OPERATING MANUAL

EN

Local Control Platform

SUNSYS HES

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1. INTRODUCTION

The PMSv2 HMI allows users to configure, drive and monitor Socomec ESS Systems.

In the following, all HMI pages will be described.

2. ACCESS

The HMI can be accessed through usual web browsers. The compatibility matrix is given as follows:

Browser	Version
Microsoft Edge	141.0.3537.92
Google Chrome	141.0.7390.108

Access can be made locally or remotely[1] if your organization department puts NAT rules between ESS product and organization network.

(1) We mean HMI access inside your organization or subnetwork.

3. SETTINGS AND CONFIGURATION

Please note that there are two types of settings: Runtime and Configuration settings. Runtimes settings can be changed when the system is running. Configuration settings need the overall system to be rebooted to be considered.

4. NAVIGATION

4.1. Access level

Navigating the HMI is done by clicking on each displayed item. Available pages and menus depend on the access level rights.

Note: Each logged session has a 15min non-activity timeout.

4.2. Guest access

Guest access is the default access. In this level visitors can only see the information detailed hereafter:

4.2.1. Synoptic view

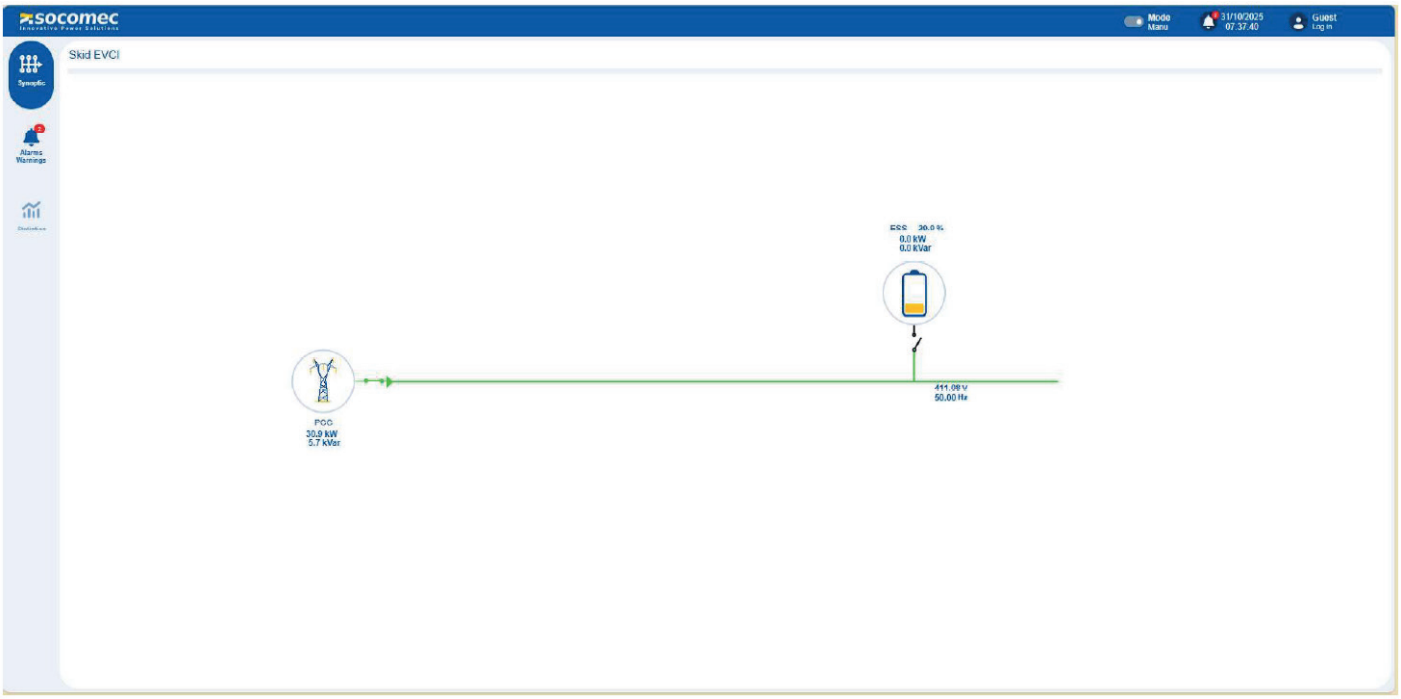

Figure 01. Basic synoptic page

Accessibility

	Guest	User	Service	Socomec
Visualization	✓	✓	✓	✓
Operations	✓	✓	✓	✓

Description

The synoptic page represents a simplified view of the ESS system. It is the HMI's main page. Each element configured on the page: "configure" > "Site" is displayed on the synoptic page - See Figure 2 "Fully configured synoptic page" example.

