

MUHAMMAD NUR HIDAYATULLAH ADZANI

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Electronics and Hardware Engineer with multidisciplinary expertise in embedded systems, hardware product development, manufacturing, and technology commercialization. Experienced in leading end-to-end product development from concept and prototyping to production and market launch, with a focus on wearable technology, wellness devices, and connected hardware solutions. Combining strong technical capabilities with business acumen, I excel at translating engineering challenges into scalable products, strategic partnerships, and sustainable growth opportunities. Passionate about innovation, R&D, engineering leadership, and developing impactful technologies that improve people's lives.

Education

State Polytechnic of Malang

2017 – 2021

Bachelor of Applied Engineering in Electronics (GPA: 3.59/4.00)

Malang, Indonesia

- Bachelor Thesis: Smart Metering PDAM System Using Token Number Based on Internet of Things in Household Scale

Professional Experience

PT. Regenesis Studio Indonesia

Feb 2026 – Present

R&D Engineer (Electrical and Electronics) - Contract

Bali, Indonesia

- Contributed to diagnose and resolve EMC radiated emission failures during compliance testing by redesigning the power electronics circuit, selecting appropriate shielded and filtered cabling, and re-engineering the audio subsystem setup, successfully achieving compliance with EN55014 radiated emission requirements
- Developed and maintained comprehensive production documentation, including assembly SOPs, electrical wiring standards, test procedures, and quality verification checklists to ensure consistent manufacturing and product reliability.
- Led technology transfer and technical training initiatives for international third-party manufacturing and representative partners, ensuring successful process adoption, production readiness, commissioning and compliance with engineering and quality standards.
- Collaborated with hardware and firmware teams to define feature requirements and electronics design for POD v4, integrating RS485 interface and EMI reduction techniques (e.g., shielding, filtering, layout optimization) to enhance system reliability and regulatory compliance

PT. Recharge POD Bali Ltd.

Oct 2024 – Feb 2026

R&D Engineer (Electrical and Electronics) - Contract

Bali, Indonesia

- Designed and developed electromechanical control systems for automated door operation, integrating motor control and fail-safe release mechanisms to ensure reliable performance and operational safety.
- Contributed to hardware design and development activities including schematic creation, PCB design reviews, prototype evaluation, and product validation.
- Designed production testing methodologies and validation procedures to ensure compliance of vendor-assembled modules before system integration.
- Developed electrical and electronic subsystems like PEMF, stroboscopic, infrared, vibration, aromatic and audio therapy for wellness technology products, supporting design, prototyping, validation, and production implementation.
- Developed technician-friendly commissioning SOP's covering installation, wiring, testing, and reporting procedures to improve field deployment consistency.
- Engineered BOM optimization initiatives that reduced material costs by up to 80% while maintaining product functionality and manufacturability.
- Managed and coordinated cable production with 3rd parties, increasing production effectiveness by 750% and improving operational efficiency by up to 90%.
- Assisted the production manager in creating structured project timelines using Gantt charts to ensure efficient task tracking and planning.
- Coordinated export preparation activities including packing list documentation and logistics support with cross-functional teams.
- Assisted engineering and management teams with remote diagnostics, troubleshooting, and technical support for deployed systems.
- Collaborated with international manufacturing partners to support production setup, technical alignment, and knowledge transfer activities.
- Execution installation, commissioning, and operational support of wellness technology systems for international customer, ensuring high reliability and seamless user experience.

State Polytechnic of Malang (Prof. Budhy Setiawan's Mechatronics Lab)**Jan 2024 – Aug 2024***Research Assistant (Mechatronics) - Intern**Malang, Indonesia*

- Lead and mentored interns and junior students, ensuring timely completion of their theses project.
- Assisting with a laboratory research project to develop 3D printing and renewable energy.
- Maintain laboratory equipment and tools, and ensure they are functioning properly.

PT. Utama Marina Indonesia**Jan 2022 – Jan 2023***Commissioning Engineer – Contract**Jakarta, Indonesia*

- Lead commissioning team to check each installation according to the PID drawings.
- Identified problems or and failures in the system and fixed them through PLC programming or electrical installation according to PID drawings.
- Liaise with shipyard and vessel crew to conduct commissioning and maintaining daily report to board of director.
- Managed class inspections and vessel crew training in accordance with working principles and type approval certificates from classification societies such as BKI, RINA, DNV GL, and CCS.

Vocational Education Development Center (VEDC)**Jan 2021 – Feb 2021***Engineer – Intern**Malang, Indonesia*

- Assigned to make electrical circuit to start STAR-DELTA Motor with contactor..
- Assigned to make electrical circuit and ladder diagram to start STAR-DELTA Motor with PLC.
- Assigned to making electrical-pneumatic circuit without PLC.
- Assigned to make electrical-pneumatic circuit and ladder diagram to start system with PLC.

