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HCL

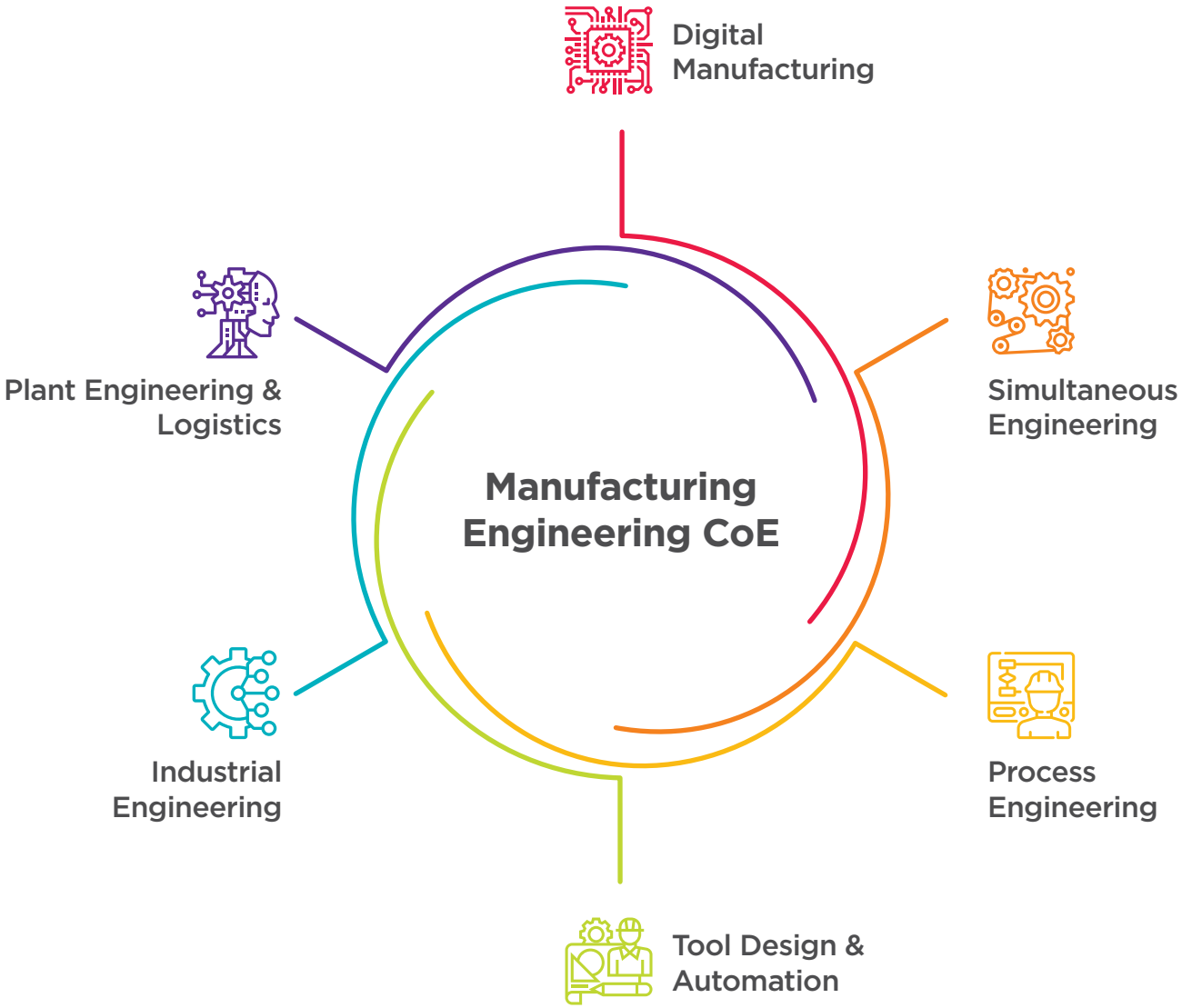
Engineering partnership towards patient centric ecosystem

Acceleration | Compliance | Value

Manufacturing engineering services by HCL

HCL has brought $40 MN Savings through various Manufacturing Services across various verticals. With our highly experienced 750+ manufacturing engineering professionals, we achieved 60-70% reduction in time in CNC tool path programming and 50% productivity improvement. Optimize your productivity with our comprehensive portfolio of manufacturing engineering services.

