Kivanc Yildiz

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PROFESSIONAL SUMMARY

Staff-level mechanical engineer with extensive experience designing and launching electric motors and precision electromechanical systems at Tesla and Ford, spanning concept through production. Deep expertise in rotor and stator design, thermal architecture, and structural integration, with hands-on prototyping, failure analysis, and cross-functional development across mechanical, electrical, and controls domains. Builds Python-based automation tooling to accelerate hardware development workflows.

EXPERIENCE

Ford Motor Company *Palo Alto, California*
Staff Motor Mechanical Design Engineer - Technical Lead *Oct 2024 - Present*

- Built a Python tool that generates clash-free hairpin winding patterns via Google OR-Tools and produces full 3D stator CAD assemblies with conductors, enamel, insulation, and lamination in minutes (previously weeks)
- Led development of a heavy rare earth (HRE)-free motor platform eliminating dependency on volatile magnet supply chains while achieving performance parity with legacy designs validated through FEA
- Designed a $2M stator manufacturing pilot line to internalize development capability, enabling rapid prototype iteration, cost learning, and manufacturing readiness for future programs
- Reduced component cost by 21% through supplier-facing DFM initiatives, first-principles analysis of part processing, and introduction of novel manufacturing methods
- Authored inspection plans for critical to function (CTF) features, resulting in zero fit failures during prototype builds and enabled statistical process control (SPC) at the supplier for mass production
- Directed the mechanical integration of the motor's thermal management in partnership with the thermal analysis team by engineering the stator fin geometry and the rotor cooling paths to avoid thermal throttling

Tesla, Inc. *Palo Alto, California*
Senior Motor Mechanical Design Engineer - Lead Rotor Engineer *Dec 2022 - Sep 2024*

- Owned mechanical design and structural validation of rotors for Cybertruck, Robotaxi, and Model 3/Y refresh, collaborating with electromagnetics, thermal, and motor controls teams to optimize closed-loop performance
- Applied topology optimization to cut mass by 15% while exceeding power density and fatigue life requirements
- Eliminated a source of NVH by directing an on-site supplier process change, traced issue to inadequate spline gear metrology and mandated adoption of temperature controlled inspection rooms
- Executed rapid, hands-on prototyping and failure analysis, personally building and instrumenting Alpha units in the lab to validate FEA models and perform root cause analysis on test failures to drive design revisions

Motor Mechanical Design Engineer Aug 2019 - Dec 2022

- Directly Responsible Engineer for injection molded plastic phase junction for Model 3/Y and Cybertruck, implementing a design change that eliminated an assembly risk on the assembly line
- Developed and deployed a fully automated Python-based high voltage tester to detect partial discharge failures in stators, replacing a manual process, eliminating human error, and increasing data collection by 300%

EDUCATION

University of Ottawa - Bachelor of Applied Science, Mechanical Engineering

SKILLS

Mechanical Design: Electric Motor Design, EVT/DVT, Mechanism & Fit Design, DFM/DFA, Geometric Dimensioning & Tolerancing (GD&T), Statistical Tolerance Analysis, Topology Optimization, Structural & Fatigue Analysis, Thermal Management
CAD & CAE Software: Python, CATIA 3DExperience, ANSYS Workbench, Solidworks, Minitab