

JARED MAFFUCCI

SENIOR MECHANICAL ENGINEER | HARDWARE PRODUCT DEVELOPMENT

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PROFESSIONAL SUMMARY

Senior mechanical engineer and product-development specialist with 8+ years turning ambiguous physical-product ideas into prototype-ready and manufacturing-ready hardware. Leads end-to-end consumer, prosumer, and commercial programs across discovery, user and business requirements, architecture, concept generation, mechanism and enclosure design, CAD and analysis, rapid prototyping, DFM/DFA, supplier sourcing, verification, and manufacturing handoff. Consulting work spans adjustable furniture, thermal beverage products, home-improvement tools, ergonomic and user-contact products, electromechanical enclosures, reverse-engineered products, and fabricated systems. Combines fast iterative development with disciplined engineering analysis, polished technical communication, and production-ready documentation.

CORE EXPERTISE

Full-Lifecycle Consumer Product Development | Product Architecture and Concept Generation | Mechanical Product Design | Mechanisms and Kinematics | Enclosures and Electromechanical Packaging | Ergonomics and User-Contact Geometry | Thermal Product Design | Reverse Engineering and Scan-to-CAD | Complex Surface Modeling | Rapid Prototyping | DFM/DFA | Supplier Sourcing and RFQ | BOM, CTQ and FAI Definition | GD&T and Tolerance Analysis | Validation and Manufacturing Transfer

SELECTED PRODUCT DEVELOPMENT IMPACT

Adjustable Furniture Platform: Developed product-family architecture and supplier-control definition for four manual adjustable-table products, then built a 312-row BOM, processed 199 purchasable/COTS lines, and created CTQs, FAI and test matrices, supplier questionnaires, quote templates, deviation tracking, and explicit production-release gates.

PCM Beverage Cooler: Iterated a modular can-cooler architecture through eight archived CAD revisions, integrating the outer shell, inner liner, phase-change cartridge, closure, sealing, condensation control, serviceability, and prototype/patent-support requirements.

Brewing Equipment Ecosystem: Developed scan-informed controller-enclosure and accessory CAD, heat-sink and assembly interfaces, additive-manufacturing files, supplier-component reviews, revision-controlled geometry, a final BOM, and editable manufacturing handoff documentation.

Ergonomic Product Reconstruction: Reverse-engineered a physical foot orthotic into an approved CAD replica against a stated ± 0.10 mm target, preserving fit-critical organic curvature and traceability to the supplied sample.

Patent-Support Product Design: Created editable master SolidWorks geometry for a brush-and-roller holder concept supporting patent-application views, environmental renders, and product-animation development.

PROFESSIONAL EXPERIENCE

Independent Product Development Consulting | San Diego County, CA

2023 - Present

Mechanical Product Design Engineer and Consultant | Part-Time / Concurrent

Built an independent cross-market product-development portfolio across consumer, prosumer, ergonomic, furniture, beverage, home-improvement, software-adjacent, and industrial hardware markets.

- Lead direct-to-founder and product-team programs from ambiguous need through requirements, benchmarking, architecture, concepts, detailed CAD, prototypes, DFM/DFA, supplier packages, validation planning, and manufacturing handoff.
- Design mechanisms, adjustable structures, enclosures, thermal assemblies, ergonomic and user-contact geometry, complex surfaces, and serviceable electromechanical systems while balancing usability, performance, reliability, cost, and scalability.
- Create supplier-ready BOMs, CTQs, drawings, RFQ/SOW packages, inspection and test matrices, cost/feasibility models, patent-support figures, renders, and revision-controlled handoff documents.
- Use SolidWorks, Geomagic Design X, FEA/CFD, and first-principles analysis to reconstruct products, expose technical risk, and drive evidence-bounded decisions; prior DriveWorks automation reduced repetitive design effort by more than 30%.

PROFESSIONAL EXPERIENCE (CONTINUED)

Nordson Electronics Solutions | Carlsbad, CA

Sep 2025 - Present

Senior Mechanical Engineer, New Product Development

Own mechanical NPD and product-improvement work for complex electromechanical manufacturing equipment, translating machine, customer, production, and service needs into practical architectures, prototypes, supplier-ready hardware, validated integrations, and released upgrades.

- Lead reliability and product-improvement work for complex electromechanical equipment, translating field, production, and service findings into supplier-ready mechanical changes and controlled release packages.
- Own mechanical integration of sensing and identification hardware, including component selection, mounting, access, configuration, validation planning, and system handoff.
- Reduce architecture risk for new electromechanical interfaces through requirements, rated-component screening, physical samples, additive evaluation parts, and DFM/DFA reviews before design lock.
- Deliver thermal and structural analysis, controlled data collection, BOM and work-instruction updates, supplier coordination, and production reviews spanning fabricated and machined hardware, finishes, fasteners, inspection, and service access.

Viasat Inc. | Carlsbad, CA

Jul 2018 - Jun 2023

Mechanical Engineer, Space Systems R&D

Designed and released compact, high-reliability hardware and electromechanical packaging for advanced communications systems, building a rigorous foundation in integration, analysis, configuration control, and supplier execution.

- Designed brackets, mounts, cable-routing hardware, deployable and fixed mechanisms, EMI gasket interfaces, and multi-point thermal mounting within severe packaging, vibration, thermal, and electromagnetic constraints.
- Used first-principles calculations, structural, modal, shock, and thermal FEA, prototypes, and test feedback to resolve strength, stiffness, packaging, thermal, and manufacturability risks.
- Released 100+ ASME Y14.5 engineering drawings with BOMs, materials/process callouts, tolerance definition, and ECO/configuration records in SolidWorks PDM.
- Coordinated with systems, RF, electrical, thermal, manufacturing, quality, supply chain, suppliers, and technicians to move hardware from concept through fabrication, integration, inspection, test, and release.

TECHNICAL SKILLS

Product Development: product discovery, user and business requirements, benchmarking, architecture, concept generation, trade studies, design reviews, rapid prototypes, risk retirement, validation planning, patent support, and manufacturing transfer.

Mechanical Design: mechanisms, kinematics, adjustable products, enclosures, user-contact and ergonomic geometry, thermal assemblies, complex surfaces, sheet metal, machined parts, weldments, and electromechanical integration.

CAD and Analysis: SolidWorks 2024/2025, Geomagic Design X 2024.2, SolidWorks Simulation, Flow Simulation, Visualize, PDM, DriveWorks Pro, VElements, Cura, FEA, CFD, tolerance stacks, fit/interference, contact, modal, and thermal analysis.

Manufacturing and Commercialization: DFM/DFA, GD&T, BOM/ECO/PLM/PDM, CTQ and FAI definition, supplier RFQs, cost/feasibility estimates, inspection, CNC machining, sheet metal, weldments, additive/FDM, injection molding, castings, coatings/plating, fasteners, and PEM hardware.

Markets: consumer and prosumer hardware, ergonomic products, furniture and adjustable products, beverage and lifestyle accessories, home-improvement tools, industrial automation, semiconductor equipment, and aerospace/space systems.

EDUCATION AND CERTIFICATION

Bachelor of Science in Mechanical Engineering | Colorado State University, Fort Collins, CO

May 2018

Certified SOLIDWORKS Professional (CSWP) | Dassault Systèmes

Work Authorization: U.S. Citizen