

The Tenth International Conference on Green Communications, Computing and Technologies

GREEN 2025

October 26, 2025 to October 30, 2025 - Barcelona, Spain



Energy Management of PV-Batteries System for a Rural Micro-Grid Application in Guinea

M. L. Toure, M. B. Camara, A. Payman, B. Dakyo

GREAH Laboratory – University of THE HAVRE NORMANDIE-FRANCE

UGANC Gamal Abdel Nasser University of Conakry - GUINEA

mohamed-lamine.toure@etu.univ-lehavre.fr





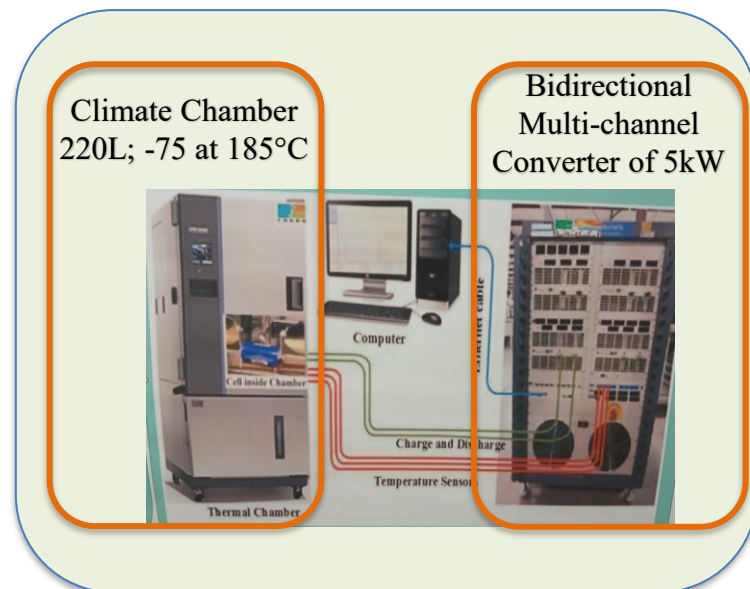
My name is Mohamed Lamine Touré, and I am a Guinean national. I hold a degree in electrical engineering (BAC+5) from the Polytechnic Institute of Gamal Abdel Nasser University in Conakry (UGANC) in Guinea. I also obtained a Master's degree in research in the same field at Mohammed V University in Rabat, Morocco, in 2018. I am a lecturer and researcher at UGANC and am currently pursuing doctoral studies at the GREAH (Electricity and Automation Research Group) laboratory at the University of Le Havre Normandy in France. This research is funded by the Ministry of Higher Education, Scientific Research, and Innovation (MESRSI-GUINEA) as part of the 1000 PhD and 5000 Master's program. Professionally, my expertise is sought after for several electrification projects in Guinea, the most recent of which is the project to rehabilitate and extend the 20 kV distribution networks in the Ansoumaniah and Kagbélen areas of Conakry with INEO Energy & Systems in partnership with EGETECH (Guinean Electricity and Technology Company).

