**Solar Electric Technician (Level 2)**

**Module 4: Site Selection for Solar PV Systems**

**E5: Assignment - Battery bank installation requirements**

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| **E5: ASSIGNMENT MEMO** | |
| **Date** | …. |
| **To** | Participants |
| **From** | Trainers |
| **Subject** | Battery bank installation requirements |
| **What** | Review and identify the critical factors involved in safely and effectively installing a battery bank, including reading specifications, safety precautions, and operating conditions. |
| **Why** | The objective of the assignment is to equip trainees with the skills to assess and the requirements for installation of a battery bank. |
| **How** | 1. Group of 2 or 4. 2. Each team will receive a battery bank specification sheet and installation manual. 3. Read and carefully follow the instructions to perform the specific task. 4. Each group will be assigned to a specific section to review and present on the following topics. 5. Record the findings/observations for each specific tasks in the table and discuss the results with the trainer. |
| **Time** | 60’ for each technology (at least two) |

**Understanding the technical requirements to install a battery bank safely**

**Required tools/equipment:**

* Battery
* Instruction manual
* Plier, torque wrench
* Clamp meter
* Camera (smartphone) for documentation

| **Specific tasks/instructions** | **Findings/Observations/Verifications** |
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| **Task 1: Review the battery specification sheet and identify key details, such as** | |
| 1. Review the battery specification sheet and identify key details, such as:  * Battery capacity (in Ah or kWh). * Voltage rating (nominal voltage and maximum voltage). * Recommended charge/discharge cycles. * Weight and dimensions of the battery. |  |
| 1. Discuss how to interpret these values in the context of the system's power needs. |  |
| 1. Identify all safety instructions provided for handling and installing the battery. |  |
| 1. Discuss and write down hazards like electrical shock, chemical spills (for lead-acid batteries), or thermal runaway (for lithium-ion batteries). |  |
| 1. Review the requirements for Personal Protective Equipment (PPE), such as gloves and eye protection. |  |
| 1. Discuss the need for fire extinguishers and emergency protocols. |  |
| 1. Review the voltage and current ratings for the battery bank with respect to the inverter’s dc voltage requirements, including acceptable charge and discharge rates. |  |
| 1. Discuss the operating temperature range and the effect of temperature on battery performance and lifespan. |  |
| 1. Review the step-by-step instructions for installing the battery bank. |  |
| 1. Discuss the mounting methods, ensuring the battery bank is placed securely and perform the task of mounting the battery bank |  |
| 1. Ensure the importance of securing battery terminals and grounding the system and perform the task accordingly |  |
| 1. Verify any pre-installation checks mentioned in the manual. |  |
| 1. Review the wiring requirements for the battery bank, including the recommended wire sizes and cable routing and perform wiring accordingly. |  |
| 1. Ensure you understand how to connect positive and negative terminals properly. |  |
| 1. Identify any instructions regarding the series or parallel connection of the battery bank. |  |
| 1. Discuss the need for fuses or circuit breakers, their size, mounting location and accessories between the battery and the system components. |  |
| 1. Discuss and identify the need for proper ventilation to prevent heat buildup, especially for enclosed battery banks for the given location. |  |
| 1. Review any specific airflow clearance requirements around the battery bank. |  |
| 1. Identify risks related to off-gassing (if applicable), especially with lead-acid or other flooded batteries. |  |
| 1. Discuss how to ensure proper ventilation in the designated installation area. |  |
| 1. Review the maintenance requirements for the battery bank including: |  |
| 1. Regular inspection of terminals and connections for corrosion or damage. |  |
| 1. Monitoring the battery’s state of charge (SoC) and ensuring it is not overcharged or discharged too deeply. |  |
| 1. Cleaning the battery regularly and ensuring it remains in optimal working condition. |  |
| 1. Discuss how to create a maintenance schedule and the tools needed for routine checks. |  |
| 1. List the necessary tools for installation. |  |
| 1. Identify the tools required for installing the battery bank |  |
| 1. Inspect the installation location for any flammable materials that may pose a fire hazard. |  |
| 1. Discuss the importance of installing the battery bank in a non-combustible environment and away from potential fire risks (e.g., open flames, heat sources). |  |