Lithium Sizing Web User Manual

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Sommaire

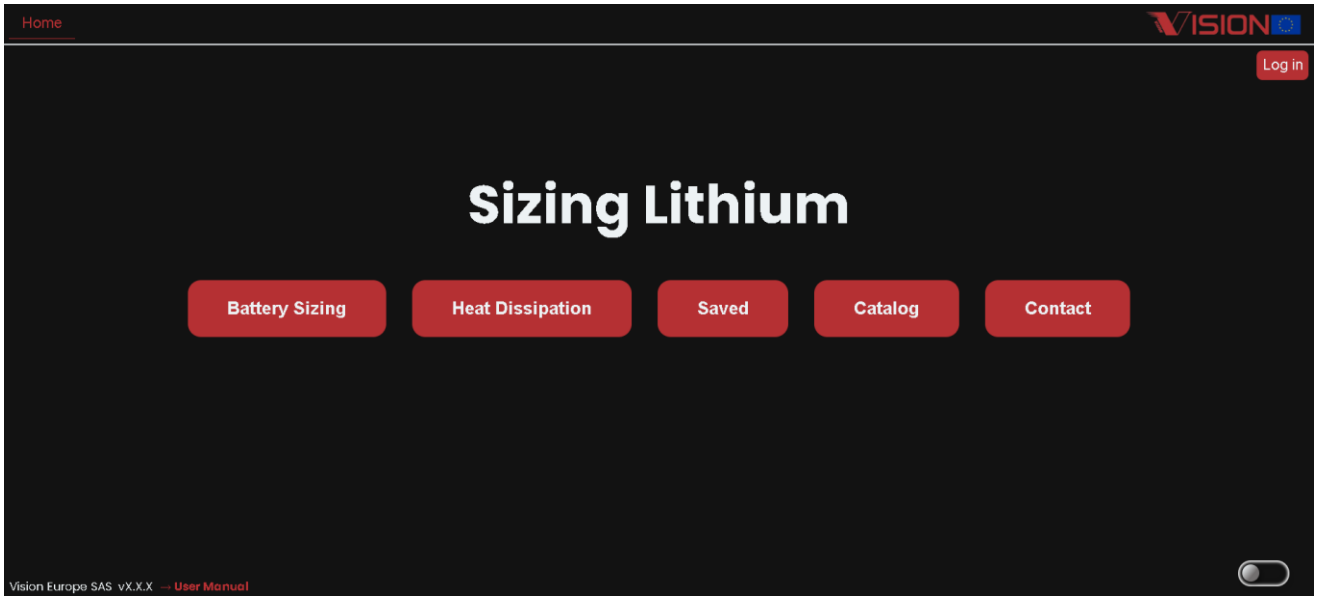
Introduction

This document applies to the Vision Europe Sizing Lithium web tool. The website is used to calculate battery sizing, heat dissipation, and to generate technical reports for REVO modules.

Home Page

Overview:

The home page groups all tools available on the platform.
It serves as the entry point to the calculation modules and the available information.



Main Buttons:

- **Battery Sizing**
  Opens the battery sizing calculation module.
- **Heat Dissipation**
  Opens the heat dissipation calculation module.
- **Saved**
  Displays the calculations stored locally on the device.
- **Catalog**
  Opens the catalog of REVO models with access to technical datasheets.
- **Contact**
  Opens the form used to send a technical or commercial inquiry.

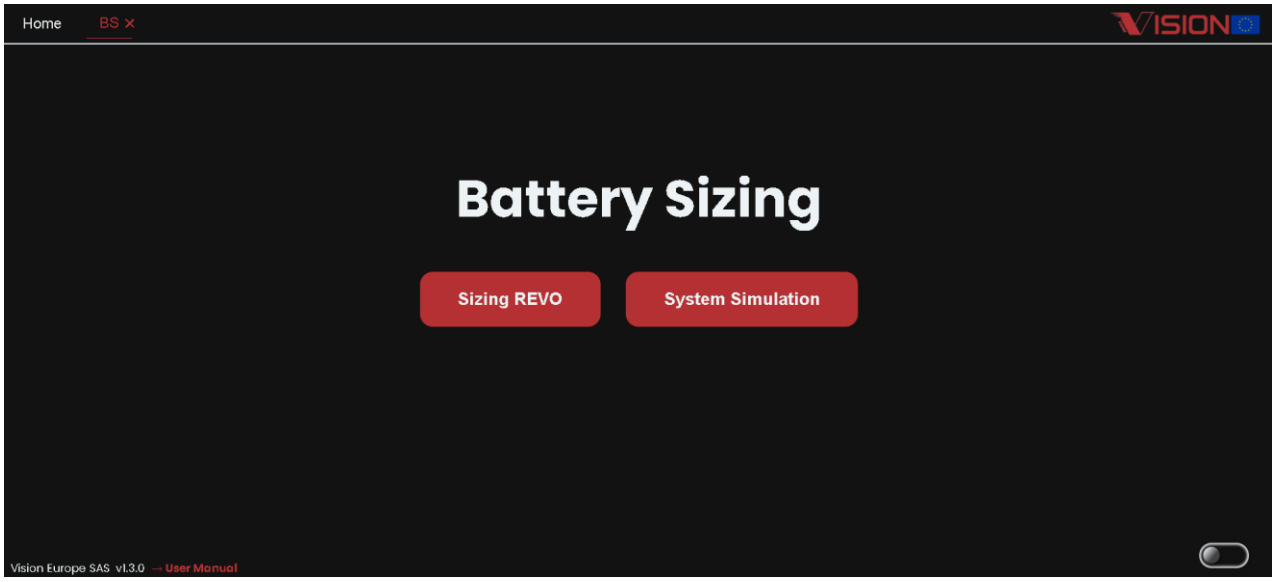
Additional elements:

- **Log in**
  The login function is only used by administrators and does not provide additional features for standard users.
- **Footer**
  - Displays the software version
  - Provides a direct link to download the User Manual (PDF)
  - Includes a light/dark theme switch.
- **Header**
  The header is displayed at the top of the page and remains visible during navigation to switch between open tabs. A red cross is shown on certain tabs when closing them is allowed.

Battery sizing

Overview:

The **Battery Sizing** home page serves as the main entry point for the application. It allows the user to select the desired operating mode to proceed with calculations or simulations.



Available buttons

- Sizing REVO
  Opens the battery sizing REVO calculations.
- System Simulation
  Opens the list of saved heat dissipation results.

