

ASNA AZHARI

Hardware Engineer | PCB Design | Embedded Systems

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SUMMARY

Hardware engineer with 2 years 9 months in medical equipment, hired as the company's first hardware engineer and building that function from the ground up with no predecessor. Takes boards from schematic to production-ready fabrication files and the verification standards behind them. Completed three products abandoned by vendors, and brought a product that had failed EMC testing at an accredited laboratory through to a passing retest.

EXPERIENCE

PT Mega Andalan Elektromedik

Yogyakarta, Indonesia · medical devices

January 2024 – Present

Lead Hardware Engineer

January 2026 – Present

- Lead the hardware function across five product lines while continuing to design hands-on, and mentored one engineer to independent work within six months.
- Diagnosed a conducted emission failure at an accredited EMC laboratory, isolating a floating DC ground by measurement (noise down 22.7 dB), then specified the EMC filter that carried all four movement conditions through retest with at least 9 dB margin.
- Own the verification standards the team works to: a nine-document set per board from schematic review to requirement traceability, and test standards and acceptance criteria for seven electrical components and assemblies, five of them incoming parts.
- Designed a thermal safety board to IEC 60601-2-19, including a clause-by-clause analysis showing where the previous design did not comply.
- Ran a sixteen-session calibration campaign on an incubator air temperature sensor against a Fluke INCU II reference, changing one variable per session. Firmware without ADC calibration accounted for 1.6 °C of the error, probe tip position for 0.3 °C, and the probe and board together for under 0.1 °C. The result is a draft one-point calibration rule.

Hardware Engineer

January 2024 – December 2025

- Designed an in-house mainboard replacing an imported operating table controller, consolidated so one board serves three product variants and both remotes, removing a separate stepper driver board. Per-unit cost fell roughly 70 % against the imported part, and the design reached mass production at 50 sets.
- Redesigned a Power Supply Control Board abandoned by a vendor: OR-logic supply so the system runs from either battery or charger, and a dedicated MCU on the PSU board so a display failure no longer stops an operating table in use. Now in mass production.
- Contributed to STM32 firmware on the team codebase: sensor calibration against instruments, safety logic (overcurrent latching, temperature hysteresis, cross-axis limits, safe behaviour on sensor loss), and LiFePO4 fuel gauging.
- Built a PC-side test tool to log battery discharge and charge profiles, whose data produced the OCV table used in firmware.

Earlier: internships at PT Ultima Desain Otomotif and PT Murni Cahaya Pratama, 2018 – 2022.

SELECTED PROJECTS

AVX-MG-101, Genset Metering & Cut-off

Three-phase 400/230 V monitoring board for 25 to 200 kVA gensets, designed end to end for PT Avenxor. ATM90E36A metering in full galvanic isolation from the ESP32-S3 host, 8 mm reinforced creepage, fail-safe cut-off relay, MQTT with local buffering. Fabricated and bench-verified: the voltage front-end reads 227 V where a multimeter reads 225 V, with no calibration applied, and the isolated SPI link is proven in hardware.

Baby Incubator Mainboard

Six schematic sheets, 293 placements. Three-rail current monitoring, thermocouple front ends, three cut-off relays, and an external watchdog, none of which existed in the earlier vendor design. Released for production with full fabrication and verification documents. Preparing for clinical trial.

Wireless Nurse Call (BLE)

Two products designed from scratch: an nRF52832 patient button and an ESP32-C3 receiver module. Chip antenna with a π matching network on swappable footprints, so tuning never requires a PCB respin. Dry-contact output for drop-in compatibility with installed systems. Average current cut from 0.90 to 0.60 mA and battery life from 46 to 69 days, every figure measured.

Blue Light Phototherapy

Neonatal phototherapy mainboard, merging a previously separate control board and driver board into one with minimal cabling. LT3518 constant-current LED driver with PWM dimming for irradiance dosing. Mapped spectral irradiance across 18 grid points with a spectrometer, and caught a band-width divisor error that had doubled every recorded value before the numbers were relied on. Passed national regulatory testing.

EDUCATION

B.Eng. Electrical Engineering, Control Systems

Universitas Negeri Yogyakarta · GPA 3.46 / 4.00 2019 – 2023

Thesis: predicting the effect of discharge current on the State of Charge of a 108 V 259 Ah battery pack using LSTM.

SMK Negeri 2 Depok Sleman, Mechanical Engineering, 2015 – 2019.

CERTIFICATIONS & LANGUAGES

PCB Design & Multilayer PCB · Udemmy, 21.5 h, 2024

Micro-credential, Internet of Things · Kampus Merdeka, 2021

Certificate of Appreciation, Machine Learning · Bisa AI, 2023

3rd Place, National Skills Competition in CAD & Design · 2017

Freelance: greenhouse control mainboard, 10 panels · PT Arqom Tech, 2024–2025 · Indonesian (native) · English (technical reading & writing)

SKILLS

Technical: PCB design (EasyEDA Pro) · PSU & monitoring · EMC & grounding · RF antenna layout · low-power design · battery management · analog & digital measurement · IEC 60601 · technical documentation

Embedded: STM32 F4 · G4 · H5 · ESP32-C3 · ESP32-S3 · nRF52832 · C · C++ · Python · CubeMX · ESP-IDF · CMake · Git · I2C · SPI · UART · BLE · RTOS

Instruments: oscilloscope · logic analyser · multimeter · spectrometer · Fluke INCU II incubator analyser · accredited EMC laboratory testing · soldering & rework

Professional: root-cause problem solving · self-directed work · mentoring · cross-functional collaboration · vendor coordination · attention to detail · fast learning