Depending on the application site, the following elements can be configured:

- Grid (labelled PCC)
- PV or renewable source (labelled Renew)
- Genset
- ESS
- Loads

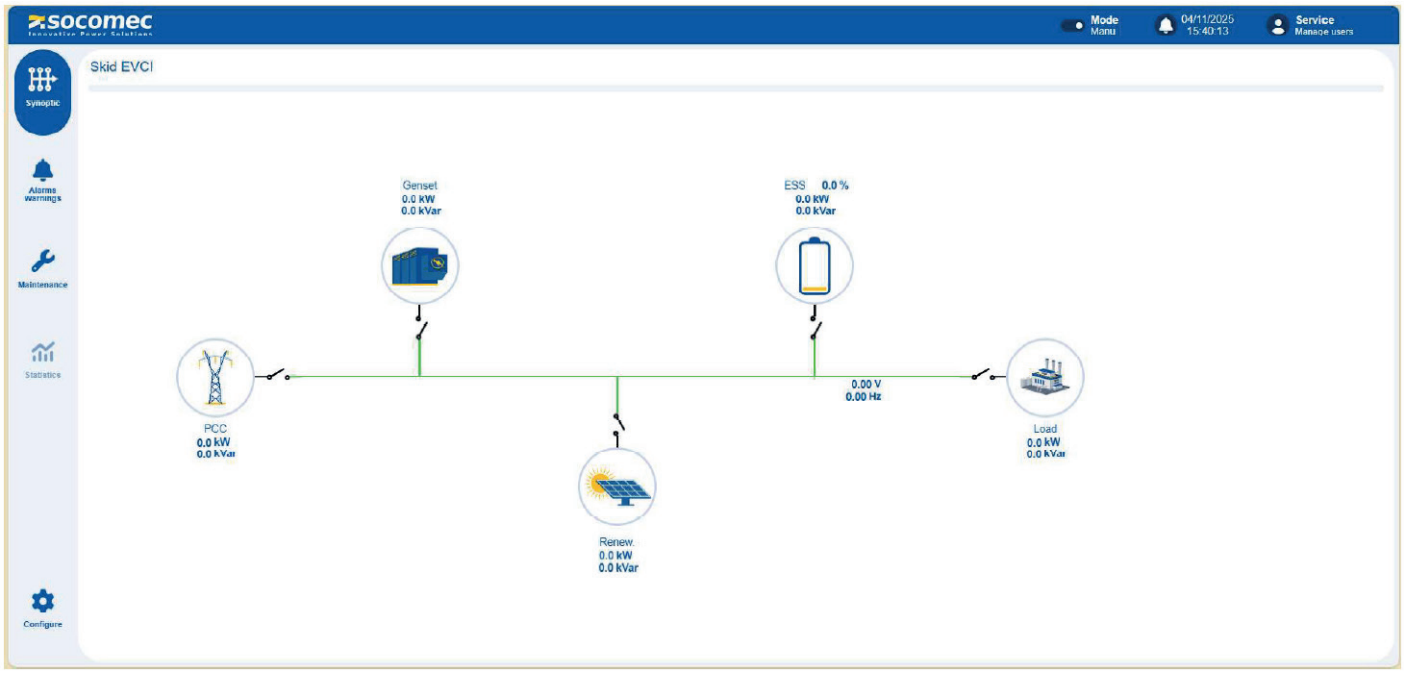

Figure 02. Fully configured synoptic page example

By clicking on each configured element, you have access to additional information regarding measures, alarms and warnings etc; as shown below.