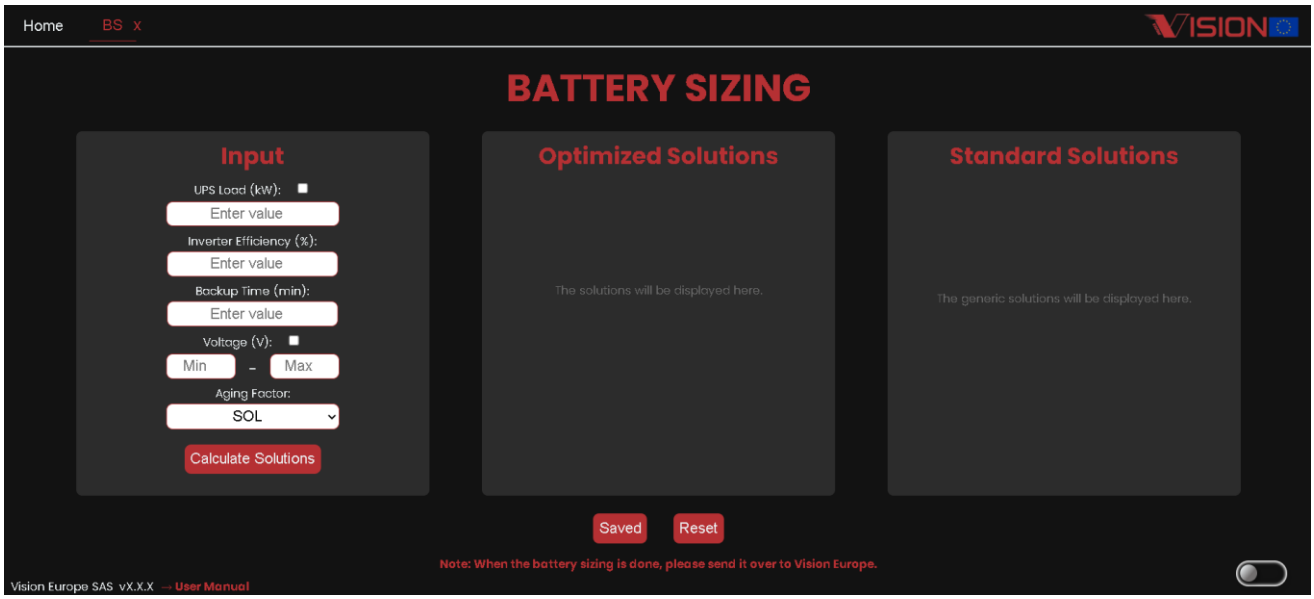
General purpose

This page acts as the main menu, allowing the user to select which calculation module to launch (**Sizing REVO** or **System Simulation**) before accessing the specific interface.

Sizing REVO

Overview:

The **Sizing REVO** tab is used to perform a battery sizing calculation based on several input parameters. The results are displayed as optimized solutions and standard solutions, generated from the technical data of the REVO modules.

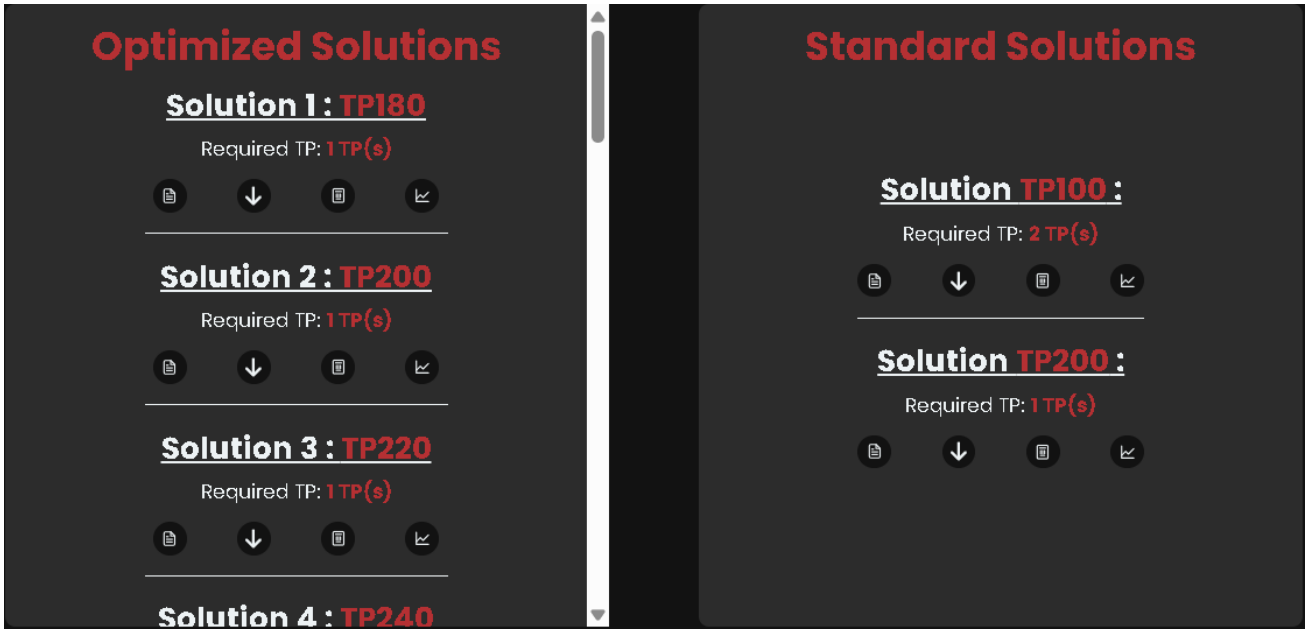


Input Area (Calculation Parameters):

The left panel contains the fields required to run the calculation:

- **UPS Load (kW)**
  UPS load value. The input can be entered in kW or kVA (a checkbox allows switching between units).
- **Inverter Efficiency (%)**
  Inverter efficiency used in the calculation (basically between 0.9 and 0.99).
- **Backup Time (min)**
  Required autonomy time.
- **Voltage (V)**
  The voltage can be entered as a range (using Min and Max values). It is also possible to enable the associated checkbox to select a predefined nominal voltage directly from the list, without entering a manual range.
- **Aging Factor**
  Aging factor selected from the dropdown menu (SOL/ EOL-10 years/EOL-15 years).

Once all the fields have been filled in, you can click on the "**Calculate Solutions**" button.



Results – Optimized Solutions:

This section displays the optimized solutions generated from the input parameters.
The results are automatically sorted according to the following rules:

- The first solution shown is always the one requiring the lowest number of TP units.
- If two or more models require the same number of TP units, the first solution is the one with the lowest margin.

Each solution also includes:

- The recommended REVO model
- The required number of TP units
- Available actions: save the solution, download the datasheet, view calculation details, or display the runtime vs load curve

Results - Standard Solutions

This panel displays predefined generic configurations (**TP100 & TP200**) which will always be the same, the operation remains the same.

Additional Actions

- Saved: stores the solutions in the **Saved** section (local browser storage).
- **Reset**: clears all input fields.
- Information note: a reminder indicates that once the sizing is completed, it should be forwarded to Vision Europe.

Available Actions

Datasheet : Downloads the PDF technical datasheet of the corresponding REVO model.

Saved : Stores the solution in the Saved section (local browser storage).

Calculation Details : Opens a window showing all steps and values used in the sizing calculation.

Runtime vs Load Curve: Displays the autonomy curve based on the applied load.

