Arnout Groen

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Education

Amsterdam University of Applied Sciences **Sep 2022 – Aug 2026**
Bachelor of Mechanical Engineering *Amsterdam, The Netherlands*

Keizer Karel College **Sep 2017 – Aug 2022**
Secondary education (HAVO) – Major: Nature & Technolog *Amstelveen, The Netherlands*

Skills

Design & CAD: Autodesk Inventor (incl. Nastran), AutoCAD, Fusion 360
Simulation & Physics: Python (NumPy/SciPy), Matlab, Fluid & Thermal Modeling, Quaternions, FEM
Prototyping & Manufacturing: 3D printing, Laser cutting, CNC, CAM
Engineering Methods: GD&T, DFA, DFM, Tolerance Analysis, FMEA, STPA, Root Cause Analysis (RCA)

Projects

Unmanned Aerial Vehicle | *Inventor, Python, Merlin simulator* **Jun 2025**
- Simulated UAV aerodynamics in Python & Merlin, improving stability by $\sim$30% and achieving 34 m/s top speed
- Reduced structural weight by $\sim$25% using composites and structural analysis, maintaining a safety factor of 1.8
- Applied DFM/DFA and defined GD&T for key components & designed modular frame for easier access and servicing
- Integrated GPS, telemetry, and sensors for full autonomy with $\pm$2 m waypoint accuracy & automated landing procedure

High End Bookshelf Speakers | *Inventor, Excel, Xsim, Fusion 360* **Jul 2024**
- Designed a 2-way speaker system, achieving a cost reduction of $\sim$50% compared to commercial alternatives
- Tuned electrical components using XSim, achieving $\pm$3.5 dB response between 70 Hz–20 kHz for a balanced sound
- Designed a parametric speaker cabinet in Inventor, reducing time spent on iterations by $\sim$80% for rapid prototyping
- Identified and mitigated cabinet resonance via FEM modal analysis in Inventor Nastran
- Worked with a CNC manufacturer to produce cabinet parts from G-code, achieving sub-8 hour turnaround

Digital Twin: Hydro-Thermal Simulation | *Python, NumPy, Quaternions* **current**
- Developing a computational physics engine (Digital Twin) to model warm water distribution for hospital infrastructure
- Implementing physics algorithms to simulate pressure drop and thermal dissipation across complex 3D networks
- Utilizing Quaternions for robust 3D pipe orientation and routing, avoiding gimbal lock in the geometric modeling
- Creating an interactive simulation environment allowing for real-time changes to optimize system efficiency
- Automated the generation of 3D CAD models from the simulation, modernizing legacy documentation to enhance technical communication and stakeholder alignment

Work Experience

Machined4You **Mar 2025 – Present**
Project Engineer *Amsterdam, The Netherlands*
- Leading weekly design reviews and coordinating cross-functional feedback, reducing project delays by $\sim$30%
- Designing and reviewing mechanical assemblies for DFM, tolerance stack-up, and production alignment
- Analyzing market trends to support product strategy and investor materials

VOSTA LMG **Aug 2024 – Feb 2025**
Mechanical Engineer Intern *Hoofddorp, The Netherlands*
- Researched & developed an electric ship anchoring system increasing energy efficiency by $\sim$50% & reducing emissions
- Collaborated with 2 external suppliers and 3 internal departments to integrate off-the-shelf & custom components
- Wrote a comprehensive 40-page report detailing the R&D process to guide future electrification efforts

Certifications & Additional Training

Python for Engineers | *Python* **July 2024**
- Learned Python fundamentals, including data processing and working with key libraries (e.g., Pandas, NumPy)

Maintenance | *ISO maintenance & safety protocols* **Feb 2024**
- Applied Root Cause Analysis (RCA) and FMEA to identify and prevent mechanical failures
- Trained in industrial maintenance workflows and ISO-aligned system inspections