PLATFORM

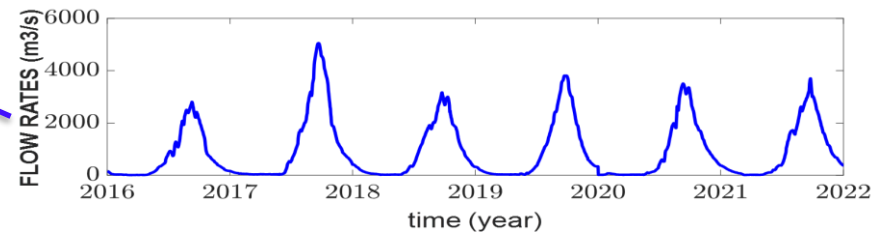
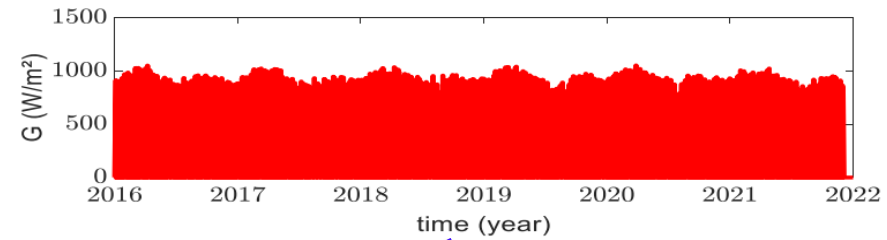
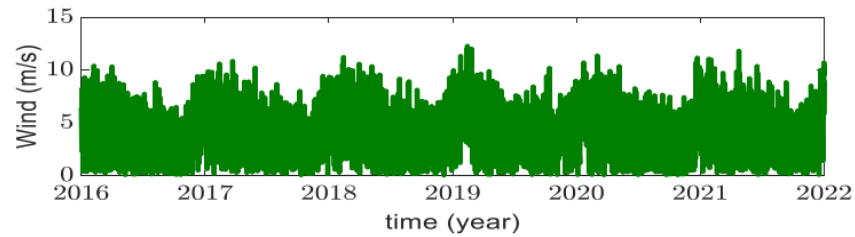
CHARACTERIZATION OF TECHNOLOGICAL AND ENERGY CAPABILITIES AND PERFORMANCE