Calculation details:

Definition

The Calculation details window provides a complete analysis of the sizing process for the selected solution.
All values displayed are automatically computed from the inputs provided in the Battery Sizing tab.
A red cross in the upper-right corner allows closing the window.

The window is structured into several sections:

1. Required Battery Power (RBP)

Shows the battery power required to meet the requested backup time.
The calculation uses:

- UPS load
- inverter efficiency
- aging factor

The applied formula and the resulting value are displayed.

2. Unit Capability

Shows the capability provided by a single REVO TP module for the specified runtime. This includes:

- available power per module
- associated duration
- technical data extracted from the database

3. Required TPs

Displays the total number of TP modules required to meet the calculated battery power (RBP). The value is based on the capability of a single TP and is rounded up to the nearest whole unit.

4. Power Provided

Indicates the total power supplied by all installed TP modules, representing the system's available output. Calculated as: (Power per TP) × (Number of required TPs).

5. Power Margin

Shows the margin between the total provided power and the required battery power.
This value confirms whether the system includes excess capacity.

6. Real Load per TP

Displays the actual load applied to each TP module after sizing. This value reflects how the system load is distributed across all installed TPs.

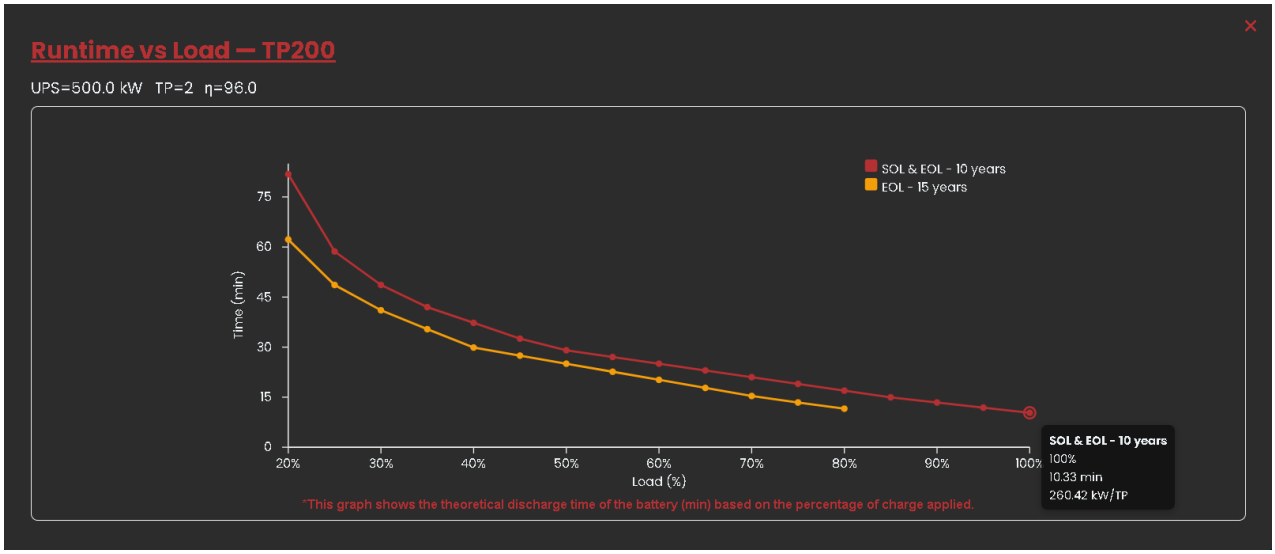
7. Theoretical Backup Time

Indicates the new backup time obtained with the selected number of TPs, including the extra margin, and therefore generally higher than the requested backup time.

8. Energy System

Indicates the total energy provided by the battery system. This value is derived from the energy capability of one TP multiplied by the total number of TPs.

Runtime vs Load Curve:



Definition

The Runtime vs Load window displays the theoretical runtime curve of the selected TP model based on the applied load percentage.
The curve shows several operating points and helps evaluate how the discharge time changes with different load levels.

Displayed information:

SOL / EOL curves
Two curves may be presented:

- SOL & EOL – 10 years
- EOL – 15 years

They illustrate how the system's runtime evolves with aging.

Horizontal axis: Load (%)
Percentage of load applied to the system.
Vertical axis: Time (min)
Corresponding theoretical runtime.

Interpolation point (Interactive)
The chart is interactive and allows for precise data reading:

- **Hovering**: When moving the mouse over the curve, a tooltip dynamically displays the values.
- **Pinning**: Clicking on the curve **fixes/unfixes** the tooltip at that specific point. Users can pin multiple tooltips simultaneously to compare data at different moments.

The tooltip displays:

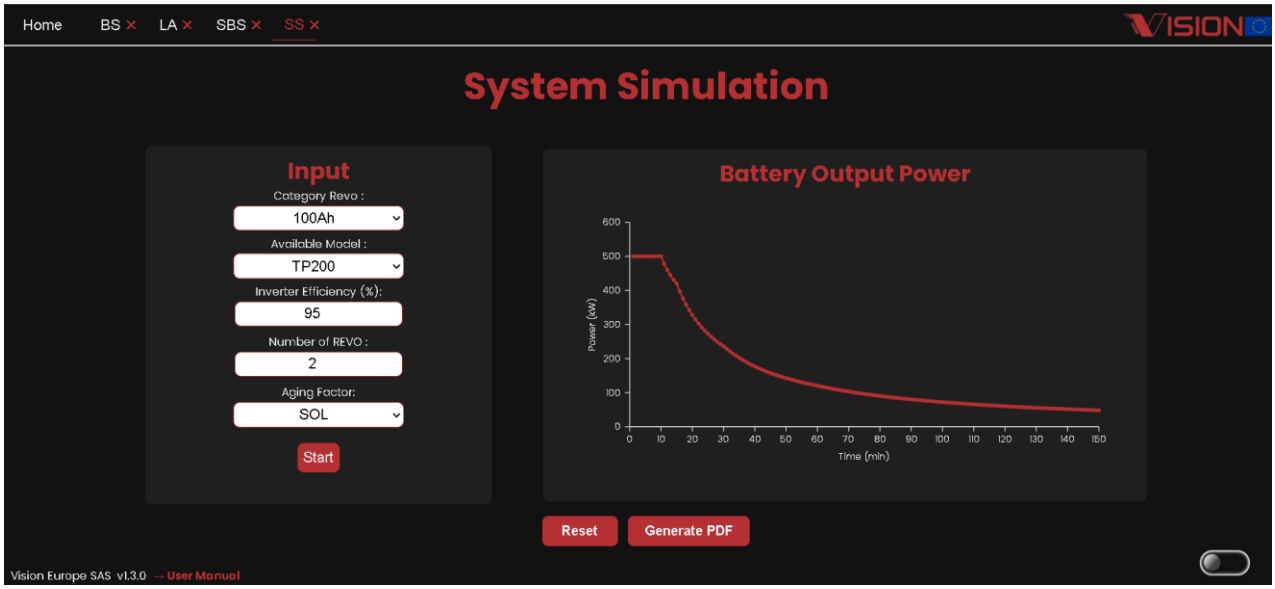
- the load percentage
- the corresponding runtime
- the power provided per TP at that point

Note : A message under the chart indicates that the graph represents the theoretical discharge time (in minutes) based on the applied load percentage.
A red cross allows closing the window.

