Nicolas Bamamou

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ABOUT ME

I am a highly, dedicated and polyvalent Battery Engineer with a Master's degree in Electrical Engineering from the Instittute of New and Renewable Energy of Beijing Jiaotong University a bachelor's degree in Industrial Engineering from Gamal Abdel Nasser University.

- Specialized in Lithium-ion power battery management system algorithm and intergration for both stationary (Grid, microgrid, cosumer electronics) and mobile applications (EV, PHE, BEV).
- 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

21/07/2022 – CURRENT Beijing , China

SENIOR BATTERY ENGINEER EVOKE MOTORCYLES

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 completely and radically improve the riding experience. With more than two decades of extensive electric mobility, we have been a core battery and electric power train OEM provider to many other companies in the field of high-power e-mobility as well as ESS.
As their senior battery engineer, my tasks include but 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 design and integration, battery module design, and pack design.
- Design and implementation of fast charging prototype (DC).
- Create SOPs for battery pack assembling and collaborate with other teams in brainstorming innovative ideas.
- QC of BMS, OBC, PDU or battery junction box, DC_DC, EVCC, etc..
- Battery cell IR, OCV-SOX, Capacity testing, and module immersion 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 welding techniques and improving CCS (cell contact system) quality.
- Temperature effect modeling on RUL estimation during the laser welding process of prismatic cells.
- BMS wire harnessing and wireless voltage and current sensing for cell balancing.
- PCB design using Altium or KiCAD or EasyEDA (power supply, DC-DC, interface bus converters, etc.)
- Elaborating communication protocol between BMS and VCU (J1939 CAN2.0, CAN Open, RS485, UART)

16/02/2017 – 30/08/2017 Conakry, Guinea

INDUSTRIAL ENGINEER UNITED COMPANY RUSAL

Industrial engineers design a vast array of production systems aiming to present efficient and effective solutions. We integrate a varied number of variables such as workers, technology, ergonomics, production flows, and product specifications for the design and implementation of production systems. We can specify and design as well for micro-systems in a modular method for macro-system purposes.

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 insertion. 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.

Business or Sector Mining and quarrying | **Department** Production and logistic | **Website** https://rusal.ru/en/

05/03/2018 – 30/08/2018 ACCRA, Ghana

RENEWABLE ENERGY CONSULTANT WITTEVEEN+BOS

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 one of them working for Witteveen+Bos, an international consulting and engineering firm offering global solutions to complex engineering issues in the field of water, infrastructures, environment, and renewable energy. The company headquarters is in Amsterdam (Netherlands). I worked for them in the Ghana branch which serves as the headquarters of the African region. 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.

09/11/2020 – 30/06/2022 Beijing, China

VICE--_LEAD MANAGEMENT CENTER HULT PRIZE 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

01/09/2019 – 15/07/2022 Beijing, China

MSC Beijing Jiaotong University

Battery cell model development (ECM, PDO, ML)
Algorithm for battery management system
Microgrid and energy storage system
Renewable Energy energy management and forecasting

Address Beijing Jiaotong Univesity, Haidian, Beijing, China, 100000, Beijing, China | **Website** www.bjtu.edu.cn |

Field of study Electrical Engineering | **Final grade** 92/100 |

Thesis Battery Energy Storage System Characterization, Modeling, SoC Estimation and its Integration into AC Microgrid

03/10/2013 – 18/08/2017 Conakry, Guinea

BENG Gamal Abdel Nasser University

Address Université Gamal Abdel Naser, Dixin, Conakry, Guinea, 1017, Conakry, Guinea |

Website https://uganc.edu.gn | **Field of study** Industrial Engineering and Maintenace | **Final grade** 3.68/4 |

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

28/10/2017 – 03/04/2018

ENGLISH LANGUAGE DIPLOMA University of Ghana

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

LANGUAGE SKILLS

Mother tongue(s): **FRENCH**

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
ENGLISH	C2	C2	C1	C2	C2
CHINESE	B2	B1	B2	C1	A2
SPANISH	B1	B2	A1	A2	B1

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

DIGITAL SKILLS

Good familiarity with MATLAB, Simulink | P-Spice | Experience in softwares Psim, Matlab, OpenModelica, Autocad | PSCAD/EMTDC | AUTODESK Fusion360 | PCB design (Cadence Allegro, KiCad, Altium, EasyEDA) | Microsoft Office | Good listener and communicator | Team-work oriented | Motivated | Organizational and planning skills | CAN 2.0, J1939, Ethernet Basics | Microcontroller programming such as Arduino ESP8266 & ESP32 | Knowledge of UART(RS232,RS485)/SPI/I2C/ADC and other buses/protocols | Vs code | spot welding | C,C++,Python,Arduino | BMS (Battery Management Systems) | Laser Welding | Battery testing, battery management development | monday.com | Experience in MATLAB, python, and R

PROJECTS

08/08/2021 – 01/12/2021

Battery Module Assembling SOP (Standard Operating Procedure)

The battery module assembling SOP was mainly about setting up the guidelines to follow from cells' IR, OCV, and capacity testing to battery module EOL test.
With a team of 4 engineers, I was involved in all the steps of the project such as:
1 - Cell sorting, consisting of Cells' IR testing and recording in the database.
2 - Cells' OCV testing and recording (Cell sorting)
3 - Cells segregation consisting of visual inspection, and grouping (Cell sorting)
4 - Cells terminal cleaning
5 - Automatic module configuration using a 6 axis Kaku robotic arm.
6 - Spacer intercalation and glue application (For long life application)~SOH
7 - Terminal voltage confirmation of each module (Clean CCS or Cells Contact System with FPC, PCB, and FFC)
8 - Labelling and serial number implementation of each module using a bar code impression
9 - Module side thermal panels welding for both mechanical rigidity and thermal cooling
10 - Laser welding of the busbars (Timing, speed, power, contact area, and heat management were key points to consider)

11 - Module impedance and voltage confirmation based on the configuration (QC)
12 - BMU harness (Flashing and setting up for EOL test)
13- Laser welding QC and temperature sensors (NTC or PTC temp probe)
14- Module EOL test (variable power test, HPPC, Pack EOL test, etc..)

