PV based Automated Irrigation Management in Remote Onshore Area in India

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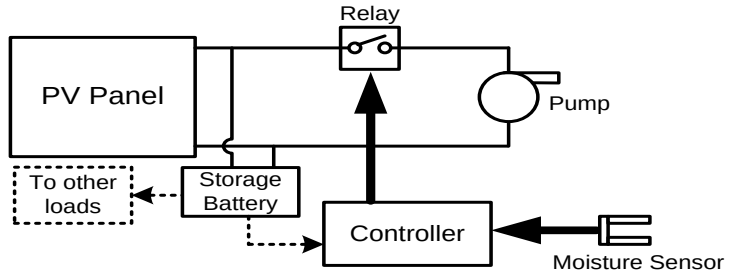
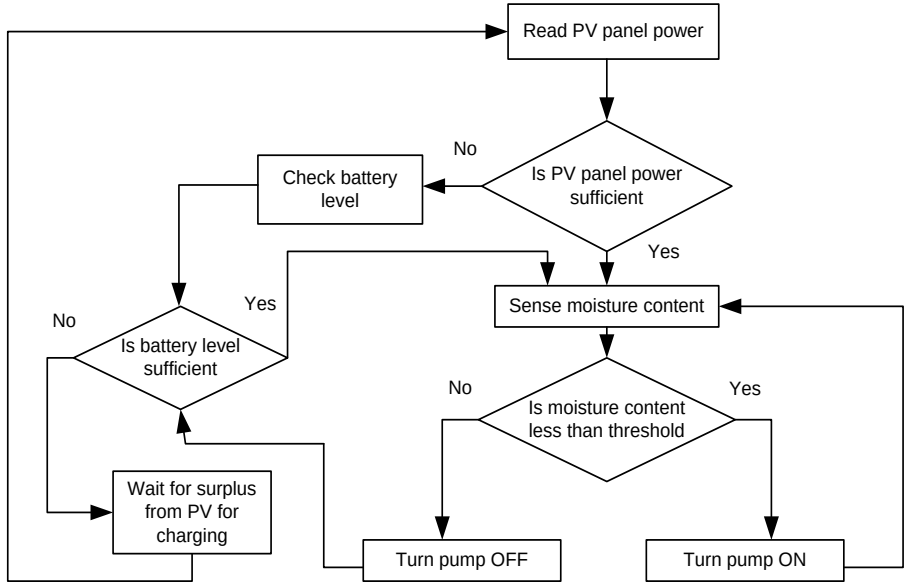
- **This paper presents an PV based automated irrigation management system and its implementation for a remote onshore area in India**

PROPOSED SYSTEM



Block diagram of the proposed irrigation system

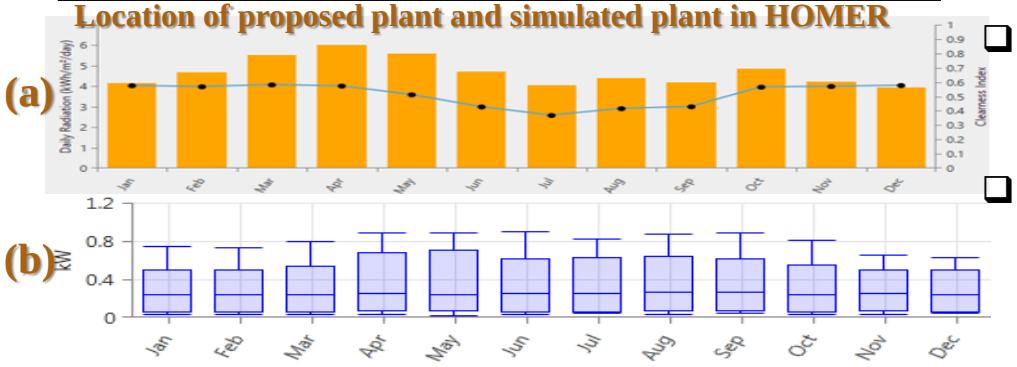
- PV panel generates power with incident solar radiation which helps in operation of the pump
- The pump switch ON only when command pulses are received from the controller.
- The controller will send a pulse to the relay circuit when the moisture sensor sends an input



Flowchart of the automated operation

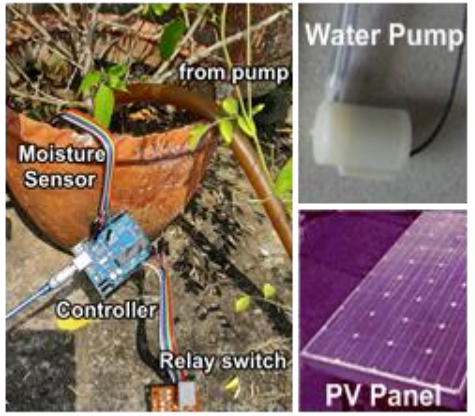
RESULTS AND DISCUSSION

Location of proposed plant and simulated plant in HOMER



(a) Seasonal wind and (b) load variation

- The system is simulated in *HOMER* (Hybrid Optimization Model for Electric Renewables) for techno-economic analysis. Plant to be situated at eastern coastal region in India
- Electric load of the plant is taken as 1.00kWh/day with a peak load of 0.21kW
- The system is simulated for 25 years. The initial capital cost of the system is found as $1044 with net present cost of $1143. The system operating is $42.84.



Experimental setup

CONCLUSION

The cost implication is also within affordable limit.

The system is a good prospect for installation in an onshore area in eastern Indian conditions.