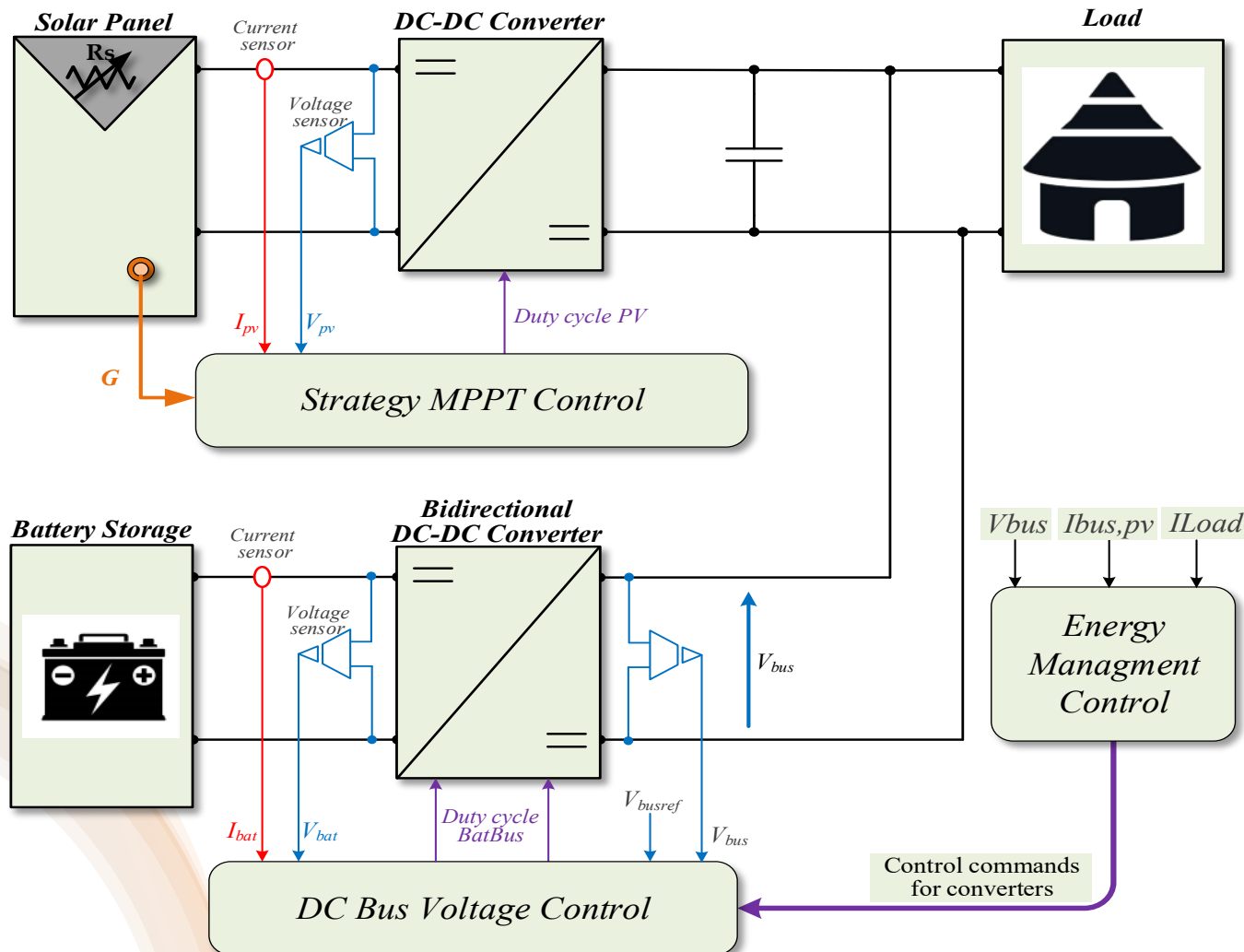
STORAGE UNIT CHARACTERIZATION PLATFORM



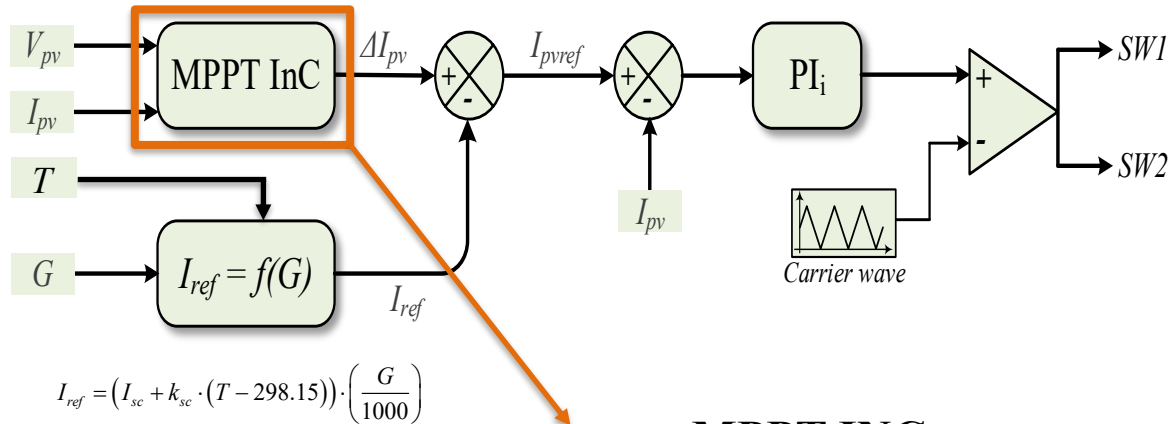
- ☐ **INTRODUCTION**
- ☐ **DESCRIPTION OF MICRO-GRID**
- ☐ **ENERGY MANAGEMENT**
- ☐ **SIMULATION RESULTS AND DISCUSSION**
- ☐ **CONCLUSIONS**



