İlkem KIRAL *Mechanical Engineer*

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📍 Istanbul, Turkiye   🚗 Available

🛡 Performed

Profile

Mechanical Engineer with extensive experience in industrial design, product development, and manufacturing processes compliant with international standards. Certified as a TEI Professional specializing in Aerodynamic Design, Gas Turbine Fundamentals, Combustion Technologies, Turbomachinery and Testing Procedures. Proficient in SolidWorks, CATIA V5, Siemens NX, and ANSYS Workbench. Additionally trained in competitive benchmarking, quality management (HoQ), identification of critical design parameters, process development, robust design methodologies, Taguchi methods, system mechanics, and matrix diagrams. Demonstrated ability in project management with a focus on budgeting and aligning objectives with customer requirements while supporting project planning and reporting initiatives. Passionate about leveraging my strong technical foundation and innovative problem-solving abilities in R&D, product design, and advanced manufacturing projects within the aerospace, aviation, and defense sectors, aiming to advance into leadership roles promoting sustainable engineering solutions.

Education

2015 – 2021 Edirne, Turkiye	**Mechanical Engineer	Bachelor's Degree** *Trakya University*
2018 – 2020 Eskisehir, Turkiye	**Business Administration	Open Education - Associate Degree** *Anadolu University*

Professional Experience

2025 – Present
Istanbul, Turkiye

Design QA and Validation Engineer - Chief Engineer
Gural Electrical Materials
- Managed 3D model and technical drawing validations, encompassing GD&T, tolerance chain analysis, and material code verification.
- Controlled revision and ECO/ECR processes via the PDM system, ensuring robust documentation integrity and flow.
- Evaluated design for manufacturability (DfMA) and implemented standardization initiatives to optimize material and labor costs.
- Designed and executed necessary prototypes and test setups for design validation, supported by root cause analysis.
- Proactively identified and resolved pre-application errors, significantly reducing losses such as downtime, scrap, and rework to enhance overall efficiency.

2024 – present
Istanbul, Turkiye

R&D Engineer - Mechanical System
Gural Electrical Materials
- Designed and developed mechanical components for low (<1 kV), medium(1 kV-52 kV) and high-voltage (52 kV-550 kV) switch-disconnector, ensuring compliance with IEC 62271-1 & IEC 62271-102 standards.
- Conducted finite element analysis (FEA) using SolidWorks Simulation to evaluate structural integrity and thermal performance under operational loads.
- Optimized mechanical designs by integrating IEC 60947 guidelines, enhancing durability and operational efficiency. Regularly communicated with stakeholders to incorporate customer input.
- Selected materials suitable for high-performance applications, ensuring alignment with ISO 9001 and ISO 10724 specifications.

- Ensured manufacturability and performance consistency by incorporating precise tolerances, shrinkage allowances, and surface finishes in the design process.
- Managed CNC machining processes, ensuring components met high-precision requirements and adhered to ASME Y14.5 tolerances while maintaining budget management.
- Developed technical documentation, including 3D CAD models, FEA reports, and detailed assembly instructions, ensuring traceability and client approval readiness.
- Collaborated with cross-functional teams to design and manufacture custom switchgear systems, meeting specific client requirements and industry benchmarks through effective communication and coordination to ensure customer satisfaction.

2022 – 2024
Istanbul, Turkiye

Mechanical Design Engineer
Global Molding
- Designed thermoforming molds using Solidworks and CATIA V5, adhering to ISO 9001:2015 and AS9100 standards.
- Performed thermal and structural (FEA) analyses with ANSYS Workbench, ensuring compliance with industry standards.
- Selected heat-resistant and durable materials, considering ISO 10724 specifications for plastic mold design.
- Optimized cooling channels to enhance efficiency and meet performance criteria.
- Managed CNC machining and quality control processes to ensure high-precision mold production.
- Applied ISO 294-4 guidelines in mold manufacturing and testing phases.
- Implemented designs with accurate draft angles, shrinkage allowances, and venting systems for optimal mold performance. Actively involved in team discussions to meet evolving project requirements.
- Prepared detailed technical documentation, including CAD files, FEA reports, and quality inspection records, for project traceability and client approvals.
- Designed wing and tail fairings for UAVs using ABS and PETG, produced via thermoforming, adhering to AS9100.

2019 – 2019
Izmir, Turkiye

Intern Engineer
FTA Aviation
- Part production & design (with Siemens NX) for engine components of 5th generation aircraft.
- Experienced in aerospace component design (ASME Y14.5) and manufacturing processes. Proficient in using NX and ANSYS CFX for design validation and analysis to optimize engineering solutions.

2017 – 2017
Alexandria, VA, USA

Lifeguard
Guardian Aquatics
I worked to improve my language skills in USA during the summer season.

Projects

2024

Air Turbine Starter, Pneumatic Line Feeding System Design
This project covers the design and flow of the compressed air line for the Air Turbine Starter (ATS) system.

2020

Computer-Aided Analysis of The Lifetime of The Split Rim in Wide Base Agricultural Wheels

2019

Computer-Aided Analysis of The Swing System in Motor Vehicles
Stress and bending analysis of the lower control arm system in motor vehicles, which varies depending on the location, was performed.

2018	**Lightining with Solar System**
	The visibility effect of photocell street lamps on vehicles during night travel was examined.

Skills

Solidworks Proficient	**3DExperience Catia V6** Competent
Catia V5 Competent	**Siemens NX** Competent
Autocad Competent	**Python** Beginner
ANSYS Fluent | Workbench Beginner	**PDM** Proficient
MATLAB Beginner	**3DExperience Enovia | PLM** Beginner

Certificates

GD&T UCTEA Chamber of Mechanical Engineers	**Strain Gauge Theoretical and Practical Training** Sensor Tek - HBM
CSWA & CSWP | Solidworks Dassault Systèmes	**TS EN ISO 9001:2015 | Quality Management System** TSE Academy
TEI Professional TEI - TUSAS Motor Industry Inc.	**IHA-1 Pilot Certificate Sport/Amateur** Directorate General of Civil Aviation
Specialist R&D Engineer Training ISO Academy/The School of Technology & Innovation	**Artificial Intelligence Awareness and Application Training** KOSGEB
ANSYS Fluent | Workbench Numesys	**R&D Engineering Bootcamp** ISO Academy | The School of Innovation (Dr. Suat GENÇ)

Organizations

2015 – 2021	**Design and Project Community**
Edirne, Turkiye	*Trakya University | Member*