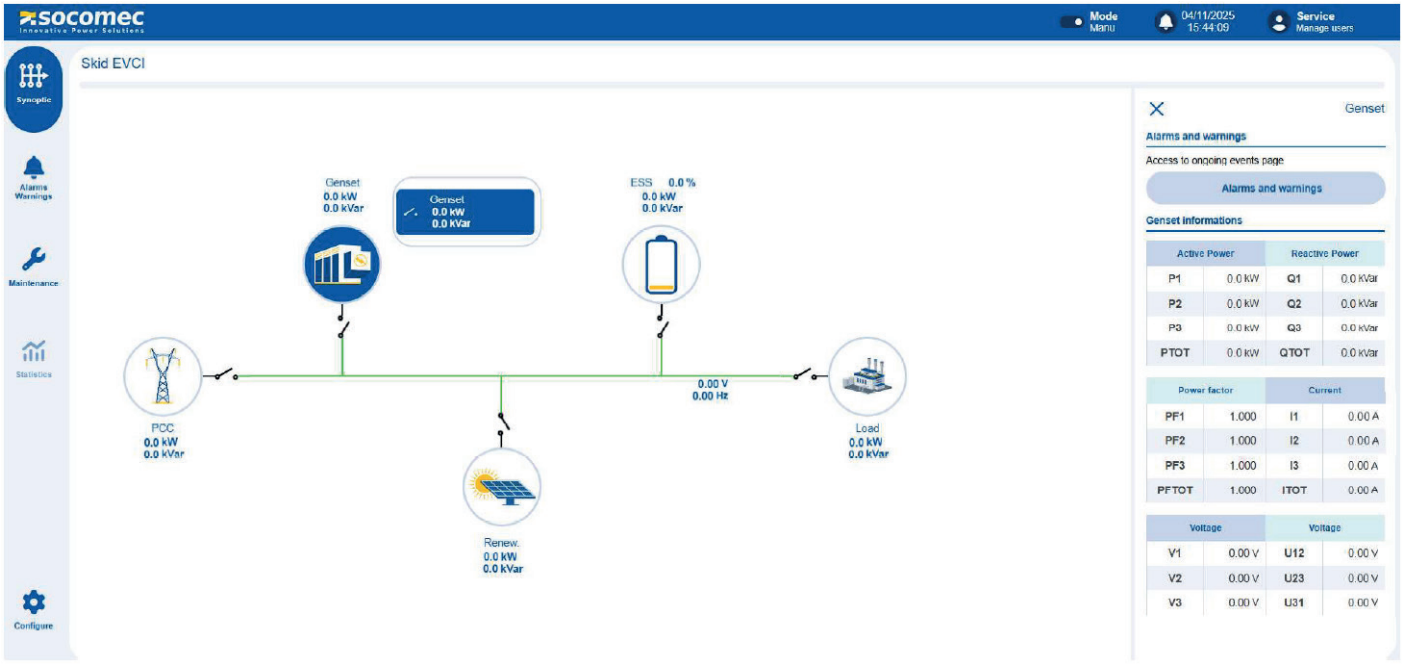

Figure 03. Example of available information on synoptic page

4.2.2. Alarms / Warning page

Accessibility

	Guest	User	Service	Socomec
Visualization	✓	✓	✓	✓
Operations		✓	✓	✓

Description

Alarms & Warnings page reports all alarms and warnings raised at the system level. It includes elements related to ESS, Genset, PCC, Loads, and Renew.

As shown below, in the menu users will be able to:

- Visualize current alarms and warnings
- Acknowledge alarms & warnings
- Acknowledge critical alarms
- Export events

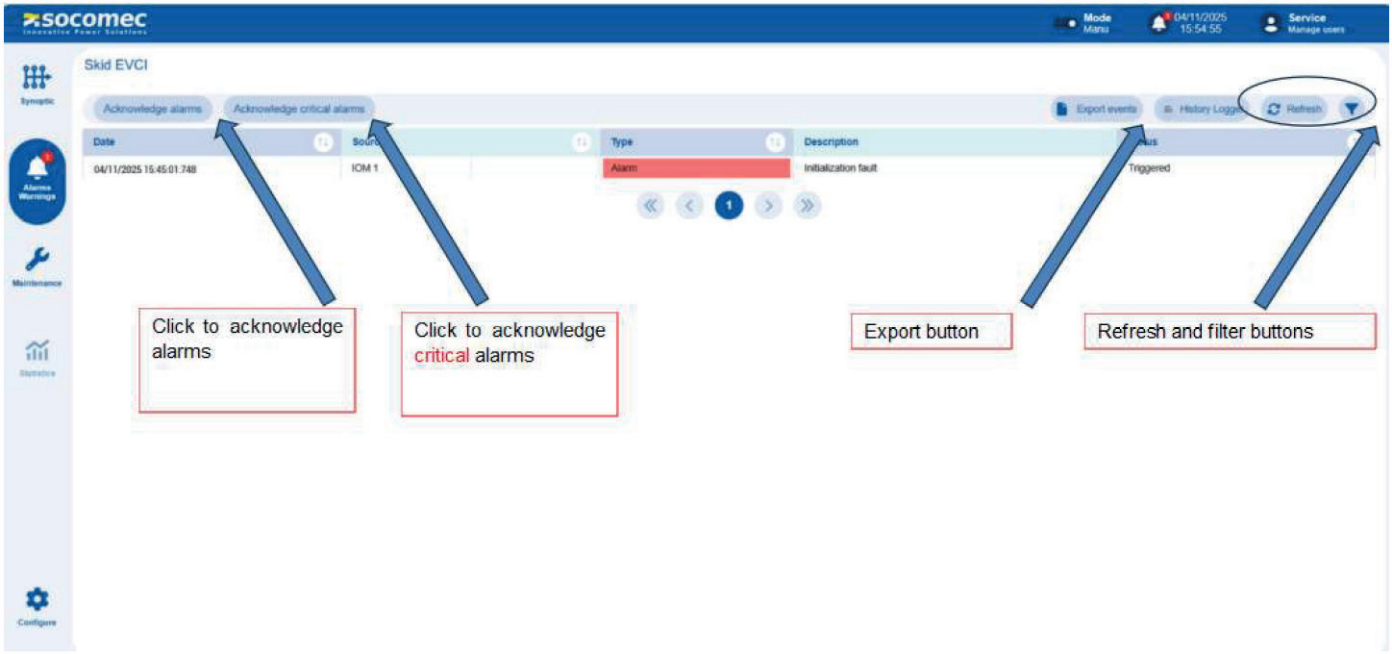

Figure 04. Alarms and warnings menu

In addition, users can filter the elements. By clicking on the raised alarms or warnings, users can have additional information.

Be aware that acknowledging an alarm without identifying the root cause can lead to some unexpected system reaction. Injury to operators or damage to systems can happen. Acknowledgement shall only be made by qualified operators.