System Simulation

Overview:

The **System Simulation** tab enables the user to simulate the discharge curve of various REVO battery configurations. This feature allows the user to visualize the available power output relative to time for the selected models, helping to assess performance behavior.



Input Area:

The left panel contains the parameters required to configure and run the simulation:

- **Category Revo**
  Dropdown menu to select the battery capacity class (e.g., 100Ah).
- **Available Model**
  Dropdown menu to select the specific REVO model (e.g., TP200).
- **Inverter Efficiency (%)**
  The efficiency percentage of the inverter used in the calculation.
- **Number of REVO**
  The total quantity of battery units in the system.
- **Aging Factor**
  Aging factor selected from the dropdown menu (SOL/ EOL-10 years/EOL-15 years).

Results - Battery Output Power

The right panel displays the simulation outcome in a graphical format:

- **Vertical axis**: Displays the Power in kW.
- **Horizontal axis**: Displays the Time in minutes.

The generated red curve illustrates how the battery's power capability decreases over time during discharge for the defined configuration.

Important Note

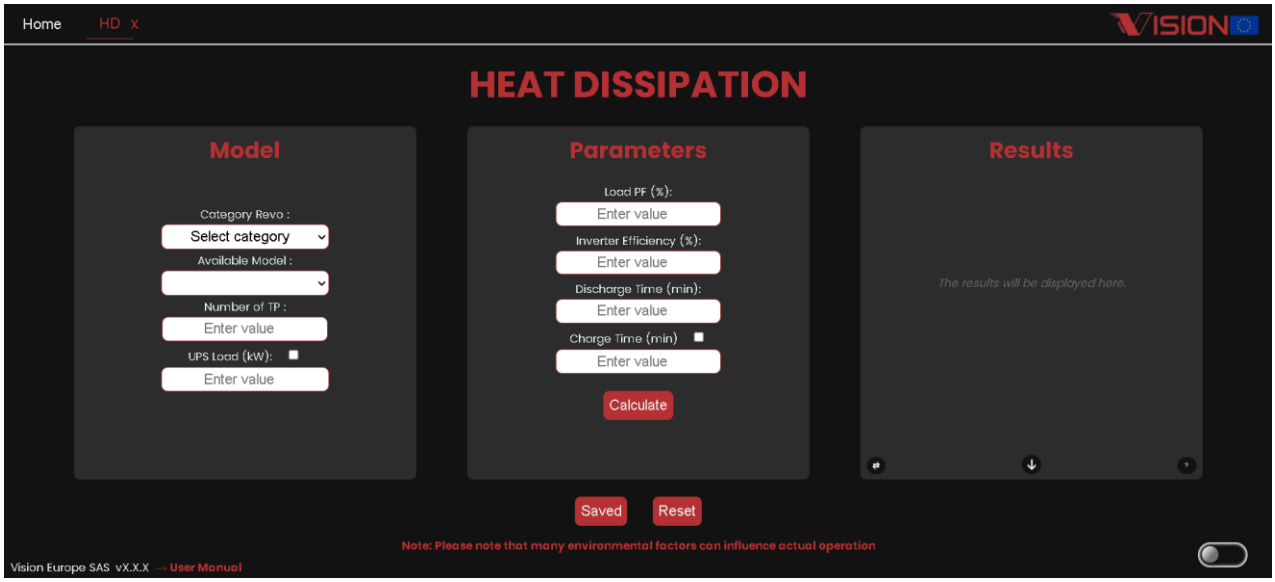
A red disclaimer displayed at the bottom of the page states: *"Results are informational only and must not be used for final system sizing: additional parameters must be evaluated."* This ensures the user understands that this simulation is for estimation purposes and does not replace a formal sizing study.

Heat Dissipation

Overview:

The **Heat Dissipation** tab is used to estimate the heat generated by REVO modules during charge and discharge phases. The calculation is based on the selected model's technical data and the input parameters.

The page is divided into three main areas: **Model, Parameters,** and **Results**.



Model Area

Defines the system characteristics:

- **Category Revo**
  Selects the REVO product range (TPX, 50Ah, 100Ah, etc.).
- **Available Model**
  Selects the specific model within the chosen category.
- **Number of TP**
  Total number of modules used in the system.
- **UPS Load (kW)**
  Load applied in kW or kVA (a checkbox allows switching between units).

Parameters Area

Contains the required inputs for the thermal calculation:

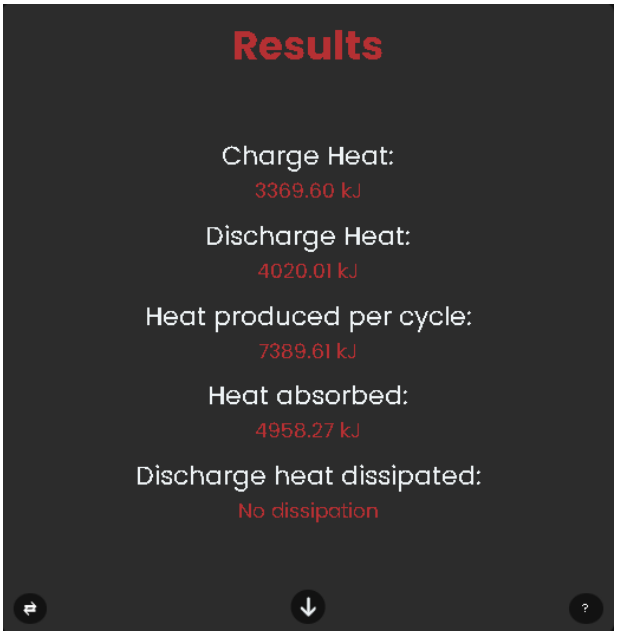
- **Load PF (%)**
  Represents the power factor applied to the load. This parameter indicates the percentage of the battery's power that is effectively used by the load compared to the apparent power. It helps determine the active power that the battery must supply during discharge.
- **Inverter Efficiency (%)**
  Indicates the output efficiency of the inverter. This parameter specifies how much of the battery's power is actually delivered to the system after conversion, with the remainder lost as heat. A lower efficiency means the battery must provide additional power to compensate for these

conversion losses.

- **Discharge Time (min)**
  Represents the duration during which the battery supplies energy. This value corresponds to the estimated discharge time based on the applied load.
  It is used to calculate the amount of heat generated during the discharge phase.
- **Charge Time (min)**
  Indicates the time required to recharge the battery from a given state of charge. This parameter is used to estimate the heat produced during the charging phase. Depending on the mode used in the tool, charging can be defined:
  - either by a charge duration,
  - or by a charge current.

Press **Calculate** to run the computation.

