



DALILA - Development of new Academic curricula on sustainable energies and green economy in Africa
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The State University of Zanzibar – SUZA
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Conferences



**ANALYSIS OF DATA COLLECTED FROM THE SOLAR PV/GRID SYSTEM INSTALLED
AT SCIENCE BUILDING IN SUZA TUNGUU MAIN CAMPUS TO IDENTIFY PATTERNS IN
THE ENERGY GENERATIONS AND CONSUMPTIONS**

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Outline

- Introduction
- Methodology
- Results and discussion
- Conclusion & Recommendation
- Acknowledgement

Introduction

- Solar PV technology electrifies 30.4% of residences [April 2020 survey by the Rural Energy Agency, “REA”] and is widely used as an alternative source of power especially during grid disconnection or low power
- Hence, to have an alternative source of power, a 3 kW PV systems is installed in Science building at SUZA main campus
- Since the installation of this system, no study has been done to identify energy patterns in power generation and consumptions

Introduction

- For the good management and control of the system, there is a need to study the patterns in energy input, storage and consumption
- Therefore, this study aimed at identifying the patterns in energy consumption and storage from the system installed at science building of SUZA main campus

Methodology

- This study was conducted using the PV system installed on top of Science building at Suza Tunguu main campus
- The system consists of four solar panels of 545 W each and connected with a two-battery system of 4.8 kWh/100 Ah (nominal voltage of 48 V) each
- SOFAR solar hybrid inverter (model No. HYD 3000-ES) is coupled with the system for the control of the energy input, storage and consumption

Methodology...

- The SOFAR solar hybrid inverter was used to give the energy values (data) for the input, storage and output/consumed
- The data were taken in the interval of 30 minutes, for six days, from 10:00 AM to 01:00 PM
- Origin software was used to plot the graph for the obtained data, to identify the patterns of power input, consumption and storage

Results and discussion

- There is variation of input, storage and consumed power with time
- The power observe to describe linear increment with some fluctuations as time changes (Fig. 1); the input power observed to be relatively higher for almost all of the days compared to storage and consumed power as expected
 - This indicates proper usage of the system, for individual days, whereby the consumed and storage power is always sum up to the input/harvested energy from the sun

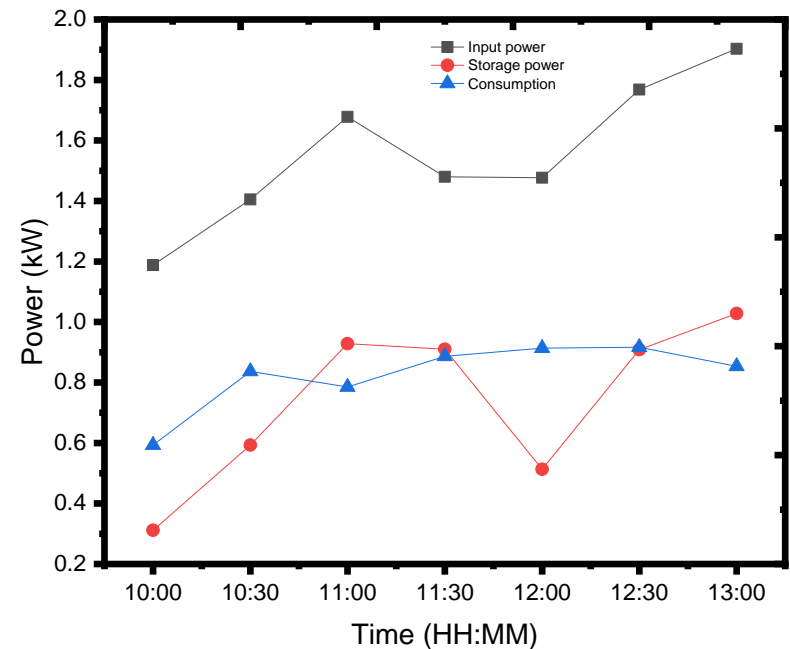


Fig. 1: Power fluctuation vs time

Results and discussion ...