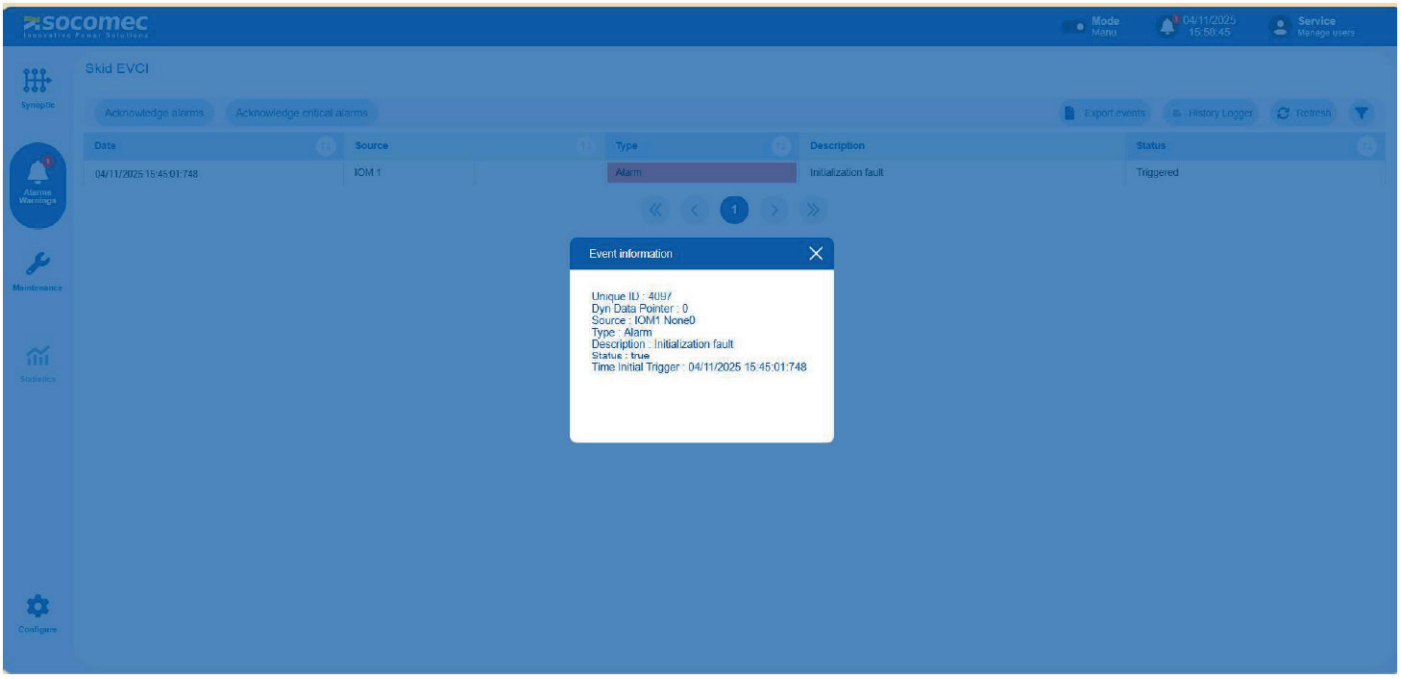

Figure 05. Detailed information about raised elements are displayed by clicking on it

4.2.3. Details view of the command

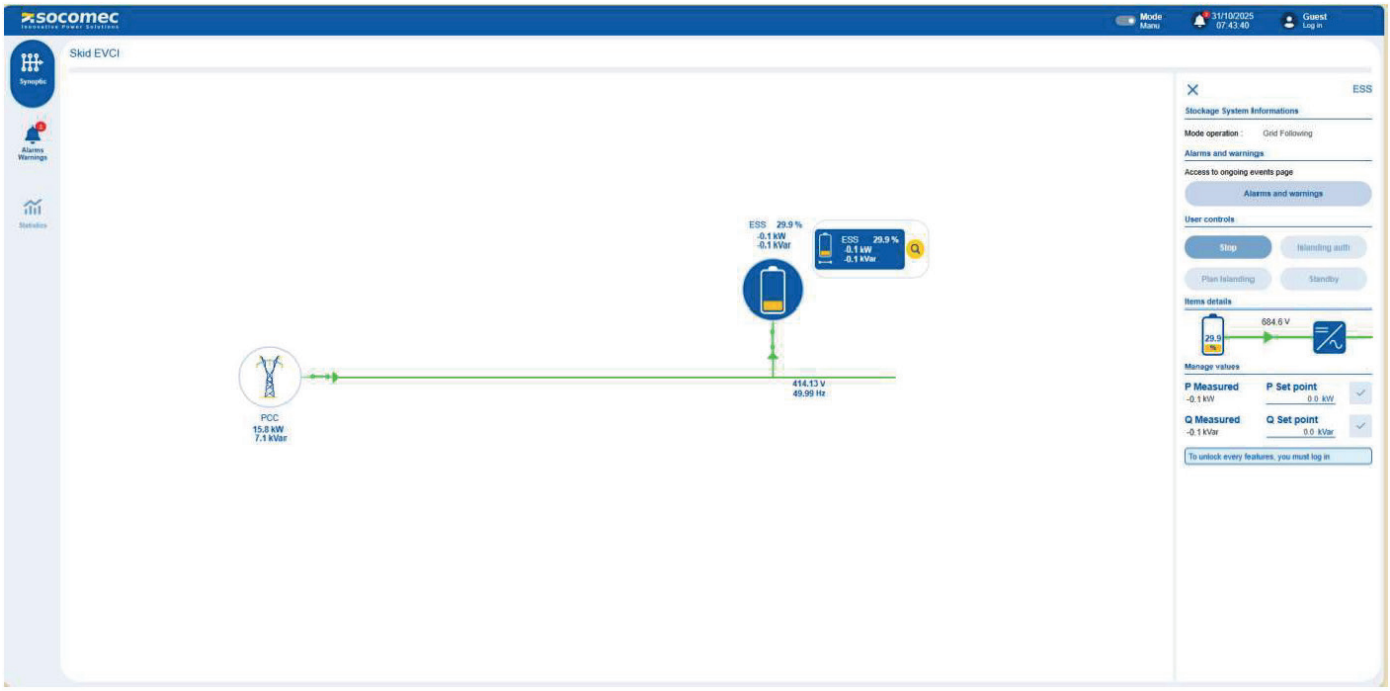

Figure 06. Command details view.

