

AZIZ BEN ABDALLAH

STAFF HARDWARE DEVELOPMENT ENGINEER – IMPLANTABLE MEDICAL DEVICES

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PROFILE

Mechanical & Hardware Engineer with proven expertise in the development of safety-critical implantable medical devices. Currently Staff Hardware Development Engineer at UroMems, leading the design, simulation, and validation of cross-functional hardware assemblies, from micro-mechanical systems and force sensors to substrate integration and thin-film deposition. Strong background in CAD, finite element simulation (Ansys), and process industrialization (injection molding, silicone processing, surface treatment). Passionate about bridging mechanics, materials, and electronics to deliver innovative, high-reliability products in regulated ISO 13485/FDA environments.

WORK EXPERIENCE

STAFF HARDWARE DEVELOPMENT ENGINEER – IMPLANTABLE MEDICAL DEVICES

UROMEMS – Grenoble | Apr 2024 – Present

- Lead engineer on Control Unit developments: force sensor design, substrate optimization, and thin-film deposition integration.
- Developed and validated silicone-based occlusive cuffs, combining simulation (hyperelasticity, fatigue) and experimental testing.
- Defined inspection criteria, tolerance stacks, and risk assessments ensuring compliance with ISO 13485 and MDR.
- Drove cross-functional collaborations with suppliers (injection molding, surface treatment, silicone dip-molding) to mature processes.
- Coordinated failure analysis, design verification, and prototype builds in a regulated clinical environment.
- Authored design documentation, DFMEAs, and contributed to technical packages for regulatory submissions.

INDUSTRIAL PROCESS ENGINEER – RAILWAY INDUSTRY

ALSTOM – Ornans | Sep 2021 – Mar 2024

- Developed process flows, tooling requirements, and validation plans for manufacturing high-volume safety-critical components.
- Led FMEAs and risk assessments to ensure compliance and robustness in production.
- Collaborated with design teams and suppliers to optimize manufacturability and assembly.
- Managed ERP (SAP) industrial cycles, technical documentation, and assembly instructions.
- Contributed to continuous improvement projects in quality and efficiency.

DESIGN ENGINEER – AUTOMOTIVE & MEMS APPLICATIONS

VALEO – Caen | Dec 2020 – Sep 2021

- Developed ADAS and ultrasonic sensor housings with MEMS-based transducers, using CATIA

and validated performance with ANSYS simulations.

- Strengthened MEMS packaging expertise by optimizing housing design for sensor sensitivity, robustness, and miniaturization.
- Standardized proximity sensor platforms for large-scale production with MEMS integration.
- Conducted multiphysics simulations and data analysis with MATLAB for product optimization.
- Supported R&D; planning and prototype builds in collaboration with project teams.

MATHEMATICS AND PHYSICS TUTOR

ACADEMIA – Besançon | Sep 2018 – Jun 2021

- Tutoring in mathematics and physics (high-school/university level).
- Developed tailored teaching methods to support student progress.

EDUCATION

SUPMICROTECH-ENSMM | Sept 2018 – Jun 2021

Master's Degree in Engineering (Equivalent MSc)

Specialization: Mechanical Design, Process Optimization, Continuous Improvement

SKILLS

- CAD & Simulation: Creo Parametric, CATIA V5, SolidWorks, Ansys (FEA multiphysics), MATLAB
- Hardware & Processes: Thin-film deposition, Substrate processing, Force sensors, Injection Molding, Extrusion, Silicone dip-molding, Surface treatment
- Methods & Tools: FMEA, Tolerance Analysis, Risk Assessment, DoE, SAP ERP, MS Project
- Regulatory: ISO 13485, FDA 21 CFR Part 11, MDR compliance

LANGUAGES

- French: Native
- English: Fluent
- Arabic: Native

INTERESTS

Sports (Trail running, Basketball, Swimming), Road trips (Italy, Nordic countries), Volunteering (WWOOF, Junior Enterprise)