

Łukasz Błaszczyk

Automation & Electrical Engineer | BMS, PLC, Power Distribution | Data Centers

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Summary

Automation and electrical engineer in industrial and data center projects since 2024. Designs electrical and BMS systems for containerized AI data centers (230 kW to ~4 MW IT): single-line diagrams, N+1 generator, UPS and ATS architecture, IEC 61439 switchboards up to 630 A in EPLAN Electric P8, and IEC 62305 lightning protection and earthing. Builds a redundant BMS/SCADA on Beckhoff TwinCAT 3 (EtherCAT, Modbus, MQTT, IO-Link). Earlier: PLC and HMI software for data center liquid cooling units and crane controls with ISO 13849 safety functions (Siemens TIA Portal).

Technical Skills

PLC (IEC 61131-3): Siemens TIA Portal (STEP 7; S7-1200, S7-1500), Beckhoff TwinCAT 3, Finder OPTA; ST/SCL, LAD, FBD; safety programs with F-blocks

HMI and SCADA: Siemens WinCC; custom BMS/SCADA on TwinCAT 3; web HMI (HTML)

Networks: EtherCAT, Profinet, Modbus TCP, Modbus RTU, MQTT, IO-Link

Power distribution: SLD, LV switchboards up to 630 A (IEC 61439, IEC 60364), cable sizing, voltage drop, short-circuit checks (SIMARIS), selectivity, generators, UPS, ATS, lightning protection (IEC 62305)

Drives: Danfoss and ABB frequency inverters (VFD)

CAD: EPLAN Electric P8, SEE Electrical Expert, SOLIDWORKS Electrical

Software: Python, C++, Git, Linux, Docker

Work Experience

Junior Automation Engineer (Electrical Design & BMS) 03/2026 – present

Hyperfusion *Warsaw, Poland*

Containerized AI data centers: HyperPOD (~4.4 MW IT, ~6.7 MW total with cooling, 50 °C ambient) and a 230 kW container.

- Identified a generator overload risk under feed loss in SLDs for NVIDIA Blackwell Ultra and Vera Rubin deployments (redundancy, UPS, busway, ride-through); proposed rack-level load shedding on top of N+1
- Prepare single-line diagrams (LV distribution, ATS-fed auxiliary boards, UPS) and size the power train: 4 power units, each with a 3 MVA transformer and a 3 MVA genset, loaded below 2 MW per unit (~6.7 MW pod), any 3 carrying the full load (3+1, N+1)
- Develop a BMS/SCADA system (20+ I/O) on TwinCAT 3 from an I/O list derived from the mechanical P&ID: redundant EtherCAT master, relay watchdog, redundant 24 V supply; IO-Link, Modbus TCP, Modbus RTU, MQTT
- Design LV and BMS control switchboards (5+, up to 630 A, IEC 61439) in EPLAN Electric P8 (IEC 81346)
- Size LV cables per IEC 60364; check voltage drop, short-circuit levels (SIMARIS) and breaker selectivity
- Design lightning protection and earthing (IEC 62305, SPDs); review MV/LV cable and busway method statements

Junior R&D Automation Engineer (PLC/HMI) 12/2025 – 02/2026

DCX Liquid Cooling Systems *Warsaw, Poland*

Liquid cooling for data centers: FDU v1/v2 (CDU) and RDHX rear door heat exchangers.

- Developed PLC control software in Siemens TIA Portal and Beckhoff TwinCAT 3 for the CDU and RDHX units
- Integrated units with facility BMS over Modbus TCP; built WinCC HMIs and a web HMI for remote diagnostics
- Designed panels in EPLAN and SOLIDWORKS Electrical; planned and supervised assembly and commissioning

Junior R&D Electrical/Automation Engineer (PLC, VFD, Crane Controls) 06/2024 – 11/2025

Fabryka Urządzeń Dźwigowych S.A. *Mińsk Mazowiecki, Poland*

R&D of control systems and electrical installations for cranes and hoisting equipment.

- Programmed S7 PLCs in TIA Portal (Profinet) for 2–30 t cranes, incl. safety functions per ISO 13849
- Configured Danfoss and ABB VFDs for crane drives; integrated a hoist height display over Modbus RTU
- Integrated SEW gearmotors, Pepperl+Fuchs sensors and HBC-radiomatic radio remotes into crane controls
- Designed crane schematics (SEE Electrical Expert) and documentation for 20+ cranes, incl. UDT/TDT dossiers

Education

Warsaw University of Technology 10/2024 – present

Mechatronics of Vehicles and Construction Machinery *Warsaw, Poland*

B.Eng. (inż.), in progress, expected 2029; part-time (weekend) studies

- Contributor to dynpy (*github.com/bogumilchilinski/dynpy*), an open-source Python library
- Co-founder of SKN "Admirał", a student group on unconventional vehicles

Technical High School No. 2 (ZSZ nr 2) 09/2019 – 05/2024

Mechatronics *Mińsk Mazowiecki, Poland*

Mechatronics Technician (technik mechatronik)

- Graduated with distinction; vocational qualifications ELM.03 and ELM.06; Erasmus+ internship in Italy (04/2023)
- Internships at MEDCOM, 2022–2023 (about 4 months): wiring electrical cabinets for rail vehicles and buses

Achievements and Training

Polish PLC Programming Championships, Editions VI and VII | *mistrzostwaplc.pl*

National PLC programming competition. Competed in the Master (2024) and Expert (2025) categories, plus OPEN, on Siemens TIA Portal, LOGO!, Finder OPTA and Fatek.

Econverse Hackathon 2025, 1st place | *github.com/LukeMech/hackathon*

Winning team at Kozminski University; built *LockIn*, an AI recruitment tool.

4Better Automation Course 2024 | *exp.lukemech.org/4better*

Training on SEW-Eurodrive drives, Pepperl+Fuchs sensors and igus cable carriers.

Languages

Polish: native

English: C1, Cambridge English Scale (*exp.lukemech.org/c1*)

Additional Information

Driving license: Category B; available for business travel

Projects

SmartPrzyczepka (since 2024) | *exp.lukemech.org/trailer*

ESP32-C3 (ESP-IDF) control system for a camping trailer's electrical installation.

immutable-sbc (since 2026) | *github.com/LukeMech/immutable-sbc*

OTA-updatable Fedora bootc images for single-board computers, built in CI.

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