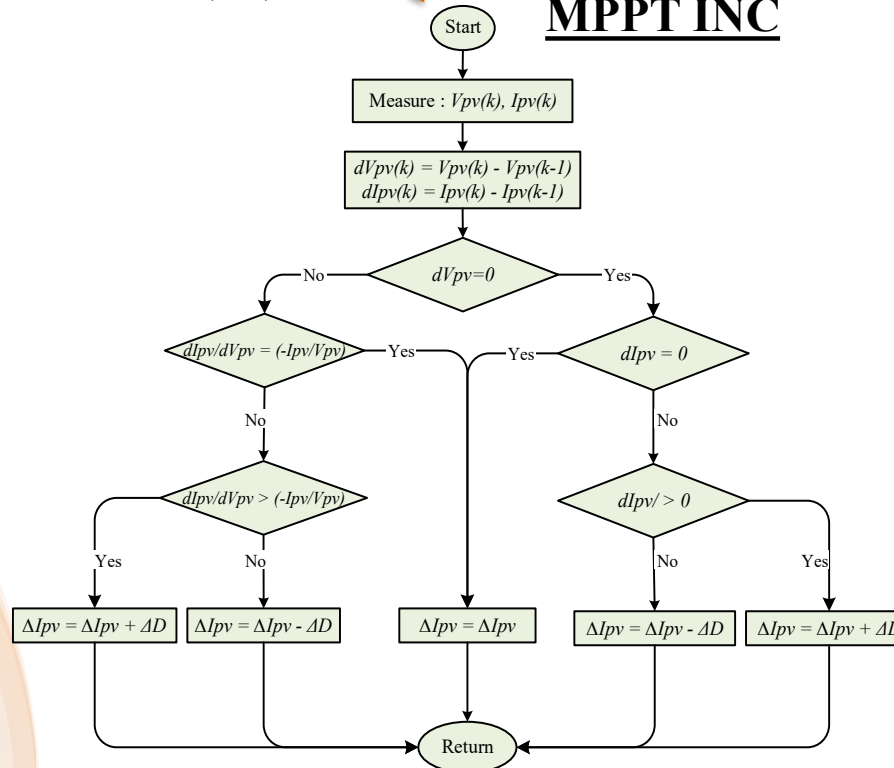
POWER SYSTEM TOPOLOGY



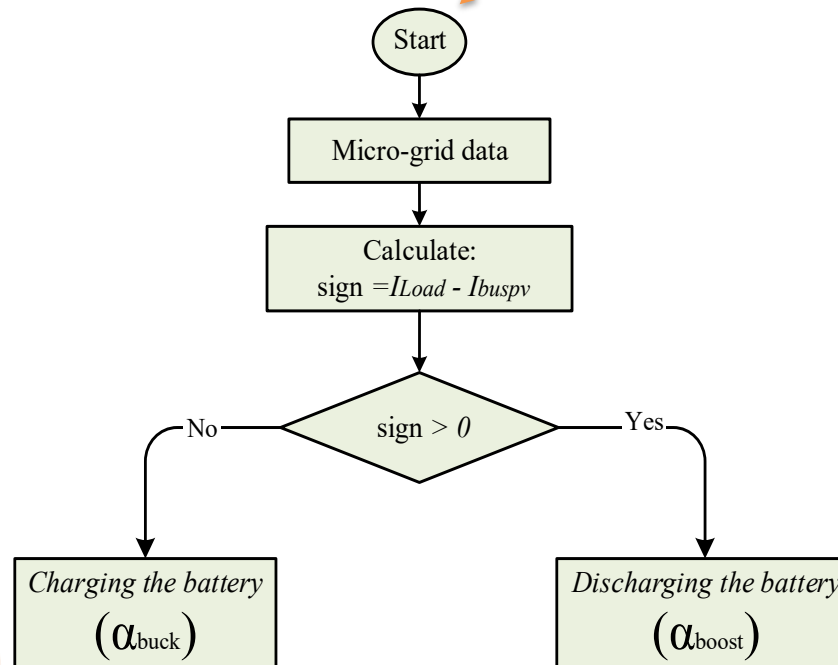
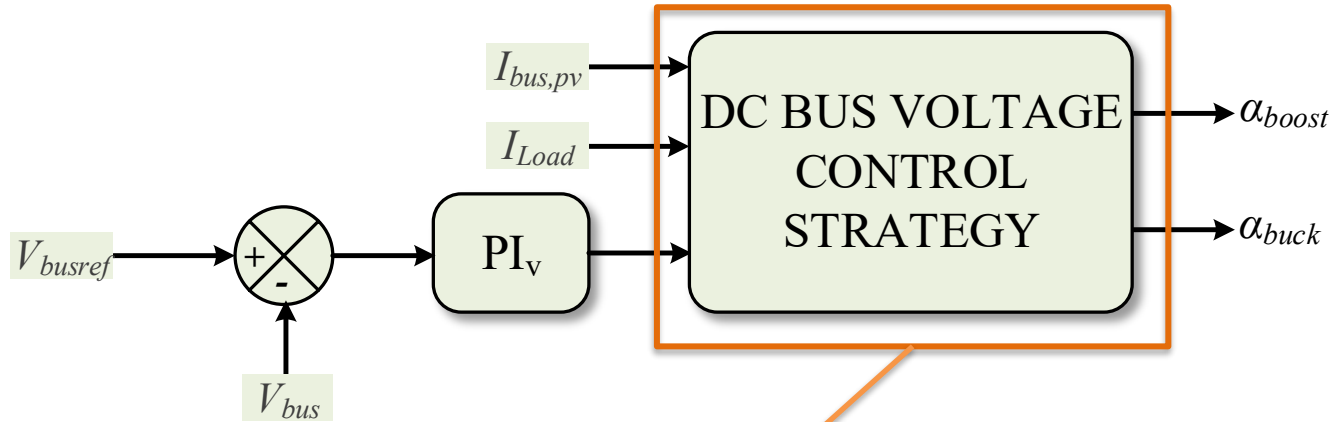
STRATEGY MPPT CONTROL



