دهباشي الهندسية
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USER MANUAL

for Dahbashi Battery Calculator

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1. Introduction

The Battery Capacity Calculator is a web-based tool designed to help users determine the appropriate capacity of the battery based on specific load and system requirements.
The system automatically computes battery capacity requirements and recommends suitable battery models based on:

a. Highest Utilization Factor (A)
b. Lowest Number of Strings (B)

2. How to Use the Battery Capacity Calculator

Step 1: Enter Basic Consumer Details

Upon opening the system, you will first see the Consumer Information section.
Fill in the following required fields:

- Company Name
- Project Name
- Installation Location
- Contact Person
- Contact Number
- Email Address

⚠️ **Ensure that all fields are correctly filled. The email address must be valid and active. Once completed, the system will automatically display additional configuration cards.**

Step 2: System Displays Configuration Cards

After entering the Consumer Information, the following sections will appear:

a. Design Parameters
b. Battery Capacity Sizing Formula
c. Additional Information
d. Battery Options
e. Recommended Batteries (Right Panel – A & B)

⚠️**These sections will remain hidden until Step 1 is completed.**

Step 3: Enter Design Parameters

In the Design Parameters card, enter the required electrical and system values:

Input Fields:

- KVA Load (kVA)
- Power Factor (PF)
- Efficiency (%)
- System Voltage (VDC)
- End Voltage (VDC)
- Autonomy Time (minutes)
- Design Margin
- Aging Factor
- Temperature Factor

✅ **Each valid field will display a green check mark.**
❌ **Invalid entries will display a red indicator.**

Parameter Guidance (Info Icon Feature)

Each parameter includes an information (ℹ️) icon beside the input field.

Hover your cursor over the info icon to view:

- The valid range of values
- Acceptable units
- Recommended input format
- Brief explanation of the parameter

This feature helps ensure that:

- Only valid values are entered
- Input errors are minimized
- Computations are accurate

Input Validation Indicators

✅ **A green check mark will appear when the value entered is valid.**
❌ **A red warning indicator will appear if the value is outside the acceptable range.**

All the fields must valid before the system performs the final computation.

3. Automatic Computations Explained

a. Battery Capacity Sizing Formula

This section automatically calculates:

- Required Watts
- Total Watts
- Number of Battery Blocks
- Required Battery Capacity

The formula is computed based on:

$$Watts = \frac{(KVA \times 1000 \times PF)}{(DCV/2 \times Efficiency)} \times DesignMargin \times AgingFactor \times TemperatureFactor$$

All results update dynamically when parameters are modified.

b. Additional Information

This section provides:

- Total Required Watt-hours (Wh)
- Watt-hours per Battery
- Required Number of Blocks
- Calculated Battery Capacity

This helps users verify and understand how the final recommendation was derived.

c. Battery Options

This table lists all compatible battery configurations.

Table Columns Include:

- Type (e.g., 100Ah/12V)
- Strings
- Number of Blocks
- Capacity

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- Utilization %
- Battery Model

You may:

- Adjust entries per page
- Use the search box to filter battery types

Each row shows whether the battery configuration is acceptable based on utilization percentage.

d. Recommended Battery Selection (Right Panel)

On the right side of the screen, two recommended configurations are displayed:

- **Recommended Battery A (Selection Based on Highest Utilization Factor)**
  - This option is ideal when maximizing battery usage efficiency is the priority.
- **Recommended Battery B (Selection Based on Lowest Number of Strings)**
  - This option is ideal when simplifying installation and reducing wiring complexity is the priority.

e. Sending Detailed Results

Each recommendation card includes a:

"**Send Detailed Results via Email"** button.

Clicking this will send to your email:

- **Data Sheet.pdf** (*complete specification of the battery*)
- **Battery Calculation.pdf** (*complete battery capacity computations*)