Results Area



Displays the calculated heat values:

- **Heat during Charge**
- **Heat during Discharge**
- **Heat produced per cycle**
- **Heat absorbed**
- **Discharge heat dissipated**

Warning messages may appear if:

- the calculated current exceeds the model limits,
- a value is outside the allowable operating range.

Button Actions
The buttons located at the bottom of the *Results* area allow the user to:

Switch the energy unit
Toggle between **kJ, kWh,** and **BTU**.

Save
Store the results in the *Saved* tab (local storage).

Display message
A warning message appears.

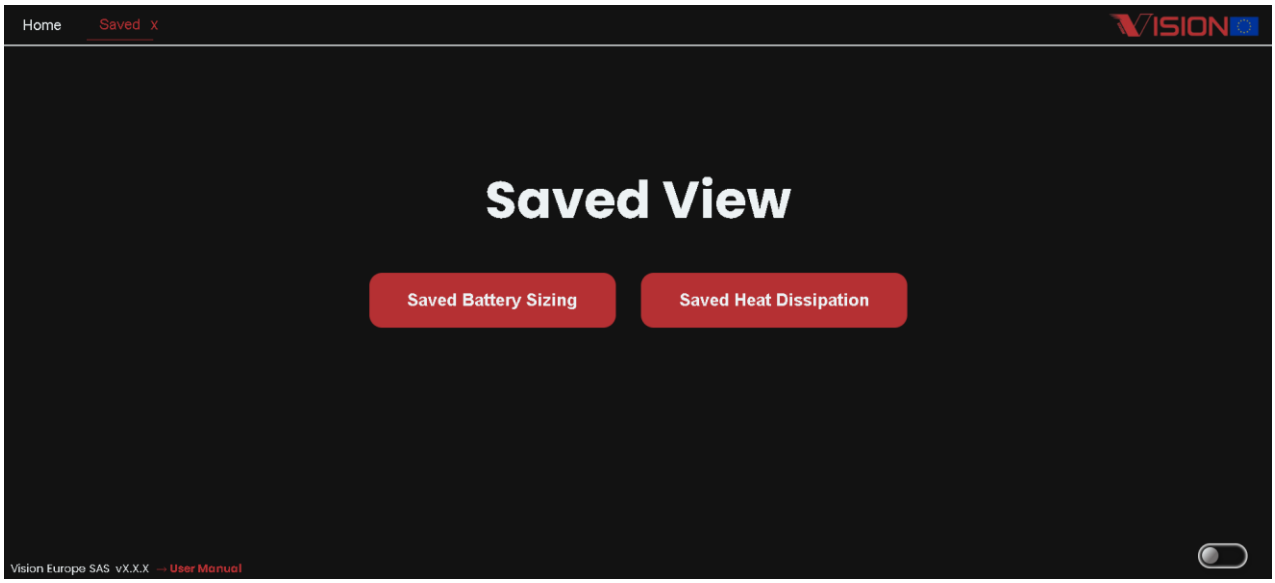
General Actions

- **Saved**: stores the results in the *Saved* section.
- **Reset**: clears all input fields.
- **Note**: a reminder indicates that environmental conditions may influence real operation.

Saved View

Overview:

The **Saved View** page serves as the main access point to all saved solutions. It provides two options that allow the user to open either the saved results from the Battery Sizing module or those from the Heat Dissipation module.
This page does not display the solutions directly; it redirects to the corresponding saved results sections.



Available buttons

- **Saved Battery Sizing**
  Opens the list of previously saved battery sizing calculations.
- **Saved Heat Dissipation**
  Opens the list of saved heat dissipation results.

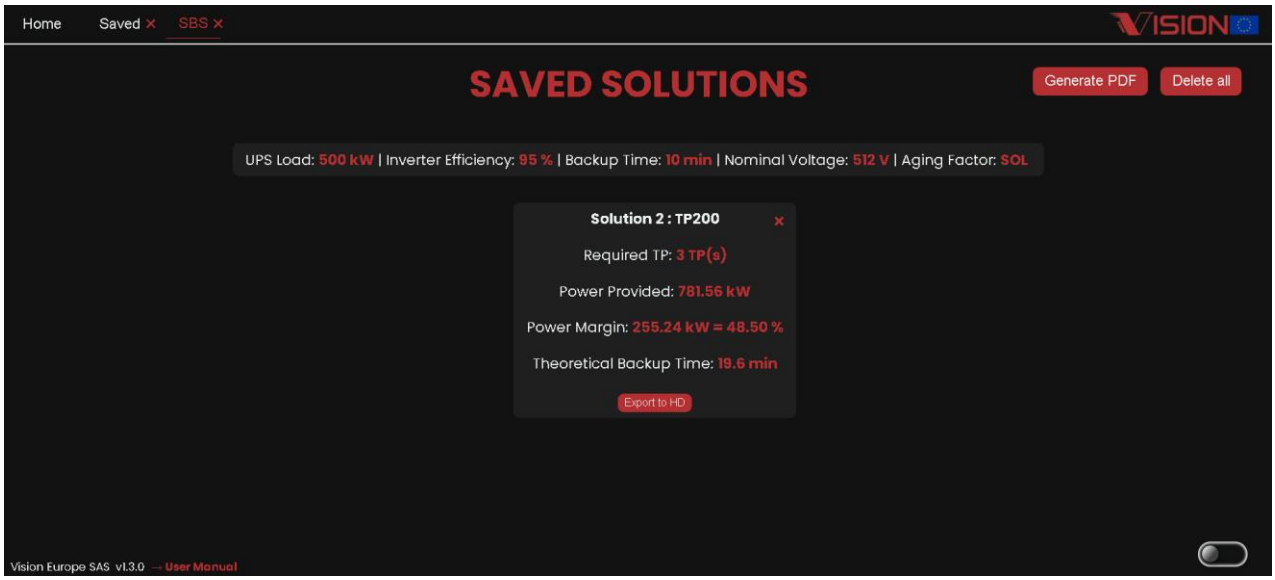
General purpose

This page acts as an intermediate menu, allowing the user to select which type of saved data to display before viewing detailed results. All solutions are stored locally in the browser and are not shared across devices.

Saved Battery Sizing

Overview:

The **Saved Battery Sizing** page displays all battery sizing solutions saved from the Sizing REVO module. Each group corresponds to a set of identical input parameters (UPS Load, Inverter Efficiency, Backup Time, Nominal Voltage, Aging Factor).
These input values are shown at the top of the page to make the context of each saved group easy to identify.



Solution display

Each solution appears as an individual card containing:

- **Required TP(s)**: number of TP modules needed
- **Power Provided**: total power supplied by the system
- **Power Margin**: available margin between provided and required power
- **Theoretical Backup Time**: resulting theoretical autonomy

A red cross in the upper-right corner of each card allows deleting only that specific solution.

Available actions

- **Export to HD**
  Export the input data to the Heat Dissipation tab .
- **Generate PDF**
  Allows creating a PDF report containing one or several saved solutions.
- **Delete all**
  Deletes all solutions saved in this category.
  A confirmation popup prevents accidental deletion.