MPPT INC



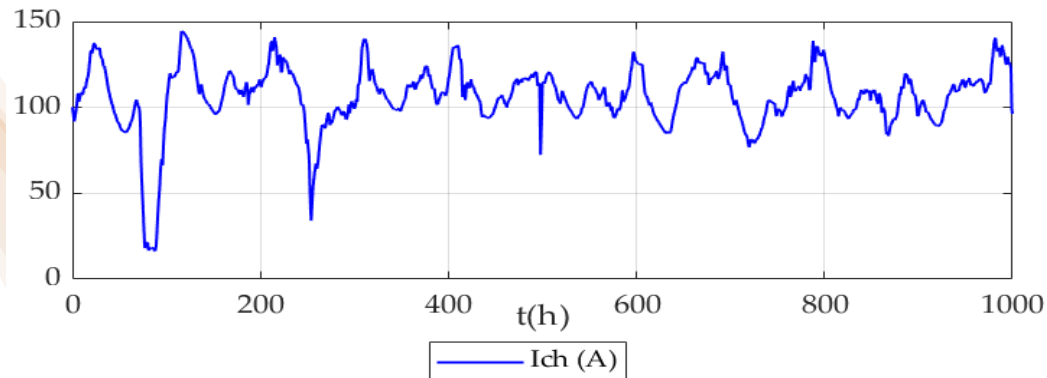
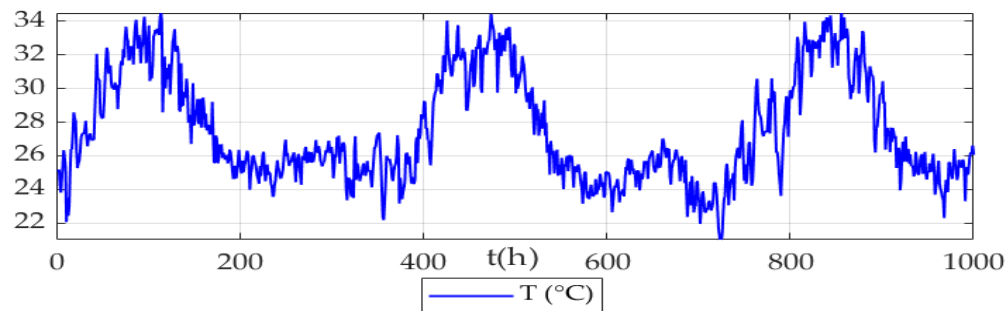
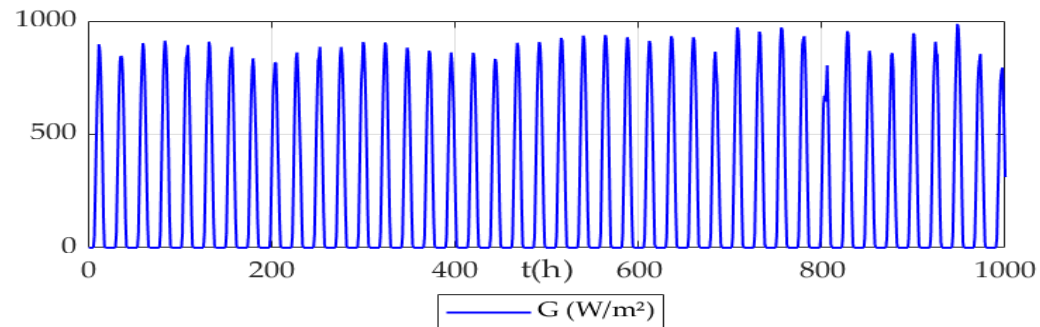
DC BUS VOLTAGE CONTROL



