



Nicolas Bamamou

Nationality: Guinean (Guinea) **Date of birth:** 01/01/1994

Phone number: (+86) 18810799128 **Home Phone number:** (+86) 13059188603

Email address: bamamounicolas@gmail.com **WeChat:** Nicolas13059188603

WhatsApp Messenger: +8613059188603

LinkedIn: [linkedin.com/in/bamamounicolas](https://www.linkedin.com/in/bamamounicolas)

Website: <https://github.com/Bamamou>

Other: Yizhuang line, 100000 Beijing (China)

ABOUT ME

I am a highly dedicated and polyvalent Battery Engineer with a master's degree in electrical engineering from the Institute of New and Renewable Energy of Beijing Jiaotong University after a bachelor's degree in industrial engineering and maintenance from Gamal Abdel Nasser University.

- Specialized in Lithium-ion power battery systems for stationary applications (Grid-storage, microgrid, UPS, BESS), mobile applications (EV, PHE, BEV, ATV, Scooters, E-Motorcycles) and consumer electronics applications (laptop, E-cigarette, robots, drone, mobile phone, etc.)
- Excellent written and spoken communication skills in French, English, and Chinese.
- A wide range of working experience, varying from the mining industry to engineering consultancy and electric mobility as well.
- Currently Senior battery engineer at Evoke Motorcycles Beijing R&D center.

WORK EXPERIENCE

Senior Battery Engineer

Evoke Motorcycles [21/07/2022 – Current]

City: Beijing

Country: China

Evoke Motorcycles is an exciting company redefining what are electric motorcycles. The company's goal is to use cutting-edge improvements in automotive and electric drive-train technology to improve completely and radically the riding experience with high-power and ultra-fast charging power battery integration in cost effective and robust drivetrain with intelligent ECU control system.

As the company's senior battery engineer, my tasks include not limited to:

- Research on key battery technologies and principles then apply them to practical, real-world applications.
- Contribute to new projects, such as BMS integration, battery module design, pack design, HV parts sizing, Project scope elaboration.
- Integration of AC and DC fast charging system and protocols.
- Sizing of liquid or air-cooled systems for thermal management of power train (Motor, Motor controller (MCU), Heat exchanger, reservoir, piping, cooling plates)
- Create SOPs for battery pack assembling and collaborate with other teams in brainstorming innovative ideas.
- QC of BMS, OBC, DC-DC, HMI, PDU or battery junction box.
- Battery IR, OCV-SOX, and Capacity testing, thermal management.
- Variable power discharge test according to USABC (United States Advanced Battery Consortium) and HPPC at the cell level.
- Prototyping, sketching, and designing battery pack components into manufacturable products using CAD (Fusion 360 or Catia V5).
- Establishing a complete process of laser and spot-welding techniques for both nickel, and aluminum busbars to battery cell terminals.
- Temperature effect modeling on RUL estimation during the laser welding process of prismatic cells.
- BMS wire harnessing and wireless voltage and current sensing for balancing wires.

- Custom PCB design using Altium or KiCAD, EasyEDA (power supply, module balancing and sensing, DC-DC, Interface Board, etc.).
- Communication protocol between BMS and ECU (J1939 CAN2.0, Can Open, I2C, RS485, UART).

Renewable energy consultant

Witteveen+Bos [05/03/2018 – 30/08/2018]

City: ACCRA

Country: Ghana

Renewable energy consultants advise clients on the advantages and disadvantages of different renewable energy sources. They conduct surveys and interviews to research the demand and opinions on renewable energy and strive to advise clients on the most advantageous source of renewable energy for their purpose.

As an intern at *Witteveen Bos* which is an international consulting and engineering firm offering global solutions to complex engineering issues in the field of water, infrastructures, environment, and renewable energy. My day-to-day work included:

- writing proposals and Expression of Interest for the company.
- Writing RFP and SoW for the firm.
- Helping colleagues in organizing meetings and training.
- Performing feasibility studies for new projects.
- Translating all English documents into French.
- Interpreting from English to French and vice versa for engineers.

Witteveen Bos' headquarters is in Amsterdam (Netherlands) but my internship was in the Ghana branch which serves as the headquarters of the African region.

Industrial engineer

United Company RUSAL [16/02/2017 – 30/08/2017]

City: Conakry

Country: Guinea

Website: <https://rusal.ru/en/>

Name of unit or department: Production and logistic - Business or sector: Mining and quarrying

Industrial engineers design a vast array of production systems aiming to present efficient and effective solutions. They integrate a varied number of variables such as workers, technology, ergonomics, production flows, and product specifications for the design and implementation of production systems. They can specify and design for microsystems as well.

As an industrial engineering and maintenance intern at United Company RUSAL, the world's second-largest bauxite company in primary production. I joined the company in Mid-2017 for the country's youth professional integration. Two months later, I became a team leader of new interns and I was involved in tasks such as:

- Maintenance of production chain,
- Solving electrical issues of electromechanical machines,
- Improvement of equipment MTBF, MTR, and reliability.
- Scoping, planning, and executing different industrial maintenance strategies.