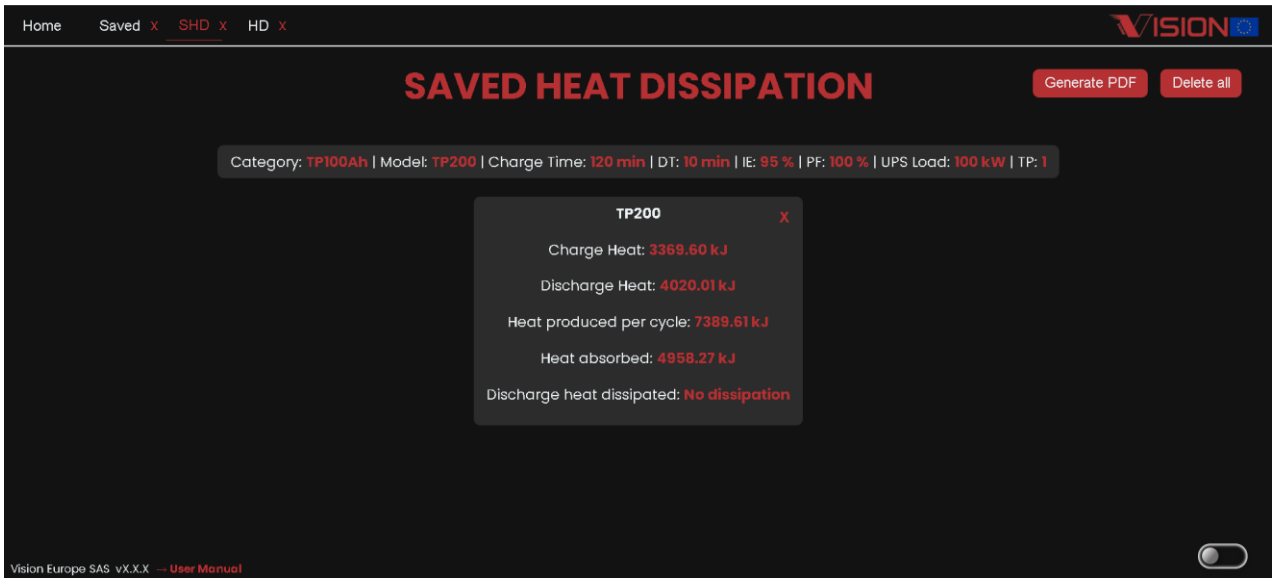
General behavior

- All data is stored **locally in the browser** using localStorage.
- Solutions are only visible on the device used to generate them.
- A red cross on a tab indicates that it can be closed.

Saved Heat Dissipation

Overview:

The **Saved Heat Dissipation** page contains all thermal dissipation results saved from the **Heat Dissipation** module.
Each group corresponds to a set of identical input parameters, displayed at the top of the page (category, model, load, times, efficiency, PF, etc.).



Solution display

Each saved result is presented as a card showing the key information:

- **Charge Heat**: heat generated during the charge phase
- **Discharge Heat**: heat produced during discharge
- **Heat produced per cycle**: total heat generated over one complete cycle
- **Heat absorbed**: heat absorbed by the system
- **Discharge heat dissipated**: amount of heat dissipated during discharge (or *No dissipation* when no dissipation occurs)

A red cross allows deleting only the selected result.

Available actions

- **Generate PDF**
  Creates a PDF report containing the saved thermal results.
- **Delete all**
  Deletes all solutions saved in this category.
  A confirmation popup prevents accidental deletion.

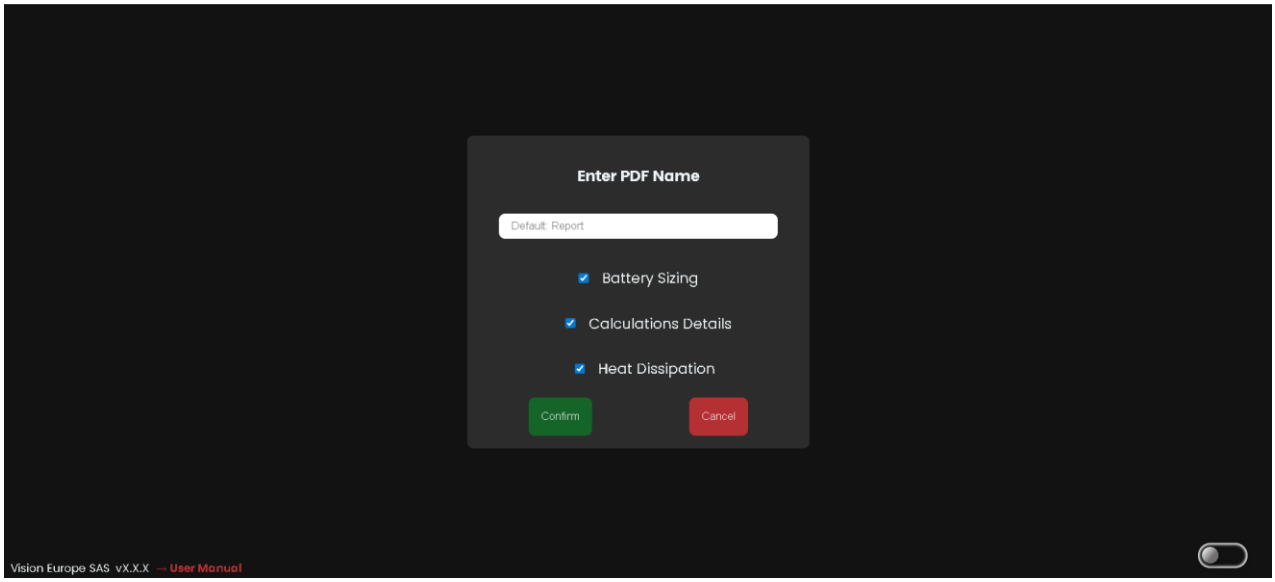
General behavior

- All data is stored **locally in the browser** using localStorage.
- Solutions are only visible on the device used to generate them.
- A red cross on a tab indicates that it can be closed.

Generate PDF

Overview:

The **Generate PDF** window allows creating a PDF report from the saved solutions.
It opens from the Saved Battery Sizing or Saved Heat Dissipation pages when clicking **Generate PDF**.



Available fields and options

- **PDF Name**
  Field used to define the name of the generated PDF file. A default name is provided, but it can be edited.
- **Battery Sizing**
  Includes the saved Battery Sizing solutions in the PDF report.
- **Calculations Details**
  Adds calculation details (RBP, unit capability, margin, etc.) for each included Battery Sizing solution. This option is optional.
- **Heat Dissipation**
  Includes the saved Heat Dissipation results in the report.

Available actions

- **Confirm**
  Generates the PDF according to the selected options.
- **Cancel**
  Closes the window without creating a document.

General purpose

This window allows customizing the content of the PDF report by selecting:

- Battery sizing solutions.
- Calculation details.
- Thermal dissipation results, or any combination of these.

The generated PDF automatically organizes the selected information into a structured layout.