PT. Perusahaan Listrik Negara (PLN) Persero**Jan 2020 – Feb 2020***Engineer – Intern**Lawang, Indonesia*

- Assigned to conduct service inspection to early detection of abnormalities that may occur in the transformer without turning it off
- Assigned to conduct service measurement to do maintenance operation with thermovision, voltage measurement.
- Assigned to conduct maintenance operation in battery room to measure DC Voltage for every single battery.

iMake Official**Oct 2019 – Present***Founder – Self Employed**Malang, Indonesia*

- Executed project preparation, component purchasing, programming, PCB design, electrical wiring, and commissioning. Ensured the system met the client's working principles, resulting in an average project completion time of 1 month.
- Managed vendor in 3D Design and workshop manufacturing for mechatronics project. Contributing to directing vendor according to the sensor or actuator working principle and reduce the failure and over budgeting from mechanical manufacturing by 20%
- Demonstrated proficiency in executing project according to the client's system working principle. Enhancing efficiency of working principle and contributing to a 10-30% decrease in overall client's budget.
- Completed IoT, Mechatronics, and system control projects with averaging 50 projects per year with a 100% satisfactory rate.

Projects

POD Regulatory Compliance EMC Test**2026***Root-Cause Analysis, Hardware Redesign, EMC Compliance*

- Diagnosed EMC radiated emission non-compliance during EN55014 testing on a power electronics product, identifying high-frequency noise sources in the power stage and redesigning circuit layout to suppress conducted and radiated noise at the source
- Selected and re-routed shielded cabling to minimize radiated coupling paths
- Re-engineered audio circuit environment setup to eliminate secondary emission paths
- Achieved compliance with EN-55014 radiated emission limits, enabling product certification readiness

POD Installation**2025***Installation, Commissioning, Troubleshooting*

- Executed on-site installation of POD units at client locations, ensuring proper electrical connections, grounding, and adherence to safety and technical specifications.
- Performed system commissioning across audio-visual, peripheral connectivity, power supply, door mechanism, and therapy modules (vibration, PEMF, stroboscopic) to ensure full operational readiness.
- Diagnosed and resolved hardware and connectivity issues during deployment, minimizing downtime and ensuring smooth handover.

- Delivered fully operational units to clients with documentation and technical guidance, ensuring customer readiness for independent operation

POD Door Mechanism Control

2025

Embedded Systems, Mechatronics, DC Motor

- Architected and developed an embedded motor control system for a door mechanism, enabling bidirectional DC motor control, dynamic speed regulation, and a dedicated hardware commissioning mode for installation, calibration, and maintenance independent of firmware execution.
- Engineered a multi-state proximity sensing scheme (OPEN, CLOSE, NEAR-OPEN) to enable adaptive motor speed control, introducing a deceleration state prior to full-open position to reduce mechanical shock and enhance perceived product quality
- Designed and validated a limit-switch-based safety system to stop motor operation at critical positions, preventing over-travel and protecting the door mechanism from potential damage.

POD Door Automatic Release System

2025

Embedded Systems, Mechatronics, Motor Stepper

- Designed a clutch locking mechanism using a stepper motor driven by an NE555 timer in astable mode, enabling controlled engagement and disengagement cycles
- Developed a multi-mode control interface with latch buttons for direction selection (CW/CCW), operation mode (automatic/manual), and release mechanism enable/disable, along with a trigger button for manual on/off control
- Implemented a sensor-based stopper mechanism to halt the stepper motor upon confirming trigger latch engagement within the solenoid door lock, ensuring precise and safe stopping position
- Engineered a fail-safe release behavior where, upon power outage with the release mechanism enabled, the clutch automatically disengages from the solenoid door lock, allowing the door to open without external power—ensuring safe egress during power failure
- Validated system functionality through proof-of-concept prototyping, confirming reliable mode switching, mechanical engagement/disengagement, and fail-safe performance

POD PEMF (Pulse Electro Magnetic Field)

2025

Power Electronics, Embedded Systems, PEMF

- Fabricated PEMF coil windings according to design specifications for prototype development and functional validation
- Collaborated with the electronics team on PEMF circuit design discussions, contributing to topology selection and component considerations
- Developed a standalone PEMF module for integration into the existing POD system, enabling independent therapy functionality

POD Hardware PCB Development

2025

Power Electronics, Embedded Systems, Electronic design

- Contributed to the design of a 2-layer PCB for the POD system, covering schematic and layout considerations
- Selected components for sensing and actuator driver circuits used across the POD system, balancing performance, availability, and reliability requirements
- Validated PCB functionality and performed troubleshooting to resolve design and manufacturing considerations prior to deployment

POD Project Documentation

2025

Documentation, Writing

- Authored production SOPs covering pre-assembly, full assembly, and testing procedures to standardize manufacturing workflow
- Created electrical drawing documentation to support assembly, troubleshooting, and design reference across POD versions
- Compiled and maintained PCB inventory lists used across different POD versions to support engineering and production traceability
- Organized and structured engineering files related to electronics design, improving accessibility and version control for the team

POD Production Validation Tester Module

2025

Embedded Systems, Test Engineering, Production Validation

- Designed and developed a tester module for validating pre-assembled electronic modules from manufacturing vendors.
- Implemented automated input and output verification routines to ensure compliance with design specifications before integration.
- Improved production quality assurance by detecting hardware faults before final assembly and deployment.