Vice--_lead management center

Hult Prize China [09/11/2020 – Current]

City: Beijing

Country: China

Hult Prize China is a leadership learning platform that empowers the new generation to deliver social impact through education and global startup award.

Since 2020, I have been working with them as a lead manager in China's community. I am mainly in charge of :

- Interviewing campus directors, mentors, and coaches.
- Recruiting new fellows from all Chinese universities.
- Creating a talent pool for the future of the organization.

EDUCATION AND TRAINING

MSc

Beijing Jiaotong University [02/09/2021 – 15/07/2022]

Address: Beijing Jiaotong University, Haidian, Beijing, China, 100000 Beijing (China)

Website: www.bjtu.edu.cn

Field(s) of study: Electrical Engineering (New and Renewable Energy)

Final grade: 92/100

Thesis: A full time 3 years master's degree program under the Chinese Scholarship Council (CSC) in the institute of new and renewable energy from the electrical engineering department. My research direction has been around Battery energy storage system characterization, modelling, SoC Estimation, and its integration into microgrid. with core subjects such as:

- Battery cell model development (ECM, PDO, ML)
- Algorithm for battery management system (SOX estimation, Balancing, Thermal management, Communication, Protection, etc.).
- BESS integration into microgrid and smart grid.
- Renewable energy management and forecasting.

BEng

Gamal Abdel Nasser University [03/10/2013 – 18/08/2017]

Address: Université Gamal Abdel Nasser, Dixin, Conakry, Guinea, 1017 Conakry (Guinea)

Website: <https://uganc.edu.gn>

Field(s) of study: Industrial Engineering and Maintenance

Final grade: 3.68/4

Thesis: La Gestion de maintenance préventive basée sur l'estimation de la fiabilité des outils industriels avec la GMAO

Four years of full time in the polytechnics institute of Gamal Abdel Nasser university majoring in industrial engineering and maintenance with core subjects such as:

- thermodynamics
- industrial design
- material science
- preventive and correctional maintenance
- electrical automation processes.

English language diploma

University of Ghana [28/10/2017 – 03/04/2018]

Website: <https://www.ug.edu.gh/>

LANGUAGE SKILLS

Mother tongue(s): **French**

Other language(s):

English

LISTENING C2 READING C2 WRITING C2

SPOKEN PRODUCTION C1 SPOKEN INTERACTION C1

Chinese

LISTENING B2 READING B1 WRITING A2

SPOKEN PRODUCTION B2 SPOKEN INTERACTION C1

Spanish

LISTENING B1 READING B2 WRITING B1

SPOKEN PRODUCTION A1 SPOKEN INTERACTION A2

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

I. Power battery applications:

Battery pack design in Fusion360 or CATIA with the traditional CTM (cell to module) approach / PDU or BJB design with charge, discharge, pre-charge and predischage contactors, / BMS selection and test. / Protection fuses, pre-charge resistor sizing, pre-charge time estimation, current sensor selection. / Busbar sizing, Laser welding, spot welding, cells and module testing. / Balance wire, and communication wire harness between slaves and master BMS / Air-cooled cell spacers sizing and design.

II. General programing

C/C++: Data type, Class, template, OPP multilevel Inheritance, polymorphism / Python: syntax, pandas, NumPy, matplotlib, Seaborn, Pytorch, pip, conda, Jupiter Notebook, etc. / GNU Octave: Syntax, datatype MATLAB, Simulink, ThingSpeak.

III. Embedded firmware development framework

Arm CMSIS / Arduino / Espressif IDF / Micropython

IV. Embedded systems communication protocols

CAN2.0 SAE J1939 (Layer architecture, framing, electrical specifications, logic, arbitration) / 2C: frames, addressing, clock synchronization, electrical specifications. / UART: RS232, RS485 / SPI : Mode, Multiple slaves / MQTT, BLE/BT, Wi-Fi, IR (NEC)

V. Software or App skills

Microsoft Office / AUTODESK Fusion360 / MATLAB / Autodesk Fusion360 / Keil Micro Vision 5 / PCB design (Cadence Allegro, KiCad, Altium, EasyEDA) / Visio / monday.cpm / Team beation

PROJECTS

Battery Assembling SOP (Standard Operating Procedure)

[08/08/2021 – 01/12/2021]

The battery assembling SOP was mainly about setting the guidelines to follow from cells' IR, OCV, and capacity testing to battery pack charge and discharge test.

With a team of 4 engineers, I was involved in all the steps of the project.

- 1 - Cells' IR testing and recording in the data base (Cell sorting)
- 2 - Cells' OCV testing and recording (Cell sorting)
- 3 - Cells segregation and grouping (Cell sorting)
- 4 - Cells terminal cleaning
- 5 - Spacer or intercalation glue application (For long life application)~SOH
- 6 - Module configuration
- 7 - Terminal voltage confirmation of the each module (Clean CCS or Cells Contact System with FPC, PCB and FFC)
- 8 - Selection, design of aluminum busbars (dimensions based on current requirement)
- 9 - Laser welding of the busbars (Timing, speed, power, and heat management)
- 10 - Module impedance and voltage confirmation based on the configuration (QC)
- 11 - BMS wiring (Flashing and setting up the BMS)
- 12- Thermal management and temperature sensors (NTC or PTC temp probe)
- 13- Pack capacity test (EOL test)
- 14- Cell voltage difference test (deltaV)
- 15- Charge and discharge test. (variable power test, HPPC, Pack EOL test etc..)