Manufacturing Engineering Services



HCL Manufacturing Capability

DIGITAL MANUFACTURING

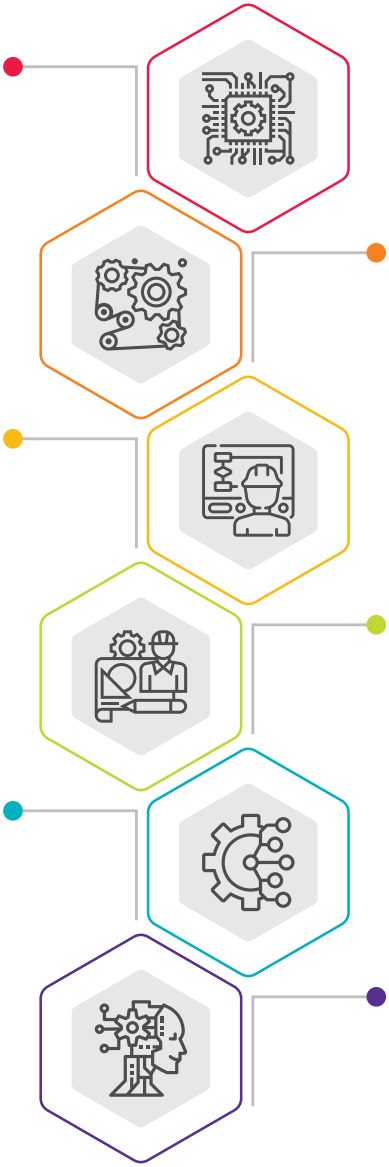
- Robotic Simulation
- Assembly simulation
- Plant Scanning, 2D & 3D plant Layout
- Plant simulation
- Ergonomics simulatiob- static and dynamics
- Robot, CNC,CMM, programming

PROCESS ENGINEERING

- Process study & analysis
- Process improvements
- APQP, FMEA & control plan
- Smart work instructions
- Accessibility & Ergonomics analysis
- First Article Inspection Reports
- Plant & Process documentation

INDUSTRIAL ENGINEERING

- Standard Time computation (MTM, MODAPTS, MOST)
- Line Balancing
- Workstation Design
- Value Stream Mapping
- CAPEX estimation & project management
- Route study & analysis



SIMULTANEOUS ENGINEERING

- Assembly Feasibility Studies
- Selection of suitable process
- Process optimization
- Welding Operation Analysis
- Sealing Operation Analysis
- Assembly process Analysis
- Safety analysis

TOOL DESIGN & AUTOMATION

- Jigs and Fixtures – Machining, Assembly, Welding & Inspection
- Rack, Trolley design
- Tooling requirement gathering & design for NPI
- Low cost automation

PLANT ENGG. & LOGISTICS

- Layout Optimization
- Material Flow optimization
- Material classification (ABC)
- PFEP creation
- Material preparation, Kitting, Sequencing, & Storage design
- Space Optimization

HCL Credibility

Driving cost saving

$30MN VALUE SAVING through various Manufacturing Services and our own IPs till date

60-70% TIME REDUCTION in CNC Tool Path Programming

$2M SAVED by successful design, validation and setup of high density racks for inbound logistics in manufacturing plant

Over **50 plants** were **digitally set up and optimized** by **discrete event simulation**

50% PRODUCTIVITY IMPROVEMENT by Minimizing the overall operating cost by redesigning workstation and overall layout

