

KEMAL DEMİROZMAN

Mechanical Design Engineer | Product & Platform Architecture | Design Automation |
Technical Leadership

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ENGINEERING PORTFOLIO demirozman.com



PROFESSIONAL SUMMARY

Mechanical engineer specializing in 0 → 1 development of industrial electric vehicles, trailers and electromechanical platforms, with a growing focus on **design automation and configurable product architecture**. Experienced across the full product lifecycle: concept development, rapid prototyping, customer demonstrations, production preparation and iterative improvement. Led vehicle platform development from concept to serial production, reducing assembly time by 50% through modular architecture redesign. Currently architecting a configuration-driven modular vehicle family and its automated design-to-manufacturing pipeline (config → parametric CAD → validated production package), and built an AI-native business management platform now used in production. Combines deep mechanical execution — GD&T, tolerance stack analysis, structural FEA, drivetrain integration — with AI-assisted software automation and cross-functional engineering leadership.

CORE ENGINEERING COMPETENCIES

- Vehicle Development & System Architecture
- Modular Platform & Configuration-Driven Design
- GD&T and Tolerance Stack Analysis
- Structural FEA and Mechanical Validation
- CAD Automation with Python (Fusion 360 API)
- Rule-Based Design Gates (Stability, Safety, Ergonomics)
- Motor & ESC Selection, Drivetrain Integration
- Rapid Prototyping and Industrialization
- Design Verification and Testing
- AI-Assisted Software Development (AI Coding Agents)
- Engineering Knowledge Systems & Decision Records
- Supplier Coordination (Türkiye / China / United States)

SELECTED PROJECTS

Wagger — Configurable Modular Industrial Vehicle Family

2026 – Present

System Architect & Lead Engineer, Hergele Mobility — concept & design phase

- Architecting a highly modular, configurable industrial vehicle family that unifies order-picker and tugger product lines on a single parametric chassis platform, turning low-volume custom orders from engineering projects into configurations.
- Designed a fixture-less chassis manufacturing concept — laser-cut tab-and-slot and tube-cope joints that self-locate on the bench — eliminating fixture investment and making single-unit orders economical.
- Designed self-contained, field-replaceable drive modules (motor, ESC, swappable battery, EM brake in one unit) so field service becomes a module swap instead of on-site diagnostics.
- Built an automated design-to-manufacturing pipeline: configuration JSON → serial number → parametric Fusion 360 model → complete production package (DXF flat patterns, bend and weld drawings, weld plans, mass & CoG reports), generated end-to-end by 40+ Python scripts and validated by automated integrity checks.
- Implemented a rule engine that applies engineering gates automatically at configuration time: load class limits, tipping/center-of-gravity checks, operator ergonomics and occupational safety rules.
- Established a single-source engineering record — 275-parameter registry, 111 traceable design decisions with rationale and rejected alternatives, automated consistency audits — so no value ever lives in two places.
- Defined and batch-automated a 26-test chassis verification matrix; first customer-order vehicle adopted as the platform's MVP.

Tıkır — AI-Native Business Management Platform

2026 – Present

Creator — built solo by directing AI coding agents; live in production; Hergele Mobility is the first customer

- Designed and built single-handedly from scratch — directing AI coding agents end to end — an AI-native multi-tenant business management platform (CRM/contacts, finance, tasks, dashboards) now used in production by two organizations.
- Embedded an AI assistant (Claude) that answers questions and performs actions on live company data through natural language — e.g. querying receivables and drafting follow-ups in a single sentence.
- Implemented secure multi-tenancy with row-level security, authentication and additive schema migrations; deployed with continuous delivery.
- Stack: Next.js 15, TypeScript, Supabase (PostgreSQL, Auth, RLS), Anthropic API, Vercel.

PROFESSIONAL EXPERIENCE

Hergele Mobility — Production Engineer

Nov 2023 – Present

- Led development of industrial electric vehicle platforms, trailers and mechanical accessories from concept to serial production.
- Latest delivery: DMT3500 electric tugger — 3,500 kg towing, independent three-wheel suspension.
- Designed chassis architecture, modular assemblies and structural subsystems for electric vehicle platforms.
- Prepared GD&T technical drawings and performed tolerance stack analysis using Fusion 360.
- Performed structural FEA simulations and mechanical validation for load-bearing components.
- Selected motor, ESC and drivetrain components based on system-level requirements; designed wiring harness routing and mechanical integration.
- Executed tipping and stability tests to validate vehicle safety and operational limits; designed mechanical test jigs and performed design verification testing.
- Established rapid prototyping workflows using additive manufacturing and CNC fabrication.
- Built AI-assisted internal tools: harness drawings, tube bend/cut optimization, swept-path simulation.
- Coordinated international suppliers and manufacturing partners across Türkiye, China and the United States.
- Structured production checklists, assembly procedures and quality workflows.
- Participated in customer visits and demonstrations; translated field feedback and sales requirements into design improvements and custom adaptations; supported post-sales troubleshooting and product improvement initiatives.

Hummingdrone Havacılık — Product Design Engineer

Apr 2022 – Nov 2023

- Designed UAV mechanical structures, docking systems and vibration-isolated payload mechanisms.
- Executed concept, preliminary and detailed mechanical design in a 3D CAD environment.
- Performed structural FEA analysis and mechanical optimization.
- Prepared detailed technical documentation including GD&T drawings.
- Collaborated with electronics and software teams for system-level integration.

INTERNSHIPS

- TOFAŞ — Management Trainee, Commercial Systems Project Management (2017)
- Borusan Mannesmann — Production Department Intern (2016)
- TOFAŞ Türk Otomobil Fabrikası A.Ş. — Body Workshop Production Intern (2015)

LEADERSHIP & PROCESS DEVELOPMENT

- Established a docs-as-code engineering record system: decision registry with rationale, single-source parameter registry and automated audit gates guarding design consistency.
- Built and deployed an AI-native CRM/business platform supporting engineering and sales collaboration.
- Structured standardized assembly workflows and quality procedures for scalable manufacturing.
- Coordinated engineering, production and supplier teams during development cycles.
- Improved product maintainability and serviceability through modular system architecture.

ENGINEERING TOOLS

CAD: Fusion 360, SolidWorks, AutoCAD

Simulation: Fusion 360 Simulation (FEA)

Manufacturing: CNC Machining, Sheet Metal Fabrication, Laser Cutting, Additive Manufacturing (FDM, SLA, SLS, MJF, SLM)

AI-Assisted Development: Production automation and apps built by directing AI coding agents (Claude) — Python/Fusion 360 API pipelines, Next.js + Supabase platforms — with Git and docs-as-code engineering records

Electronics & Prototyping: Arduino

Other: LaTeX, MS Office

LANGUAGES

Turkish (Native) | English (C1 – Advanced) | German (B1 – Intermediate)

INTERESTS

Cycling | Hiking | 3D Printing | Arduino Projects | AI-Assisted Engineering | Vibe Coding

EDUCATION

Yıldız Technical University — B.Sc. Mechanical Engineering (2012 – 2021)

Anadolu University — Sociology (2021 – Present)

İstanbul Erkek High School (2007 – 2012)

REFERENCES

Assoc. Prof. Orhan Çakır — Dept. of Mechanical Engineering, Yıldız Technical University, Beşiktaş, İstanbul
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