Auto LED Car Matrix Module

Jan 2024

Embedded Systems, Automotive Electronics, Product Development

- Designed a 32-channel automotive LED matrix controller including schematic design, PCB layout, and hardware validation.
- Developed firmware supporting more than 20 programmable LED animation patterns for automotive lighting applications.
- Collaborated with engineers and workshop technicians during installation, testing, and product deployment.
- Successfully commercialized the product with 10 units sold during the initial launch phase.

Ballast Water Treatment System (BWTS) Commissioning

Jan 2022 – Jan 2023

Marine Engineering, PLC Systems, Electrical Commissioning

- Commissioned BWTS installations on 14 commercial vessels across cargo, tanker, and container ship categories.
- Performed electrical troubleshooting, PLC validation, functional testing, and system verification prior to vessel handover.
- Designed and installed independent alarm interfaces to improve fault monitoring and operational safety.
- Conducted class inspections and technical training for vessel crews according to operational and regulatory requirements.

Selected vessels: MV. Sinar Solo, MT. Bloom, MV. Seamec Gallant, MT. Gaschem Moshel, MV. Meratus Samarinda, MV. UACC Manama, and 8 additional vessels.

Basketball Scoreboard & Shot Clock System

Jan 2019

Embedded Systems, RS-485 Communication, PCB Design

- Designed and developed a custom controller board for a basketball scoreboard and shot clock system.
- Integrated MAX485-based RS-485 communication for reliable real-time synchronization between controller and display modules.
- Performed retrofit and hardware integration on an existing installation to improve maintainability and system reliability.
- Completed hardware design, testing, and deployment within a two-week project timeline.

Technical Skills

Electronics: ESP32, Schematic & PCB Design, Power & Control Electronics, EMC Testing

CAD & Prototyping: Autodesk Inventor, Fusion 360, SketchUp, 3D Printing, CNC PCB and laser cutting

IoT: Node-RED, WiFi, BLE, Lo-Ra

Programming Language: Python, C++, node.js

Additional Software: Touchdesigner, EasyEDA, VSCode

Core Competencies

Product Development: Hardware Product Development, Rapid Prototyping, DFM, EMC Testing, Validation Testing

Business Development: Technical Sales, Market Research, Strategic Partnerships, Product Commercialization

AI & Emerging Technologies: AI-Assisted Development, Workflow Automation, Data-Driven Decision Making

Industry Focus: Wellness Technology, Wearable Devices, IoT Products, Consumer Electronics, Automotive Products

Languages

Indonesian (Native) English (B2) Mandarin Chinese (HSK 1) French (A1)

Publication and Patent

Aplikasi Smart Monitoring Penggunaan Energi Listrik

Nov, 3 2020

ID EC00202045897

State Polytechnic of Jakarta

- Published on Annual Advanced Technology, Applied Science, and Engineering Conference (ATASEC) 2020
- This Mobile App is made to display the all electrical measurement in real-time more than one user or hardware. The unit to be measurement is AC Voltage, Current, Apparent Power, Real Power, Energy, and Power Factor.

Organization and Volunteering

Sunset Di Kebun - Bali

July 2026

Volunteer - Engineering

Kebun Raya Bali

- Installed temporary electrical infrastructure, including power distribution, cabling, and event lighting systems.
- Supported lighting and audio system setup, equipment testing, and operational checks before and during the event.
- Performed on-site technical troubleshooting and ensured safe, reliable operation of electrical and AV systems throughout the event.

PLC Competition WSEC

Mar 2018 – May 2018

Chief Executive

State Polytechnic of Malang

- Achieved a 50 participant's from internal Polytechnic.
- Achieved a 20 sponsorship of the event including FnB and media partner.

Workshop Electro Politeknik Negeri Malang

Feb 2019 – Feb 2020

Head Division of Technopreneur

State Polytechnic of Malang

- Helped the organization achieve an average monthly revenue with average of 8 million rupiah through service and product sales.
- Trained division members in troubleshooting and electronic repairs through scheduled weekly sessions, with an average of 5 participants from the team.

International Workshop Rooftop Solar Panel Technology

Jun 2019 – Aug 2019

Event Organizer

State Polytechnic of Malang

- Started the event successfully with over 100 workshop participants. Consisting of 80% lecturers, 10% degree students, and 10% general public.
- Managed the documentation, communicate with local television to take the news of the event, and serve the foreign speaker necessary before and after event with 100% satisfactory.

KSSH 29 (Kiprah Seni Smarihasta)

November 2016

Head Division of Equipment

Graha Cakrawala - Malang

- Led the planning, logistics, and installation of event infrastructure, including a 20×6 m main stage, 6×6 m mini stage, and 20 units of 5×5 m canopy tents.
- Coordinated the setup and operation of a 30,000 W professional audio system, supporting electrical distribution, cabling, and equipment integration.
- Managed the equipment crew during load-in, event operations, and dismantling while ensuring compliance with safety standards and project timelines.