PDF

Overview:

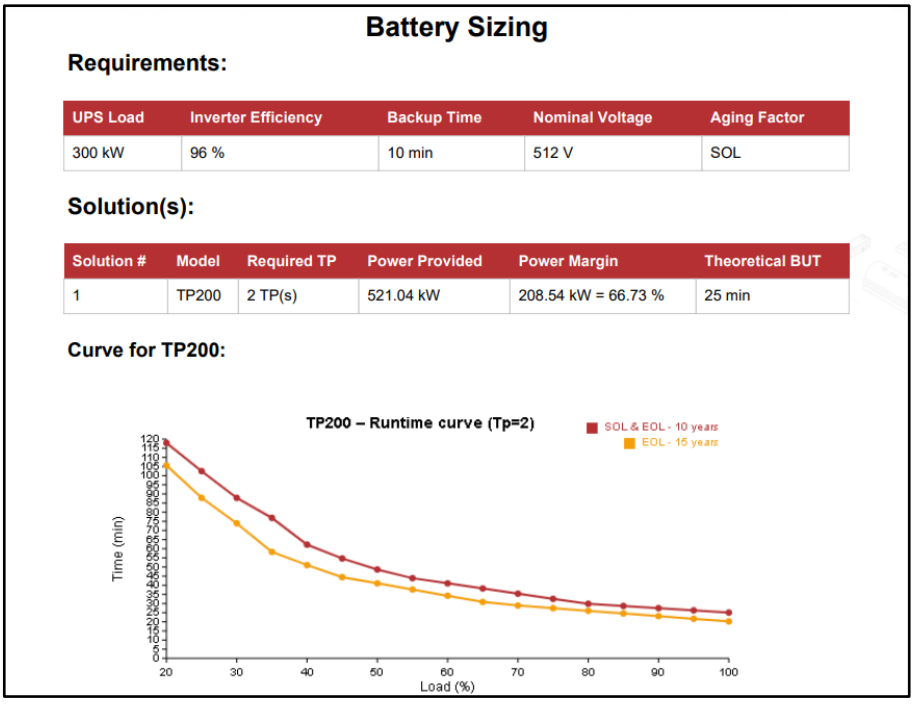
The generated PDF compiles all selected information from the **Generate PDF** window. It may include:

- **Sizing REVO** results,
- **Calculation Details**,
- **Heat Dissipation** results,
- the official **REVO module datasheet**.

The report is cleanly formatted and suitable for internal use or customer delivery.

Battery Sizing Page:

This page summarizes the input parameters used during the battery sizing process: UPS Load, Inverter Efficiency, Backup Time, Nominal Voltage, Aging Factor.



Battery Sizing

Requirements:

UPS Load	Inverter Efficiency	Backup Time	Nominal Voltage	Aging Factor
300 kW	96 %	10 min	512 V	SOL

Solution(s):

Solution #	Model	Required TP	Power Provided	Power Margin	Theoretical BUT
1	TP200	2 TP(s)	521.04 kW	208.54 kW = 66.73 %	25 min

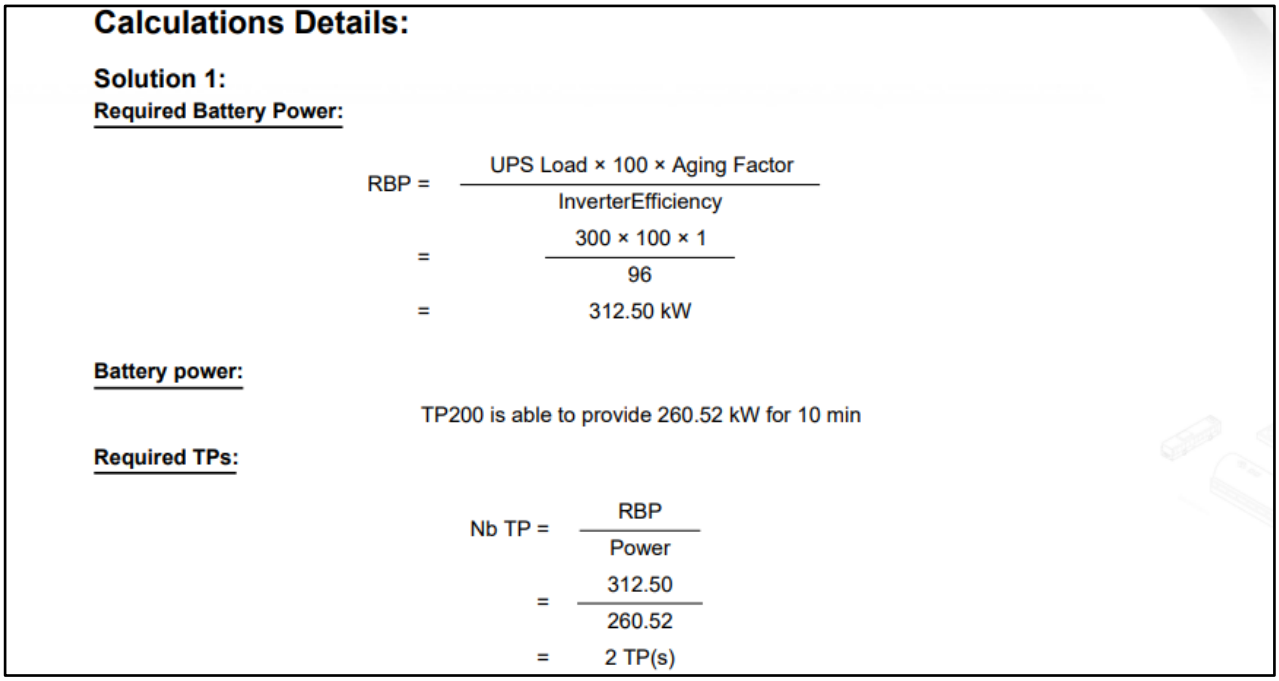
Curve for TP200:

A table lists the available solutions with:

- Model.
- Required TP.
- Power provided.
- Margin (kW and %).
- Theoretical backup time.

A *Runtime vs Load* curve is included to visualize autonomy versus applied load.