4.2.4. Details view of the synoptic elements

Socomec ESS system reports all information on a dedicated page. Users can see information related to converters and batteries. To do that, only click on the magnifying glass. See Figure 6 above.

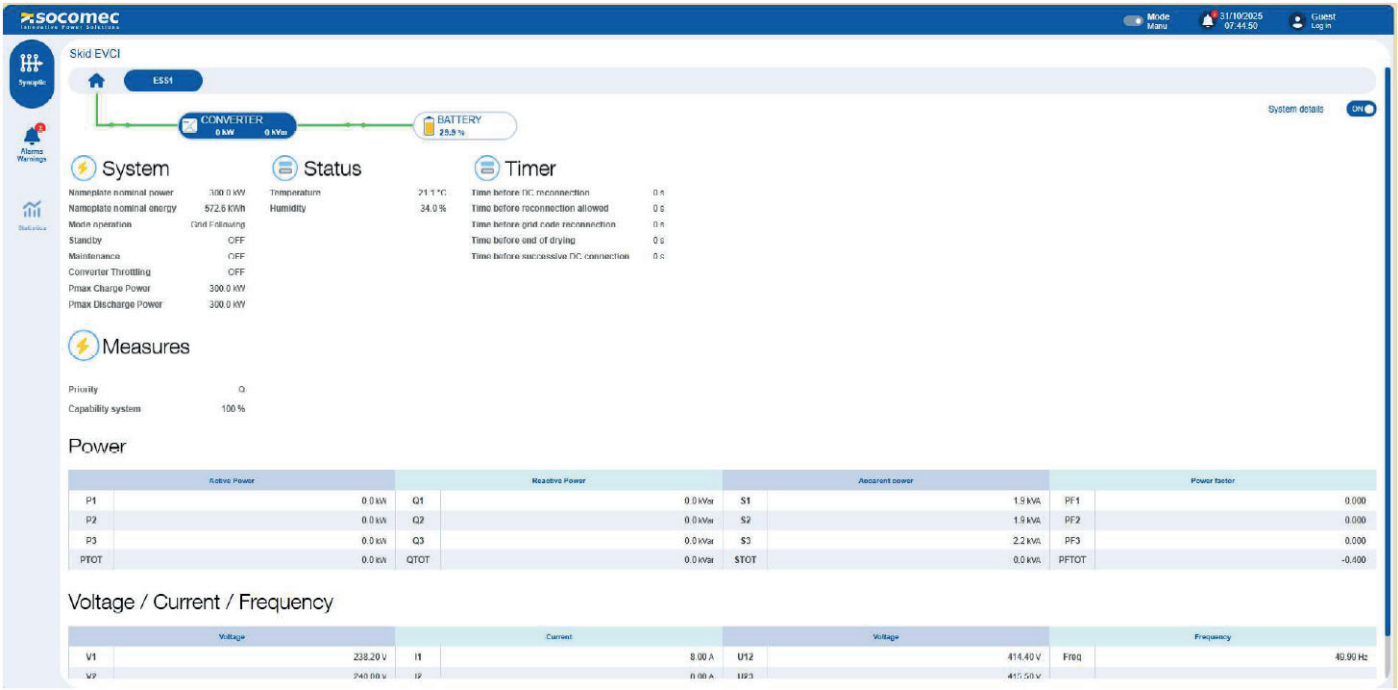

Figure 07. Converter details view

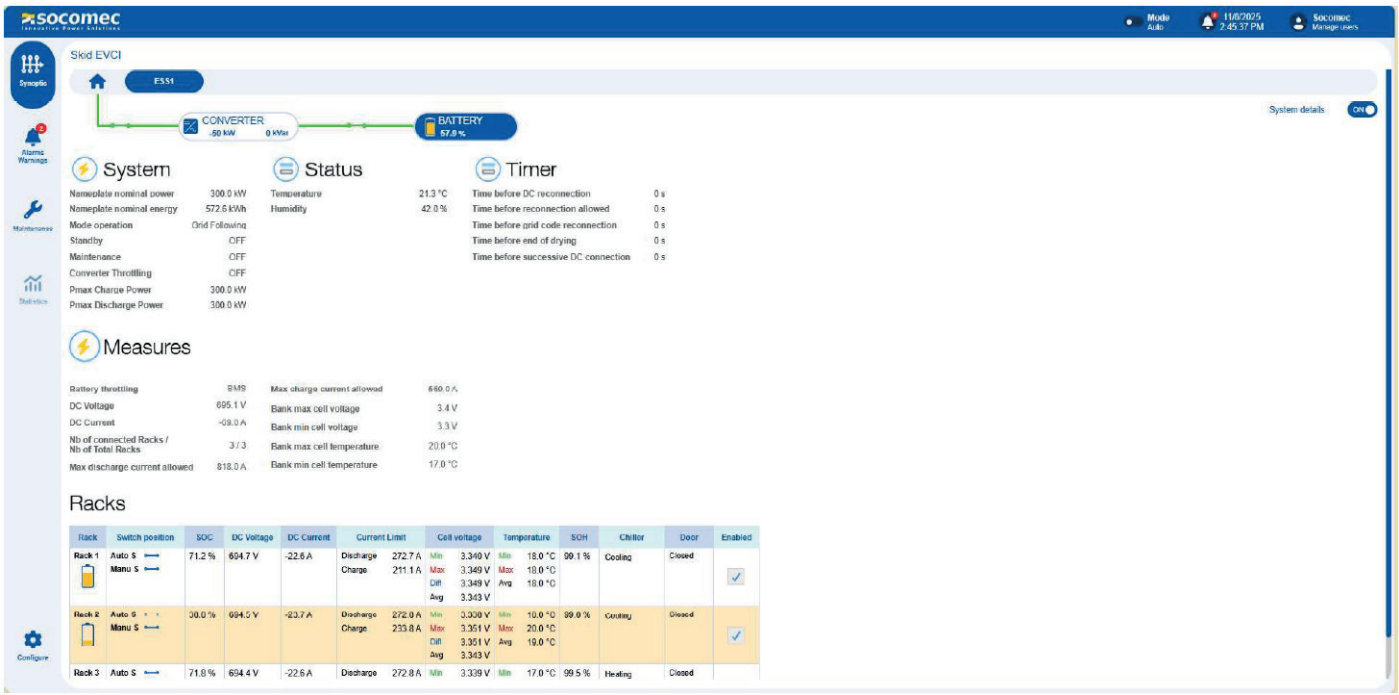

Figure 08. Battery details view

4.3. User access

User access level gives several upgrades. With this access level, users can manage the BESS.

4.3.1. Start / Stop the BESS

Accessibility

	Guest	User	Service	Socomec
Visualization	✓	✓	✓	✓
Operations		✓	✓	✓

Description

To start / stop the system, only click on the BESS and select the right function to activate. Once connected, users can send setpoints through the HMI by using the corresponding fields. A negative power setpoint value will charge the BESS; a positive power setpoint value will discharge it.