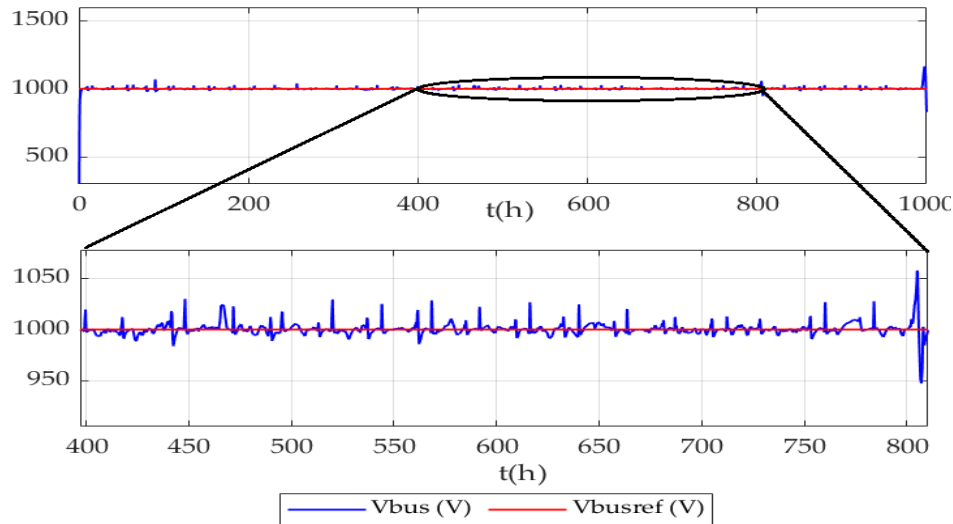
SIMULATION CONDITIONS

Parameters	Values
PV power	204 kW
PV Voltage	270 V
Battery Voltage	270 V
Switching frequency	10 kHz
Capacitor	3300 μ F
Inductor	1mH
Microgrid load	204A

