

Common Core Skill Set

■ Mechanical Engineering Design & Documentation

(Product or Manufacturing Tool / System)

1. System Architecture
2. Industrial Design (artistic look and feel)
3. Conceptual Design and Layout
4. Structural Analysis (FEM/FEA) / Structural Design / Structural Testing
5. Computational Fluid Dynamics (CFD-Fluid / Liquid or Gas flow simulation)
6. Thermal Engineering Analysis (FEM/FEA/CFD) & Design (Conduction, Convection, Radiation, Induction)
7. Mechanical Design / Machine Design / Mechanism Design
8. Rotational Systems / Rotor Dynamics / Bearings / Tribology
9. Close Tolerance Design / Precision Motion Control Design
10. Sheetmetal Design
11. Plastics Design (Injection molding, extrusions, RIM, RP, etc)
12. Graphite, Carbon Fiber, Carbon / Carbon Design
13. Electro-Mechanical Packaging Design
14. Frames and Weldments Design and Analysis
15. Manufacturing Process Selection / Optimization
16. Pneumatic Systems / Controls
17. Gas Distribution Systems / Controls
18. Vacuum and Ultra-High Vacuum Systems
19. Process Chamber Design / Loadlocks / XFR / Deposition / Etch / Plasma
20. Commercial or Industrial Product Development
21. Custom Capital Equipment
22. Automated Test Equipment (ATE)
23. Manufacturing Tools or Systems
24. Tool Design / Tools / Tooling / Jigs / Fixtures / Gauges / Instruments

■ Electrical Engineering Design & Documentation

1. Power Distribution
2. Instrumentation and Control
3. Data Acquisition
4. Human Interface Design / HMI / PC / PLC

- Wind Engineering, Analysis, Testing /
- Lightning Engineering
- Safety Engineering / UL / NFPA / SEMI S2 & S8
- Reliability Engineering / Testing
- Regulatory Compliance Engineering / SEMI / UL / IEC/ NFPA
- DFX ~ DFM/DFA/DFT/DFR
- Vendor Sourcing, Qualifying, Procurement and Supply Chain Management
- Documentation
 1. Piece part drawings, Assembly drawings
 2. Assembly process drawings
 3. Installation drawings
 4. Drawings for manuals...etc.
 5. Costed Bills of Material
- Procurement, Prototype Build and Engineering Verification
- Manufacturing Scale-up



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