On the control panel, users will find the following actions:

1. Start / stop button
2. "Islanding auth" button

   If the system is equipped with AC-Cab or IM-Box, and configured in Hybrid mode, hybrid transition will be granted.
3. "Planned Islanding" button

   If the system is equipped with AC-Cab or IM-Box, and configured in Hybrid mode, hybrid planned islanding will immediately be performed.
4. Standby mode button

   In standby, the converter remains connected to the grid, but IGBT remains open. It allows fast grid reconnection without opening the main contactor.

4.3.2. Send Setpoints

Accessibility

	Guest	User	Service	Socomec
Visualization	✓	✓	✓	✓
Operations		✓	✓	✓

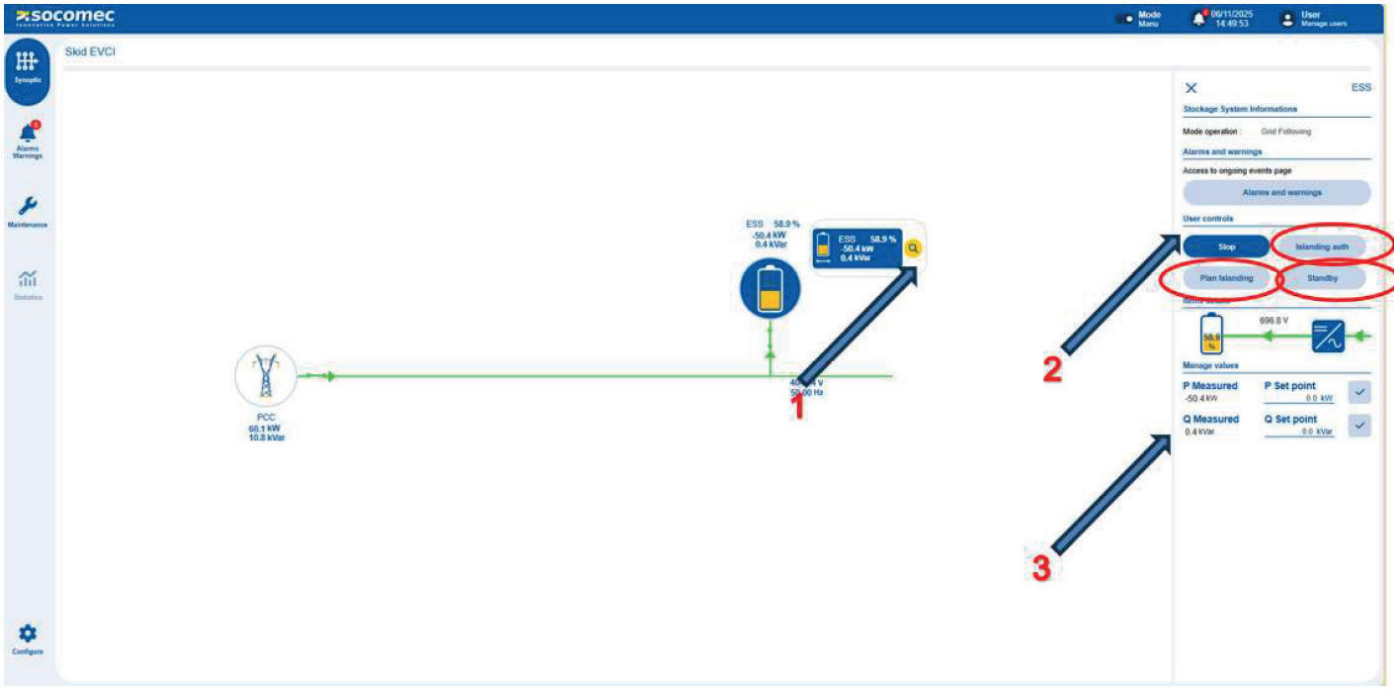

Figure 09. User control panel

1: Detail view on the system , 2: System start button, 3: Setpoints area, 4: Islanding button functions and standby mode.

