna Corporation



Summary

- ✓ IMagna's Metal Forming plant in Bowling Green, KY reached out to TPT in order to perform efficiency improvements to their material handling department.
- ✓ The two areas of focus were: better throughput of material, and cost savings by modeling a more efficient structure to the daily tasks of the employees.

Scope

- ✓ Develop baseline time study to establish current manpower usage and delivery methodology.
- ✓ Identify opportunities to increase throughput, reduce downtime due to late line feeds, and methodize the usage of the equipment.
- ✓ Observe and analyze warehouse activities to improve organization, proper location of parts, and minimize repacking of parts between totes.

Success

- ✓ After implementing new processes and efficiency measures, Average annual savings totaled approximately \$500,000



Summary

- ✓ Faurecia, a Tier One Automotive Supplier, was experiencing significant productivity issues and quality defects which resulted in large amounts of downtime and re-work to the plant and the customer
- ✓ TPT provided industrial engineers to the seat assembly plant in Tuscaloosa, Alabama for the implementation of productivity improvement initiatives utilizing Lean Methodologies for the removal of waste and inefficiencies out of their operations.

Scope

- ✓ Conducted time studies to develop a baseline for process optimization activities and manpower reduction plan
- ✓ Development of current state standardized work sheets and Yamazumi charts for analysis and the reduction of waste
- ✓ Conducted root cause analysis activities with the plant staff to ensure the sustainability of the transformation process
- ✓ Developed and supported a training program for the installation of the optimized processes for future state
- ✓ Supported the implementation of the new optimized processes and layouts

Success

- ✓ Over \$750,000 in documented cost savings with the reduction of 18 FTEs through line balancing activities, waste removal and process optimization

Magneti Marelli



Summary

- ✓ Magneti Marelli, a Global Tier I Automotive Supplier of lighting and exhausts, was launching the Clarkston Automotive facility for the new Dodge Ram and initially engaged TPT to provide WPI support
- ✓ Support general launch activities in layouts, process flow and timing
- ✓ In addition, TPT was asked to support and make suggestions for optimization and error proofing for all areas including assembly, pre-production and logistics

Scope

- ✓ Conducted time studies to develop a baseline for process Develop and track all required actions on a master planning document with timing
- ✓ Open issues tracking and coordination of issue resolution
- ✓ Workstation deliverables documentation and tracking including workstation CAD drawings with all elements in each station
- ✓ Support each pillar lead in understanding requirements, creating and tracking of WPI documents
- ✓ Facilitate workshops and meetings among pillars to coordinate change management of EBOM, facilities, equipment and logistics
- ✓ Identify and coordinate the creation of stands SOPs for critical processes

Success

- ✓ Station review workshops have identified several errors on EBOM descriptions, parts in wrong stations and missing data
- ✓ Trained over 20 people on WPI process
- ✓ Next steps are to optimize all key areas including assembly line

Borg Warner



Summary

- ✓ Borg Warner contacted TPT to provide Quality Engineering (QE) Support at their facility in Highland Park, MI.
- ✓ The plant was in launch mode and required additional, hands on resources on the shop floor to improve first time through metrics.

Scope

- ✓ TPT deployed a team of three (3) QE's to work under the direction of Borg Warner's Quality Engineering Manager at the Highland Park, MI facility.
- ✓ Our primary tasks were:
 - Root Cause Analysis
 - 8D Problem Solving
 - Corrective Actions Development and implementation
 - Updating work instructions
 - Gage R&R support

Success

- ✓ Our initial contract was for five (5) weeks. Based on the positive outcome of the initial engagement, TPT's QE's have been extended and additional QE's were added to the team. As of June 2023, TPT has been supporting Borg Warner for over six months of continuous service.