10/07/2022 – 03/03/2023

Tarform Motorcycles battery pack design 10.5kW

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 10.7kW 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 continous discharge and 5C for 30s discharge between 15 and 50 degree C
- 1C continous charge allowed on the pack side but only 0.33C on the charger side.
- CAN2.0, RS485, CAN FD, UART, and CANOpen comunitation
- 12V output for auxilary power supply
- OTA flashing of the ECU and BMS

03/02/2023 – 04/04/2023

Remote charging mode panoply

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 OBC based on the current rating of the charging point.

- 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 Wi-Fi with WebSocket connection of anESP32 to accomplish the task... (RTOS)

04/08/2022 – 11/11/2023

BYAHE electric Bus

Byahe is a Filipino PUV operator that brings safe and convenient commuting to the Filipino public. The company bought 21 new modern electric jeepneys from an Australian electric bus manufacturer. However they were not equipped with a battery pack and we, Evoke were given the contract to design and manufacture their 240kW battery pack composed of 4 Modules of 60kW.
I was responsible of managing the project from the proposal level to the integration and training level of the technicians in Manila.
For basic reference, we used a 2p80s configuration as a submodule with a capacity of 102Ah make of 8-1-1 NMC cells outputting a nominal capacity of 30kW. Each module had two sub-modules for a BMU of 160 strings.
The pack had some basic features such as:

- Three CAN bus communication (one for the entire vehicle, one for the DC fast charging control board or EVCC and one for internal communication)
- DC fast charging of 100kW using an EVCC to interface CCS2 and the BMS with GB/T 27930 based on ISO 15118 and SAE J1772.
- Liquid cooling

05/04/2023 – 11/06/2024

ROAM's Rapid battery pack design technical consultant

Roam Rapid is the first bus in Kenya designed for mass transit by ROAM previously called Opibus. With a high capacity of 90 passengers the bus allows for ample room, efficient boarding and disembarking of

commuters with both seating and standing areas. As technical consultant for their new 225 kW battery pack, I worked closely with the engineers in selecting the cells with BYD as the provider.

- I was involved in helping to ease the communication between all three engineering groups since I spoke English, Mandarin and French.
- Coordinate and participate in meetings
- Test the first LPF batch in Kenya
- Train and report test results to both Chinese engineers in Mandarin and Equator, an Africa-focused climate tech VC fund.

10/01/2024 – CURRENT

6061 GT Battery Pack design

6061 GT is a 30kW (nominal) electric vehicle with 270km/h top speed designed and built with a team of 8 engineers at Foxconn Corporation (Beijing).
As the electrical project manager, I was involved in these tasks:

1. Designing an 80s2p battery pack in Autodesk Fusion360 with liquid cooling feature.
2. Designing a power distribution unit (PDU) with 5 HV contractors (one positive and one negative contactor for DC fast charging (CCS2), one positive and one negative contractor for the Motor controller (MCU), one positive contractor for the OBC) The PDU also includes a shunt current sensor, a 500V 400A fuse, 3 pre-charge contactors and resistors, etc..
3. Designing a complete wire harness for the battery pack.
4. Designing and testing a complete LV wire harness for the entire vehicle including battery, OBC, MCU, PDU(BJB), VCU(ECU), EVCC, DC-DC, HMI(Display), ABS, HVAC system, lighting system, etc...
5. Designing the HV harness to connect all HV components.
6. Finally, write a clear and precise SOP for the battery pack production.

04/03/2024 – 14/06/2024

Solix 75kW grid-tied BEES

I am currently working on this project for SeaOil, which is a oil and gas company based in the Philippines. The project is about designing 9kW single board charger with 4 outputs channels which can charge 4 different electric motorcycles at the same time. The aim is to be able to switch the output from 1 vehicle to the other in a sequential manner based on many criteria such as: SOC, arriving time, bidding, and battery pack information (temperature, deltaV, etc).

1. As the electrical engineer of the project, my main task in this project is to source a suitable 9 to 10kW charger board with CAN.
2. Design the AC cabinet, size the DC out put side in terms of current rating.
3. Design the PCB for that implements the sequential switching based on the charging condition and payment system.
4. Finally, design a PDU that handles the safe transition between one channel to other with any arcing.

07/07/2024 – CURRENT

EV charging station based on sequential switching algorithm

I am currently working on this project for SeaOil, which is a oil and gas company based in the Philippines. The project is about designing 24kW single-board charger with 4 outputs channels which can charge 4 different electric motorcycles at the same time. The aim is to be able to switch the output from 1 vehicle to the other in a sequential manner based on many criteria such as: SOC, arriving time, bidding, and battery pack information (temperature, deltaV, etc).

1. As the electrical engineer of the project, my main task in this project is to source a suitable 25kW charger board with CAN2.0b.
2. Design the AC cabinet, size the DC out put side and contactors in terms of current rating.
3. Design the PCB that implements the sequential switching based on the charging condition and payment system.
4. Finally, design a PDU that handles the safe transition between one channel to other with any arcing.