4.3.3. Tune EMS Basic functionalities like Peak Shaving, Self-consumption, and Production Schedule

Accessibility

	Guest	User	Service	Socomec
Visualization		✓	✓	✓
Operations		✓	✓	✓

On this page, you will find the menus to configure Peak Shaving/Self Consumption and Scheduler functions.

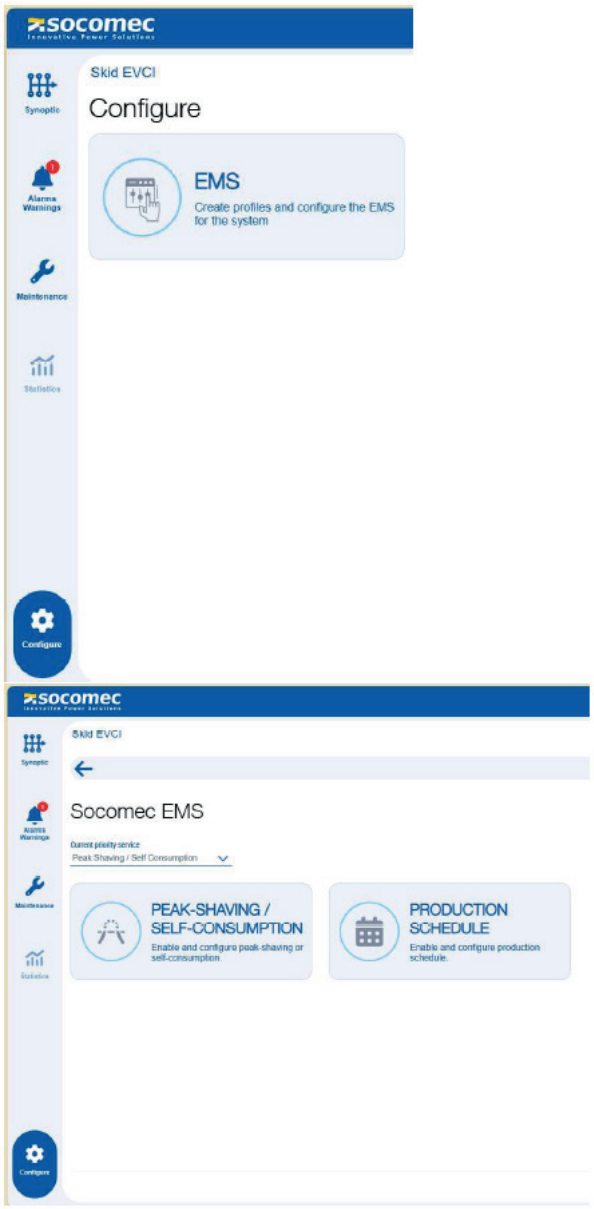

Figure 10. EMS basic configuration page

This first page gives access to a drop-down menu to select the prioritization between Peak Shaving / Self consumption function and Scheduler function. Depending on the BESS and Grid condition, if both functions are activated, the system can switch from one function to another and prioritize one.

4.3.3.1. Peak Shaving

In the Peak Shaving / Self Consumption menu, as shown below, users shall define the charge and discharge thresholds for P and Q power. The values can be negative or positive according to the chosen operating mode: Peak Shaving or Self Consumption.