Savings of **4.6 million RMB per year**, by reduction of line side inventory

Extensive capacity and capability

750 Mfg Engg Professionals across the globe

9 Years Average FTE Experience in ME Service

Presence in USA, Germany, France, UK, Sweden, China, India, Indonesia, Korea

Three decades of experience in Manufacturing Engineering Services

50+ SMEs across HCL in Mfg Engg. Practice

Cross industry experience

Serving Top 5 OEMs and 7 out of top 10 Tier 1s for over a decade

Serving Top 3 Off-highway equipment manufacturers since a decade

A decade long engagement with world Leaders in Medical Devices

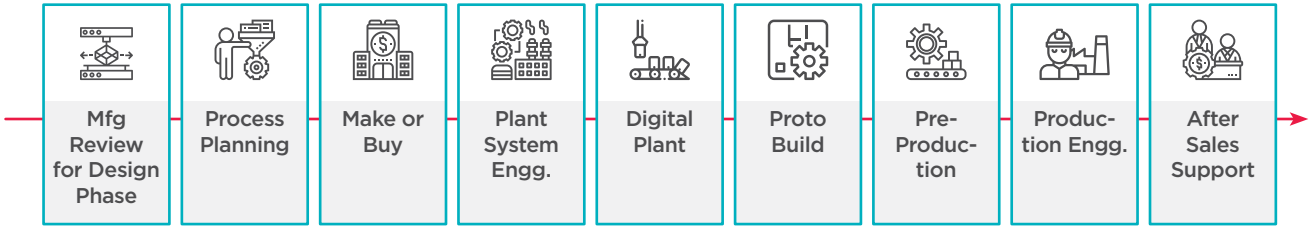
Serving world leader in Consumer Appliances

Serving Top 5 Industrial Equipment manufactures

Serving world leader in Office automation

Serving Top 5 Automotive OEMs since last 3 decades

How COE helps in each phase?



Discrete Services

- Manufacturability Methods Planning
- Plant Design & Analysis
- Assembly Validation
- APQP, PPAP
- Line Balancing Lean Mfg, WCM
- Warranty Analysis
- Design Costing and Should Costing
- MBEWeb
- Virtual Validation
- Supply Chain Mgmt.
- Tools, Jigs & Fixtures : Design / Build
- PFMEA
- Offline & Online CNC & CMM Programming

Differentiation through in-house IPs — NestLib, DFMPro, CAMWorks

End 2 End PROPOSITIONS

- Inbound and Outbound Logistics: Design and implementation
- Increase plant capacity, improve overall utilization, Reduce inventory and throughput time
- Productivity Improvement, Flexible Manufacturing
- Scanning, Plant modeling, Layout design and Simulation & Line Optimisation

Case Study:

HCL – Lab Diagnostics Divisions of a Large IVD Player Manufacturer

Challenges

The customer's METS group had a challenge in executing complex functional test fixture in quick turnaround time and they were looking for partner to the support in design, procurement, build, software development and installation at production location.

HCL Solution

- HCL did excellent job in the first project by taking ownership of design from concept to build. This was done with offshore onsite model of highly experienced resources and excellent project planning to handle procurement activities from offshore location in parallel to tester design to meet the aggressive timeline. The customer was able to get the assembled test fixture before the deadline.
- By seeing the performance of the team in first project, Customer approached HCL for duplication of test fixture development and installation at their vendor production location. HCL executed step by step approach to procure, build and install testers at vendor site over a period of 12 months.
- HCL took several initiatives such as development and installation of demo test fixture at offshore location, Customer's network connectivity for HCL offshore engineers at HCL India sites, step by step Knowledge transfer to take up higher roles and retention of knowledge, etc. HCL engineers could take up complete ownership of tester development activities independently.

Value Delivered

- Successful completion of 42 electromechanical test fixture design, procure, build, Software development and Installation at production location.
- Successful completion of 25 electromechanical test fixture duplication at vendor location.
- USD 504,000 worth value delivered by design standardization and simplification.

Case Study:

Improving throughput for a leading Agricultural, Construction equipment manufacturer

Customer Requirement: Necessitate partner support to increase the throughput (the amount of material or items passing through a system or process) through maximizing the utilization of the resources of Transmission, Cab and Final Assembly line.