Tarform Motorcycles battery pack design 10.5kW

[10/07/2022 – 03/02/2024]

Tarform Motorcycles is High power electric motorcycle company based in New York with R&D centers in Beijing and Paris.

My team and I at Foxconn designed their 10.5kW battery pack with the following features

- 102 Ah capacity of NMC cells 33% nickel, 33% manganese and 33% cobalt (graphite as negative electrode material) from Lishen
- 3.7V nominal at the cell level and 4.2V max cutoff voltage
- 103.6V pack nominal voltage (28S) 117.6V pack max cutoff voltage
- 3C continuous discharge and 5C for 30s discharge between 15 and 50 degree C
- 1C continuous charge allowed on the pack side but only 0.33C on the charger side.
- CAN2.0, RS485, CAN FD, UART, and CAN Open communication
- 12V output for auxiliary power supply
- OTA flashing of the ECU and BMS

Remote charging mode panoply

[03/02/2023 – 04/04/2023]

It's very common for EV users such as BEVs or PHEV or Electric motorcycles to charge at different places with different current ratings.

Therefore it is convenient for them to have a panoply of charging modes based on the allowable current rating of the charging point (Either charging stations or home plugs)

When EV users are charging their vehicles at home they should be charging around 8 to 16A max no more because of the current rating of most home-used extensions or plugs.

Therefore, the objective of the project was to allow users to select the maximum output current of the charger based on the current rating of the charging point.

For example, once charging the vehicle at home the user can send 50 (DEC) meaning 50% of the maximum output current of the charger avoiding Short Circuit caused by the heat generated in the extension leading to their melting sometimes.

We use both Bluetooth and wifi connection with ESP32 to accomplish the task... (RTOS)

KYTO Battery Pack 6kW

[05/04/2023 – 11/06/2023]

KYTO is an urban E-transport company specialized in tricycles and battery swapping stations based in Indonesia, bangladesh 🇬🇧 India etc...

My team and I made there power traing including the battery pack and motor controller

I also led the design of their 72V 100A abbtery swaping station design for Pakistan and Indonesia.

Evoke Urban Classic 2023 and 2024 generation 10.2kW nominal.

[20/09/2022 – Current]

The 2023 and 2024 generation of Evoke Urban Classic has a completely different power train design with my contribution the below features.

- New 27S2P(NMC) 10.2kW battery pack without UTC (UART to CAN) converter
- Modular PCB board for voltage sensing and balancing instead of pure wire.
- New LV wire harness with auxiliary 12V battery for ignition and diagnostics in case of failure from the HV.
- New HMI and its software integration
- New control hand bar switches with Wi-Fi, Bluetooth connectivity, and vehicle parameter setting, charging current control with Android App.

Dubai Evoke M1.5 pilot project.

[26/10/2023 – Current]

The M1.5 pilot project was about designing and building 100 units of pure electric delivery vehicle for the city of Dubai to support the UAE's climate change commitment. The project was listed under the goals of the COP28 (UN conference of the parties) held in the UAE.

My contribution to the project was as follows:

- Design and integration of the battery pack 32S3P with LFP cells.
- Power train cooling system design (Heat exchanger, Pump, piping, reservoir, assembly, etc.).
- HV and LV wire harness of the entire vehicle.
- CAN based protocol HMI integration.
- Motor controller and Motor integration with ECU controlled features...

PERSONAL PROJECTS

[02/01/2021 – Current]

1. Embedded PCB design: <https://u.easyeda.com/account/user/projects/all>
2. Firmware development: <https://github.com/Bamamou>
3. Mechanical design: <https://grabcad.com/nicolas.bamamou-2/models>
4. Teaching and YouTube channel: <https://www.youtube.com/@nicolasbamamou94>

VOLUNTEERING

Campus Director

[Beijing, 03/07/2021 – Current]

The Hult Prize Foundation transforms how young people envision their own possibilities as leaders of change in the world around them. With a US\$1,000,000 global startup prize as its anchor activity, the Hult Prize has brought impact-focused programs, events and trainings to

over a million students globally, creating a path way for youth everywhere to take action to build a better world.

In just over a decade, the foundation has deployed more than \$100M into the impact sector which it helped create operating on more than 3,000 college and university campuses in 121 countries with a global team of more than 300,000 staff, student volunteers, and changemakers, the Hult Prize continues to be a disruptive global leader in education, soft skills training, and entrepreneurial development for the 21st century.

As a volunteer at the Hult Prize foundation, I have been working as the campus director of Beijing Jiaotong for the 2021-2022 where I am mainly involved in motivating and leading young students to implementing their visions through startups and social entrepreneurship

Beijing, China, 03/02/2024