**Solar Electric Technician (Level 2)**

**Module 4: Site selection for solar PV systems**

**E7: Assignment - Pump controller site assessment and installation requirements**

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| **E7: ASSIGNMENT MEMO** | |
| **Date** | …. |
| **To** | Participants |
| **From** | Trainers |
| **Subject** | Site assessment and installation requirement for pump controller. |
| **What** | Perform and analyse the site assessment for installation of pump controller. |
| **Why** | To enable participants to understand and identify the key factors involved in installing a pump controller, including reading the specifications, safety precautions, and installation process. |
| **How** | 1. Group of 2 or 4. 2. Study the pump controller manual. 3. Assess the site for pump controller installation suitability and requirements. 4. Answer the questions and discuss the results. |
| **Time** | 60’ for each technology (at least two) |

**Verify the report, manuals, drawings and documentation to assess, plan and install pump controller**

**Required tools/equipment:**

* Manual
* Compass
* Measuring tape
* Clamp meter
* Camera (smartphone) for documentation

| **Specific tasks/instructions** | **Findings/Observations/Verification** |
| --- | --- |
| 1. **Carefully review the pump controller specification and user manual provided to identify key details such as:** | |
| * Voltage and current rating. |  |
| * Pump controller type (MPPT, PWM, VFD, Star-delta, soft starter etc.). |  |
| * Maximum input/output power. |  |
| * Recommended solar array capacity. |  |
| * Environmental limits (e.g., temperature, humidity). |  |
| 1. **Discuss the necessary safety measures for handling and installing the pump controller, including:** | |
| * Electrical safety: Ensure all wiring is done with the controller powered off. |  |
| * Proper earthing and grounding of the system. |  |
| * Avoid short circuits by correctly matching the wiring polarity. |  |
| * Use of PPE (Personal Protective Equipment) such as insulated gloves and eye protection. |  |
| * Electrical safety: Ensure all wiring is done with the controller powered off. |  |
| 1. **Review** **the instructions for mounting the pump controller with respect to the following:** | |
| * Location: Ensure the controller is mounted in a dry, well-ventilated area, away from direct sunlight and water exposure. |  |
| * Positioning: Secure the controller in a vertical or horizontal position as specified by the manual, ensuring easy access for monitoring and maintenance. |  |
| * Consider the mounting height for optimal wire connection and accessibility. |  |
| 1. Identify the controller's operating voltage and current range. |  |
| 1. Discuss the temperature limits for safe operation (minimum and maximum ambient temperature). |  |
| 1. Ensure the controller’s power capacity matches the solar array and pump specifications. |  |
| 1. Verify if there are any environmental factors (dust, humidity) that may affect the controller’s performance. |  |
| 1. **Discuss the step-by-step installation process for the pump controller to find the suitable site as mentioned below:** | |
| * Fixing the controller in the designated location. |  |
| * Connecting the solar panel wires to the controller input. |  |
| * Connecting the pump wires to the controller output. |  |
| * Installing any necessary fuses or surge protection devices |  |
| 1. Review the wire connections for the pump controller, identify the correct wire sizes based on current rating. |  |
| 1. Properly route and secure wires to avoid stress and damage. |  |
| 1. Discuss provision for regular maintenance procedures for the pump controller |  |
| 1. Clean any dust or debris around the controller installation area to ensure proper ventilation. |  |
| 1. List the necessary tools for Installation |  |
| 1. After completing the exercise, record and share your insights on the installation process. |  |
| 1. Discuss any unique site conditions or challenges encountered and how they would overcome them. |  |