Summary

- ✓ Headcount reduction in operations (including manufacturing and materials)
- ✓ Improve throughput in assembly lines
- ✓ Improve line side delivery of parts to line
- ✓ Eliminate stoppage due to late delivery of parts

Scope

- ✓ Reduced overall headcount by 12%, increased units/head 18% and reduced internal inventories by 24%
- ✓ Developed and implemented new work standards and work instructions in manufacturing and materials departments
- ✓ Developed and implemented new assembly line layouts on all assembly lines
- ✓ Developed and implemented new warehousing footprint and routes for all material handlers
- ✓ Developed new production schedule to maximize throughput and reduce changeovers
- ✓ Developed and implemented new training

Success

- ✓ TPT transformed the Nashville Assembly Plant by creating a new manufacturing footprint, maximizing efficiency and reducing internal inventory
- ✓ Set standards to reduce manpower and improve internal and external quality concerns

Heavy Equipment Manufacturing



Summary

- ✓ This heavy equipment manufacturer is in the process of setting up new facilities around the world to meet heavy demands for mining equipment
- ✓ TPT was engaged to create a “Global” assembly process to optimize build flow including build sequence, suggested manning, tooling requirements, and material flow
- ✓ TPT would document the improved build process and then assist in transferring the knowledge to help set up plants in Europe, South America, and Asia

Scope

- ✓ Document standard work, perform MODAPTS to optimize times required per operation and implement changes
- ✓ Develop the optimized build sequence
- ✓ Create a document and process that would allow this heavy equipment manufacturer to duplicate the processes at new facilities being built in China, Brazil and Belgium
- ✓ Implement and train engineers from the new facilities

Success

- ✓ TPT delivered plant start-up documentation and improved throughput from 3.7 to 7.8 units/day allowing for \$160 million in additional throughput

North American Lighting



Summary

- ✓ At the request of Nissan Motors, TPT dispatched a team of Quality Engineers to work on site at NAL to determine the root cause of numerous quality defects they were experiencing on head light assemblies.
- ✓ TPT provided three seasoned Quality Engineers to rapidly assess the current state process shortcomings and implement corrective actions to improve first time through quality

Scope

- ✓ Conducted time studies to develop baseline for process optimization activities and manpower reductions
- ✓ Development of current state standardized work sheets and Yamazumi charts for analysis and the reduction of waste
- ✓ Conducted root cause analysis activities with the plant staff to ensure sustainability of the transformation process
- ✓ Created the future state, standardized work sheets and Yamazumi charts which included waste reduction, quality improvements and optimized process recommendations
- ✓ Developed and supported a training program for the installation of the optimized processes for future state
- ✓ Supported the implementation of the new optimized processes and layout

Success

- ✓ Within 6 weeks, the TPT QE team identified the root causes of the majority of NAL quality issues and implemented corrective actions for sustainable results

Microheat



Summary

- ✓ Microheat was a start-up manufacturer of a heated windshield washing unit
- ✓ Located in Farmington Hills, Michigan, they went from concept to preproduction to OEM approval and placement on several
- ✓ General Motors vehicles as a standard option within 7 years

Scope

- ✓ Create a manufacturing facility capable of handling stated production volumes
- ✓ Select suppliers with the lowest cost capability for fulfilling requirements
- ✓ Design and build necessary equipment, jigs and fixtures for production
- ✓ Hire and train all necessary manufacturing personnel
- ✓ Meet OEM run rate and pre-production OEM requirements

Success

- ✓ Station review workshops have identified several errors on EBOM descriptions, parts in wrong stations and missing data
- ✓ Trained over 20 people on WPI process
- ✓ Next steps are to optimize all key areas including assembly line

Bloom



Summary

- ✓ This hi-tech green energy start-up company invented a revolutionary hydrogen fuel-cell technology that provides green power to buildings and residences at low costs
- ✓ The company was founded by ex-NASA scientists who converted technology that was developed to assist the Mars Program

Scope

- ✓ Plant specific production design, layout and implementation
- ✓ Material handling strategies and part traceability issues
- ✓ Development of work standards and instructions
- ✓ Assist in the development of automation equipment
- ✓ Set up lean manufacturing environment with continuous improvement as a key objective

Success

- ✓ Increased production from 3.5 units per week to 9 units per day (>1,200% increase)

General Mills



Summary

- ✓ General Mills plant in Joplin, MO is a major manufacturer of frozen bread products that are shipped globally.
- ✓ General Mills was experiencing a 10-12% labor defect based on their daily production schedule.
- ✓ TPT's focus was on three (3) primary production lines.