Business Challenges: Logistics improvement to increase the productivity for the emerging market.

Solution Approach

- Project charter created with dependencies / Objectives
- Business forecast of the organization was the key plan to improve the logistics function
- Designed flexible material handling, packaging and line presentation equipment with better visual factory
- Identified components for kitting and sequencing to reduce the footprint of the material at line side
- Minimized the non value added work and balanced the workload between the resources to eliminate wait time and WIP
- Optimized the material delivery routes to improve the utilization of the material handling resources and deliver the material using JIT concepts

Key Benefits

- 25% reduction in Lead time
- US $ 2,271,000 savings to customer
- Productivity was increased after the logistics improvement due to which the company was able to achieve the target as per the schedule
- Improved the utilization of the floor space
- Eliminated the capital investment of $ 587,000 in additional floor space

Case Study:

Supplier Base Optimization – Industrial Paint Makers

Business objectives

Analyze spend from indirect expenses(field spend) and suggest cost saving opportunities across group of industries.

Products analyzed

Salient points

- Quick win savings
- No-design change / supplier validation
- Large Savings

Processes adopted

Data Selection

- Top indirect Spend Commodities selected for analysis
- Batteries
- Cable ties
- Industrial Paint markers

Data Analysis

- 69 different types of batteries identified
- 17 Suppliers
- 97 Manufacturers for these 69 types
- 6 Types of batteries have spent of contributing $207k out of 322K

Approach

- 5 types contributing to $152k or 48% spend identified
- Manufacturer of each battery type identified
- Consolidated and standard pack procurement suggested

Results & Savings

- Total Spend can be reduced by $100K per annum giving a saving of 48%
- Plan B saving suggested $86K with 41% saving
- New Vendors proposed for further reduction

Case Study:

Leading HVAC Equipment Manufacturer

About Customer

- Products: HVAC equipment's, Fire Suppression, Security products, Retail solutions
- Company size: USD 30Bn
- Procurement spend: USD 11Bn (Direct, Indirect, Field)

Business Challenge

- Consolidated / Clean Spend Data not available, due to high number of ERP / PLM systems - 30
- Large number of non strategic suppliers – long tail spend (also due to large number of plants -108)
- Continuous mergers and acquisitions
- Pressure on bottom line improvement
- Decentralized sourcing processes in different business units

Products / Commodities analyzed

- Top categories supported:
  - Injection molded parts – Resin spend, Molded
  - Motors – fractional ECM, IHP (1 to 100 HP)
  - Heat Exchangers
  - Compressors
  - Valves – Check, Butterfly, Gas, Reversing
  - Metals – Steel, SS, Copper, Aluminium - flats and rolls, stamping, fab, casting, machining, forging
  - Electrical – PCB, standard items (Relays, Contactors, Switches, Transformers, etc.)
  - Mechanical – Drives, Bearings, Couplings, Filters, Seals, Pumps
  - Adhesives and Chemicals
  - Indirect spend – PPE, Hand Tools, Cleaning, etc.
  - Field branch spend – Pipes, Valves, Fittings, HVAC components, Electrical, etc.

Scope of Work

- Support to Category Management:
  - L3: Spend Data Analysis, Book of business, Recommendations, Alternate suppliers, RFI / RFQ, eAuction
  - L2: Should cost models, provide technical assistance for negotiations, Regression models
  - L1 support: VA workshops, Supplier benchmarking, CI roadmaps, Cost evaluations
- Competitive Benchmarking:
  - Internal Benchmarking – cost gaps for same / similar parts and products
  - External Benchmarking – Competitive product teardowns
  - VA workshops – product / process cost optimization and implementation of ideas
- Implementation Support:
  - Project Management
  - PAP support
  - Prototyping / Testing / Qualification
  - Engineering / Design support
  - Tool move coordination

HCL Engagement Overview

- 3 years of relationship – 50 resources
- Support geographies: NA, EMEA, Asia
- Savings realized: $45M realized

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