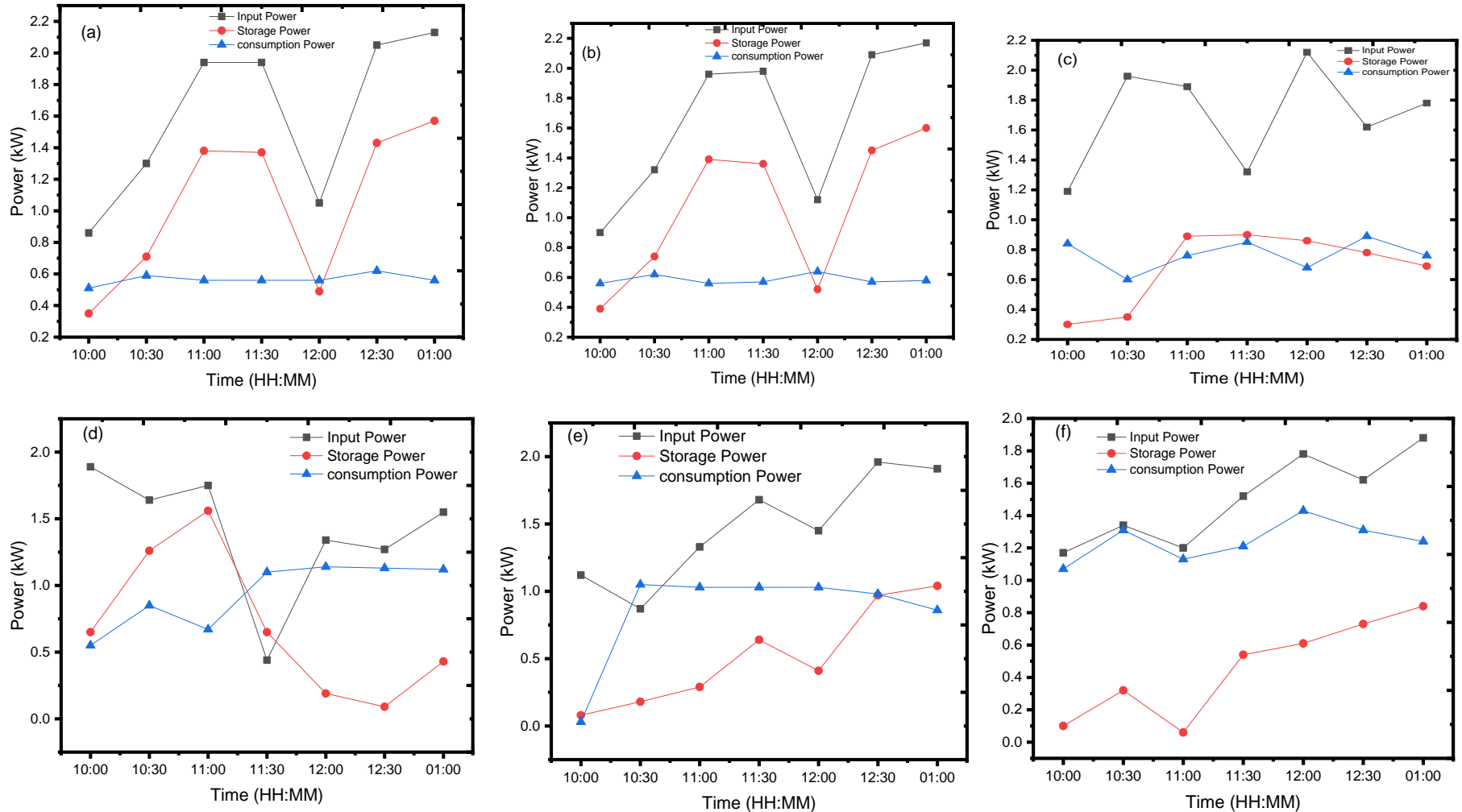


Fig. 2: Power fluctuation vs time, for different days

Conclusion

- It is found that, the system is operating normally; the power harvested is partly consumed while the remaining stored to the battery
- Also the data varies different for all days due to the fluctuation of the sun light at the different days and times which result the higher power storage for sometime and lower storage power for other times.

Recommendation

- To have more generalized results, further studies should be conducted that will focus on long period of time (monthly, yearly, etc)

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Thank
you