Scope

- ✓ Conduct detailed (current state) MODAPTS time studies on all three production lines. Our focus was on direct and indirect labor supporting daily production.
- ✓ TPT identified all non-value-added activities on all three production lines.
- ✓ Quick hit rapid improvement initiatives were implemented to further reduce waste and inefficiencies. TPT's Industrial Engineers conducted daily meetings with General Mills stakeholders to implement lean and efficient work cells which was driven by MODAPTS data.
- ✓ Certain work elements and inefficiencies were balanced out of the production process.
- ✓ Developed new operator work instructions and training to the production operators.

Success

- ✓ With the waste identification and rebalancing both direct and indirect work elements and instructions. General Mills was able to level set the three production lines and eliminate stress on the operators. No additional operators were required to meet their daily production targets.

Trane



Summary

- ✓ Trane was launching a new air conditioner assembly line at their plant in Clarksville, TN. With their aggressive launch curve, Trane contracted with TPT to provide Indirect Industrial Engineering support to design and implement a lean and efficient materials system to support daily production.

Scope

- ✓ TPT provided one (1) Project Manager and one (1) Sr. Indirect Materials Engineer for one year. Our primary task was:
 - Plan for Every Part Development for 4000 inhouse part numbers
 - Design and develop a Lean and efficient material replenishment operation to support production. This included Kanban, Kitting, and water spider methodologies.
 - Design and development of the warehouse footprint and material storage locations.
 - Optimized material flow and indirect operator utilization to support production.
 - Conducted MODAPTS time studies for all indirect labor to use as the base line for waste eliminating and optimized material routings.
 - Determine labor requirements for Warehouse and Material Handling personnel.

Success

- ✓ The new assembly line was launched on schedule and within budget. The Lean Materials System was implemented, and operators were trained in the new Lean Material System.

Quality Metal Craft



Summary

- ✓ Quality Metal Craft produces metal body panels and sub-assemblies for several OEM's.
 - The QMC team needed certain Industrial Engineering and Material Flow Engineering support due to a lack of internal expertise in those areas.
 - Specifically, QMC requested TPT provide the following support.
 - Initial PFEP development
 - Pre-Shipment Validation to Customers

Scope

- ✓ TPT worked with the QMC team to identify and improve the QMC internal ERP system to develop the initial PFEP process to establish optimized material flow.
- ✓ TPT worked with QMC Executive Leadership team to establish clear and concise work instructions for the plant floor regarding a series of pre-shipment checks to customers.

Success

- ✓ TPT was successful in presenting QMC with various improvement recommendations to their internal ERP reporting system and the development of an initial PFEP for labor and material flow optimization within the Farmington Road manufacturing site.
- ✓ TPT has established pre-shipment work instructions with step-by-step verbiage and illustrative pictures to ensure that plant floor operations are properly trained in the shipping label process.
 - This process improvement is also being used to hold the production teams accountable for mis-shipments for finished products.

Miller Coors



Summary

- ✔ TPT was contracted to study process defaults in 5 key bottleneck areas of their plant. They were getting pressured to add additional resources to improve throughput.

Scope

- ✔ TPT spent 4 weeks on site assessing the current state operations and developing detailed MODAPTS time studies of each of the bottlenecks. This data provided a prioritized production throughput plan for their maintenance department and tooling automation engineers to focus on root causes of each downtime occurrence and rapidly implement corrective actions to improve throughput.

Success

- ✔ With accurate downtime data and a focused corrective action approach, Miller Coors was able to reduce downtime without having to add additional resources.

Jim Beam



Summary

- ✔ Jim Beam Suntory was experiencing a considerable amount of waste and inefficiencies in their barrel fill and transportation process to their various Rick House storage facilities throughout the Bardstown Kentucky area.

Scope

- ✔ TPT provided a current state value stream map and conducted MODAPTS time studies on Beam Suntory's barrel fill, inspection, transportation, and storage operations. We identified a considerable amount of waste and inefficiencies associated with their current state methods.
- ✔ TPT Industrial Engineers conducted rapid improvement kaizens and created a Lean and efficient future state value stream map, and revised MODAPTS data accordingly.

Success

- ✔ TPT supported Beam Suntory with the implementation of the future state layout. This project lead to another warehouse optimization at one of their other facilities.