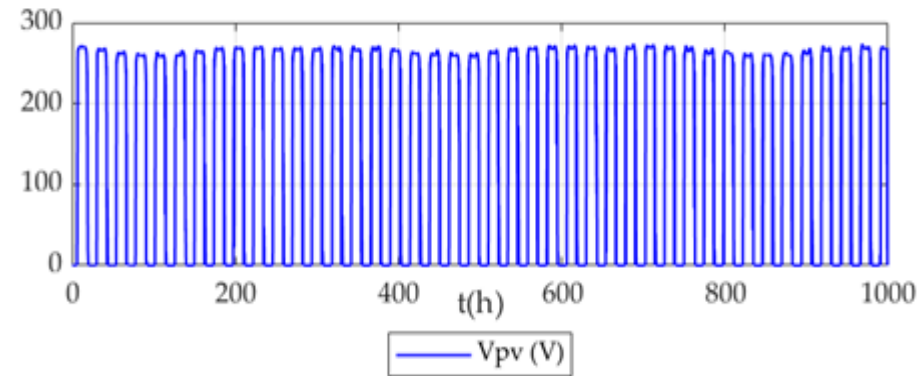
THE INPUT DATA POWER SYSTEMS



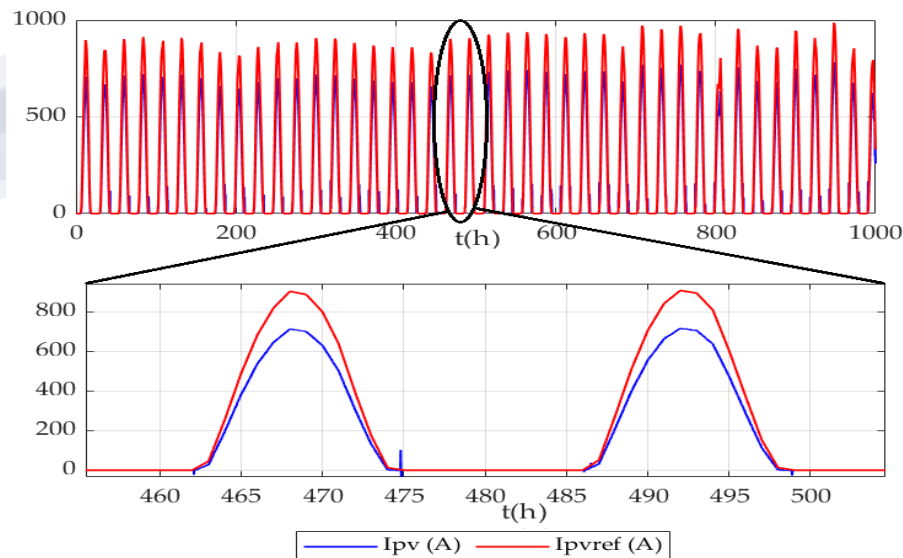
DC BUS VOLTAGE AND REFERENCE



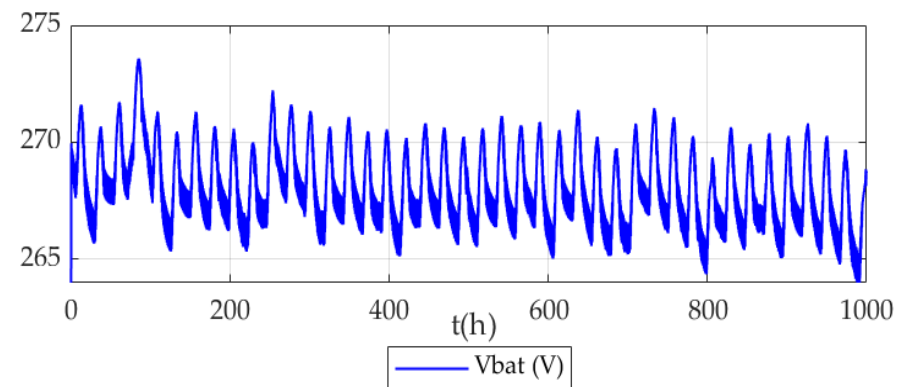
PV VOLTAGE



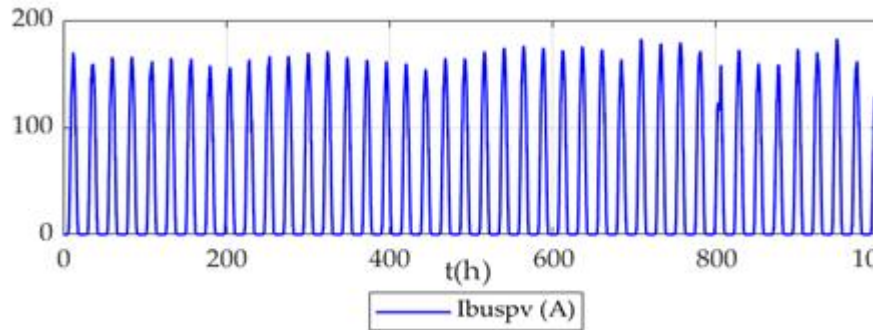
PV CURRENT AND ITS REFERENCE



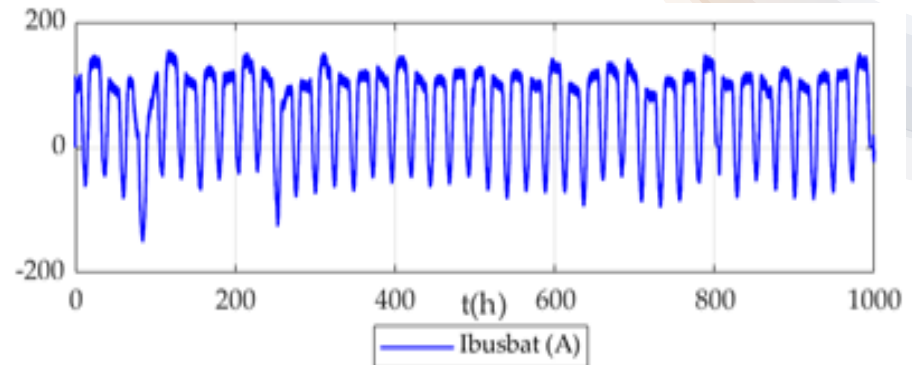
BATTERY VOLTAGE



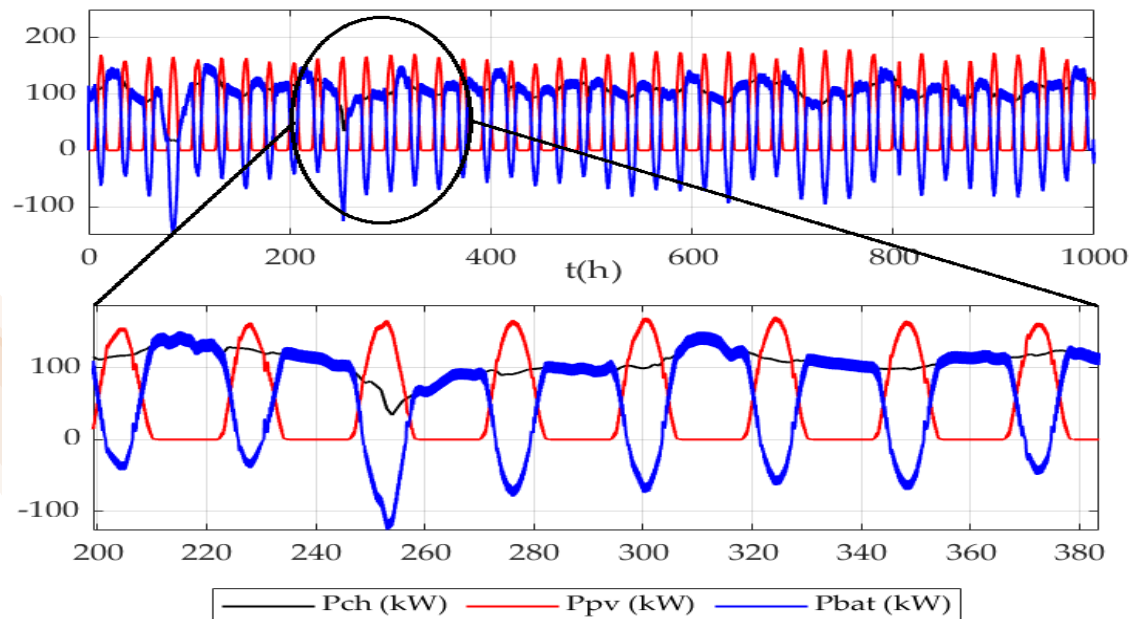
PV DC BUS CURRENT



BATTERY DC BUS CURRENT



POWER LOAD, PV AND BATTERY



Autonomous microgrid: PV+BAT+CHARGE

- ❑ An incremental conductance MPPT algorithm with PI
- ❑ A DC bus voltage control strategy
- ❑ An energy management strategy for a hybrid microgrid

The Tenth International Conference on Green Communications, Computing and Technologies

GREEN 2025

October 26, 2025 to October 30, 2025 - Barcelona, Spain



Thanks you for attention!

M. L. Toure, M. B. Camara, A. Payman, B. Dakyo
GREAH Laboratory – University of THE HAVRE NORMANDIE-FRANCE
UGANC Gamal Abdel Nasser University of Conakry - GUINEA
mohamed-lamine.toure@etu.univ-lehavre.fr

