

Alessandro Berruti

Hardware Engineering | High-Performance Electronic Systems | Field Application

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Summary

Hardware Engineer & Field Application Specialist with 10+ years building complex embedded systems across automotive, robotics, IoT, industrial, and AI edge domains. Co-founded a greentech IoT startup where I owned the full cycle — from hardware architecture and PCB design to hands-on technical demos and customer onboarding with energy operators and industrial clients — while in parallel taking on selective consulting engagements in robotics, precision timing, and AI edge systems. That dual role as engineer and customer-facing technical lead is the approach I want to build on: bringing deep hardware knowledge directly into customer engagements, from evaluation through production deployment. Track record in board design, system bring-up, signal integrity, power delivery, and NPI execution; experienced leading cross-functional engineering teams (up to 6 engineers) through full product cycles from concept to mass production.

Professional Experience

Co-Founder, *Enercade srl, Torino, Italy* **Jan 2023 – Present**

- Founded greentech startup developing an IoT platform for Renewable Energy Communities; primary technical contact for energy operator and industrial clients, delivering technical demos and hands-on integration support from evaluation to deployment
- Designed hardware devices for energy monitoring and management (embedded controllers, metering interfaces, wireless connectivity)
- Secured seed funding from VCs and established strategic partnerships with industrial partners enercade.com

Hardware Tech Advisor, *Monitor The Planet, Faenza, Italy* **May 2025 – Present**

Autonomous Robotics

- System architecture definition, subsystem integration, and power budget for outdoor/indoor autonomous robot (Nvidia Orin NX); ROS2 driver modules for motors, sensors, and connectivity interfaces
- AI-based semantic segmentation pipeline on Orin NX for real-time stereo vision; GNSS-based outdoor and visual SLAM-based indoor navigation architecture
- Functional safety strategy: watchdog logic, emergency-stop, and fault detection

AI Surveying Node

- PCB design integrating Raspberry Pi CM5 SoM, 5G, multi-constellation GNSS, and Axelera AI Metis M.2 (PCIe Gen3 ×4, 214 TOPS INT8) for edge AI inference
- Computer vision pipeline for 360° multi-camera fusion (sensor sync, image stitching, HDR); thermal and mechanical design of IP-rated enclosure

Hardware Tech Advisor, *Synchropal, Torino, Italy* **Dec 2023 – Present**

- Designed FPGA-based rack-mounted precision timing platform: ADS-B, multi-GNSS, PTP, rubidium oscillator, and OCXO for sub-microsecond accuracy
- RF front-end for ADS-B 1090 MHz with controlled impedance routing; multi-rail power delivery and thermal dissipation for 24/7 operation

Hardware Tech Advisor, *Pipeln, Torino, Italy* **Dec 2023 – Oct 2024**

- Designed all-in-one control board for pipe inspection rover: BLDC motor drivers, LiPo battery management, Raspberry Pi CM5 SoM, waterproof connectivity, and IP-rated environmental sealing

Engineering Leader, *TUC.technology, Torino, Italy* **Aug 2022 – Dec 2023**

- Led multidisciplinary team (6 engineers: HW, FW, mechanical) delivering modular vehicle connectivity platform from concept to production; owned technical architecture across hardware, firmware, and system integration
- Coordinated clients, suppliers, and external consultants; drove DFM/DFT optimization, design reviews, validation, and EMC compliance for automotive-grade product [Product demo video](#)

System & Hardware Engineer, *TUC.technology, Torino, Italy* **Jan 2022 – Aug 2022**

- Led hardware and firmware development for automotive connectivity module: high-speed SerDes (Ethernet 1000/100Base-T1), DDR, eMMC; full design cycle from schematic to 8-layer PCB stack-up
- Hands-on board bring-up, SI/PI simulation, EMC pre-compliance, and signal integrity validation

Hardware Lead & Project Manager, *EMA Global Engineering srl, Collegno, Italy* **Oct 2020 – Jan 2022**

- Led hardware team (3-4 engineers) for automotive ECU and HVAC control systems; schematic design, FMEA/DFMEA, PCB layout oversight for safety-critical applications
- Managed validation strategy, production testing, manufacturing readiness, and supplier relationships

Firmware & Hardware Engineer, *EMA srl, Collegno, Italy* **Apr 2017 – Oct 2020**

- Developed model-based embedded firmware for automotive seat control (Simulink/C); designed hardware for low-power IoT nodes and EV instrument panels
- Power delivery simulation, battery management, and communication protocol validation

System Integrator & Embedded Developer, *Alsiber.it srl, Pavia, Italy* **2015 – 2020**

- Designed mechatronic control systems for firefighting robots; developed embedded software for access control and industrial automation

Education

Master's Degree in Electronic Engineering — 108/110, *Politecnico di Torino, Torino, Italy* **2018**

Bachelor's Degree in Electronic Engineering — 97/110, *Università degli Studi di Pavia, Pavia, Italy* **2015**

Technical Expertise

System Architecture:	AI edge platforms (Nvidia Orin NX), FPGA designs, modular compute systems
Hardware Design:	Schematic, multi-layer PCB (8+ layers), VRM/power delivery, DDR memory, RF front-end
High-speed:	PCIe, Ethernet (1000/100-T1), SerDes, DDR, MIPI CSI-2/DSI, CAN, SPI, UART, I2C, multi-GNSS, ADS-B, PTP
Validation:	SI/PI simulations, EMC/EMI, thermal modeling, environmental testing, reliability
Production:	DFM/DFT/DFR, volume manufacturing, NPI execution
Tools:	Altium Designer, SolidWorks, C/C++, Python, MATLAB/Simulink, ROS, Git, Jira
Languages:	Italian (native), English (professional)