Calculation Details Page (optional):



Calculations Details:

Solution 1:

Required Battery Power:

$$RBP = \frac{\text{UPS Load} \times 100 \times \text{Aging Factor}}{\text{InverterEfficiency}}$$

$$= \frac{300 \times 100 \times 1}{96}$$

$$= 312.50 \text{ kW}$$

Battery power:

TP200 is able to provide 260.52 kW for 10 min

Required TPs:

$$\text{Nb TP} = \frac{RBP}{\text{Power}}$$

$$= \frac{312.50}{260.52}$$

$$= 2 \text{ TP(s)}$$

When the option is selected, the PDF includes detailed calculations:

- Required Battery Power (RBP)
- Unit capability
- Required TP count
- Power provided
- Margin and percentage
- Final load per TP
- Theoretical backup time
- Total system energy

Heat Dissipation Page

Heat Dissipation

Heat Inputs:

Category	Model	Charge Time	Discharge Time	Inverter Eff.	Load PD	UPS Load	TP Count
TP100Ah	TP200	120 min	10 min min	95 % %	100 % %	100 kW	1

Heat Result(s):

#	Model	Charge Heat	Discharge Heat	Heat per cycle	Heat Absorbed	Discharge heat dissipated
1	TP200	3369.60 kJ	4020.01 kJ	7389.61 kJ	4958.27 kJ	No dissipation

If selected, the report includes thermal results:

- category, model, load, times, efficiency, PF, UPS load, TP count
- Charge Heat
- Discharge Heat
- Heat per cycle
- Heat absorbed
- Discharge heat dissipated

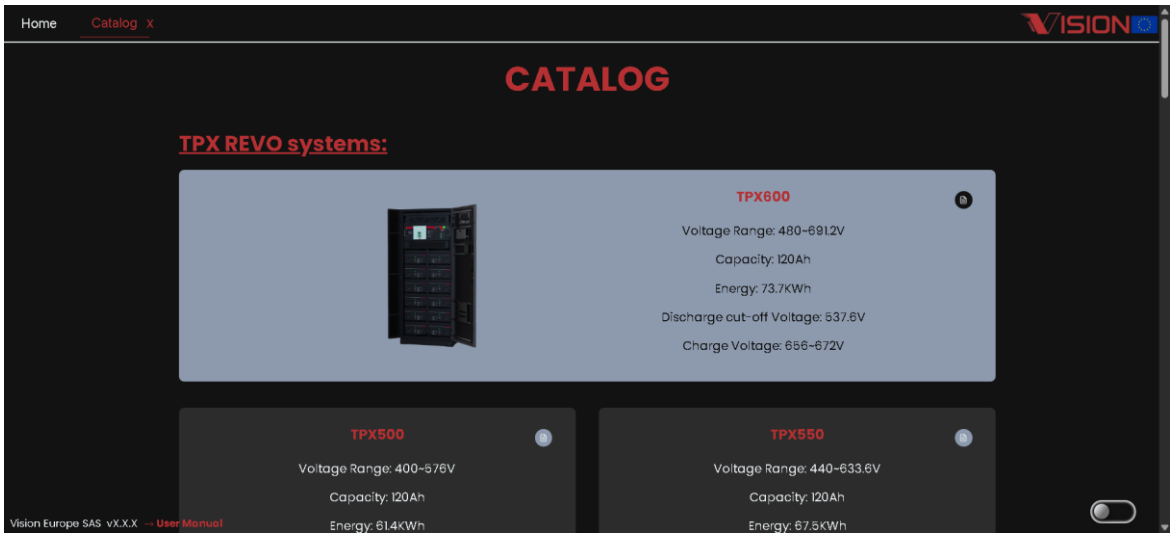
Official REVO Datasheet

When available, the official datasheet of the selected battery module is appended. It includes many technical features.

Catalog

Overview:

The **Catalog** page displays all available REVO systems and battery modules.
It provides a quick way to review the main characteristics of each model and to access the corresponding technical datasheet.
Models are organized into families (TPX, 50Ah, 100Ah, 200Ah, etc.), each shown in separate sections.



Model display

Each model appears in a card containing:

- **Model name** (e.g., TPX600, TPX500, TPX550)
- **Voltage range**
- **Nominal capacity (Ah)**
- **Energy (kWh)**
- **Charge voltage**
- **Discharge cut-off voltage**
- **System image** (when available)

The layout provides a clear summary to allow quick comparison between models.

Datasheet download

A document icon located at the top-right corner of each card allows downloading the PDF datasheet for that model.
The datasheet typically includes:

- Detailed electrical specifications.
- Thermal characteristics.
- Performance curves.
- Physical dimensions and weight.
- Usage recommendations.

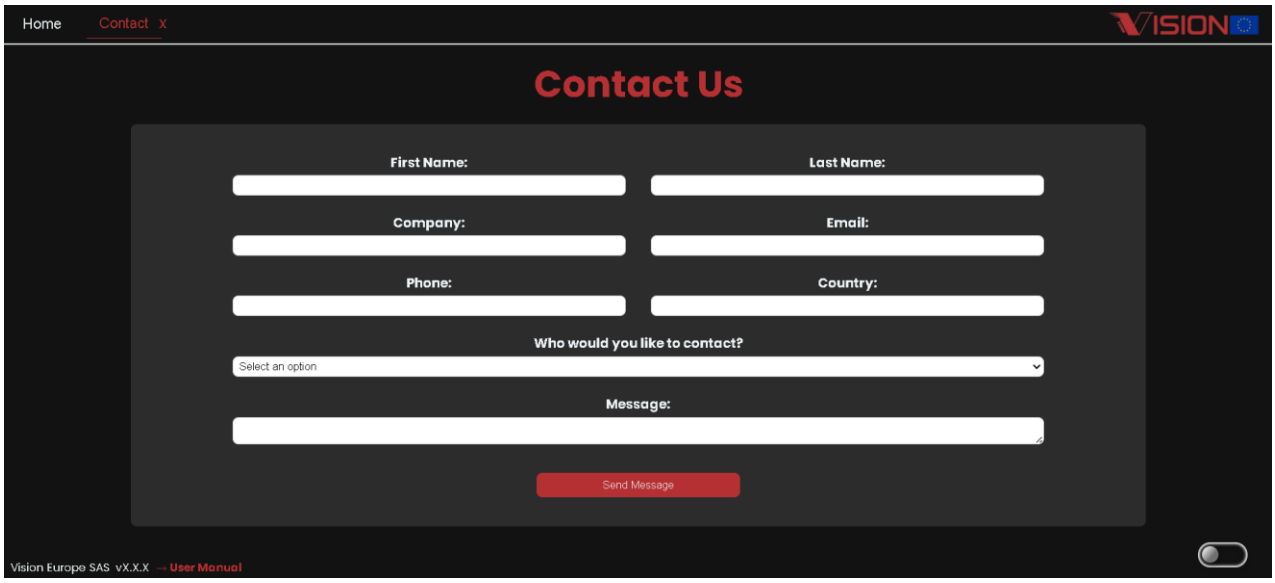
General purpose

The Catalog page acts as a technical reference, allowing users to consult key specifications for each REVO module without external documentation.

Contact Us

Overview:

The **Contact Us** page allows sending a message directly through the platform.
It is intended for technical inquiries, commercial requests, or general questions sent to the Vision Europe team.
The form is organized into identification fields and a message area.



Form fields :

Personal information

These fields identify the sender:

- **First Name**
- **Last Name**
- **Company**
- **Email**
- **Phone**
- **Country**

This information ensures proper handling and follow-up of the request.

Contact type

A dropdown menu allows choosing the category of recipient, such as:

- Technical support
- Sales support

This ensures the message is routed to the appropriate team.

Message

A free-text area where the sender can describe the request, ask a question, or provide any relevant information.

General purpose

This page provides a simple and direct way to contact Vision Europe through the platform, without relying on external tools. It supports faster processing of inquiries related to the website.