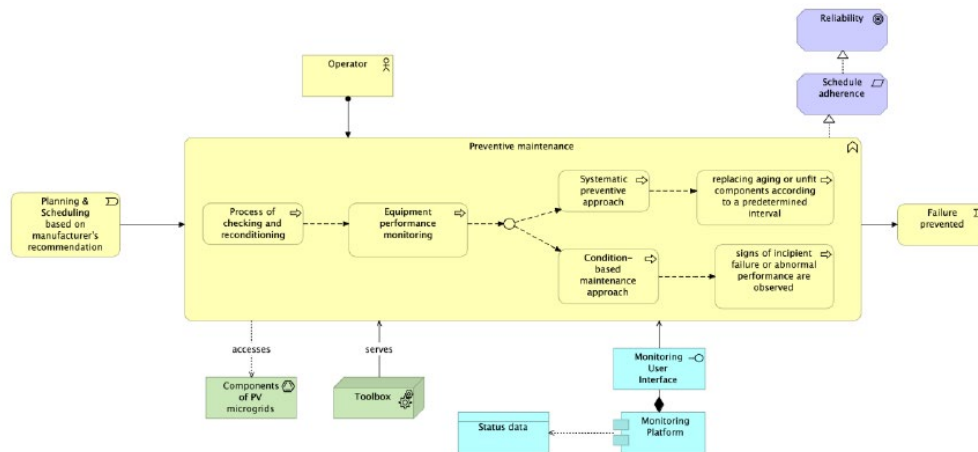


Maintenance of Standalone PV Microgrids in Energy Access

Master Assignment



Introduction

The growing reliance on photovoltaic (PV) microgrids for sustainable energy access requires meticulous maintenance to ensure their reliability and efficiency. Typically located in remote areas with logistical hurdles, standalone PV systems need maintenance methods that minimize the necessity for frequent on-site visits. This assignment seeks to develop a reference architecture for the preventive and corrective maintenance of standalone PV microgrids, with the primary objective of enhancing system performance, reducing downtime, and extending the lifespan of these decentralized energy solutions. The expected outcome of this study is to improve PV microgrid maintenance practices while reducing the need for frequent on-site inspections.

Tasks

1. Evaluate existing maintenance practices for standalone PV microgrids.
2. Investigate the common issues and failures experienced by standalone PV microgrids.
3. Investigate optimized preventive maintenance schedule based on system components' lifecycle, environmental factors, and historical performance data.
4. Investigate cost-effective corrective maintenance strategies to address identified issues promptly.
5. Create a reference architecture for preventive and corrective maintenance of a standalone PV microgrid.

Methods:

- Literature study on maintenance of PV microgrids in the energy access context.
- Define the technical requirements of maintenance methods.
- Design a reference architecture for preventive and corrective maintenance e.g. using ArchiMate.

Requirements:

- Previous knowledge in computer architecture and/or software engineering.
- A strong interest in energy access and sustainability topics.
- The assignment duration is six months.

How to apply: Send an email to Amalia at amalia.suryani@utwente.nl outlining your background, your motivation to work on the topic, and the current stage of your master's studies.