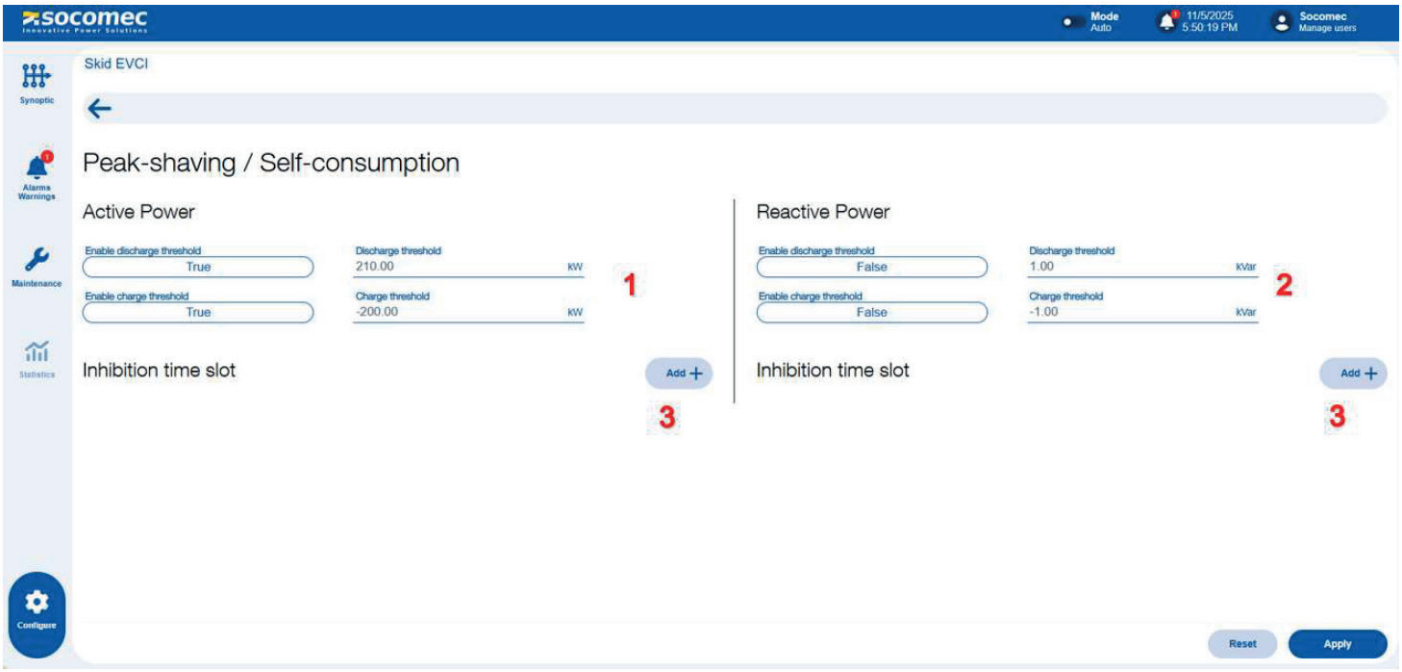

Figure 11. Peak Shaving / Self Consumption Configuration page

1: Active power section. 2: Reactive power section. 3: Add button for inhibition time slot configuration.

In addition, it is possible to set inhibition time slots for both P and Q setpoints. Inhibition time slots are set clicking "Add", as shown in the figure below.

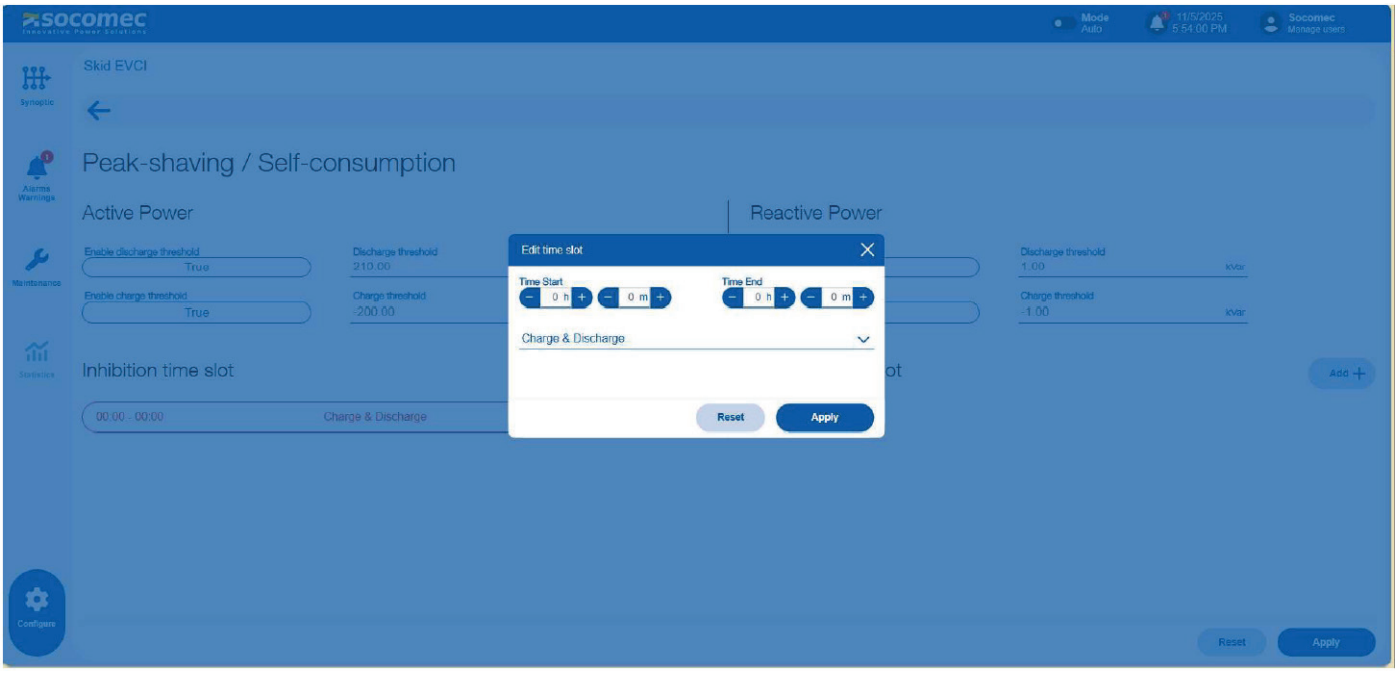

Figure 12. Time slot configuration

How to use:

1. Configure power thresholds
2. Activate them by clicking the Enabling button.
3. If needed, define time slots.
4. Once complete click on "Apply"
5. Change ESS mode from "Manu" to "Auto". See below.

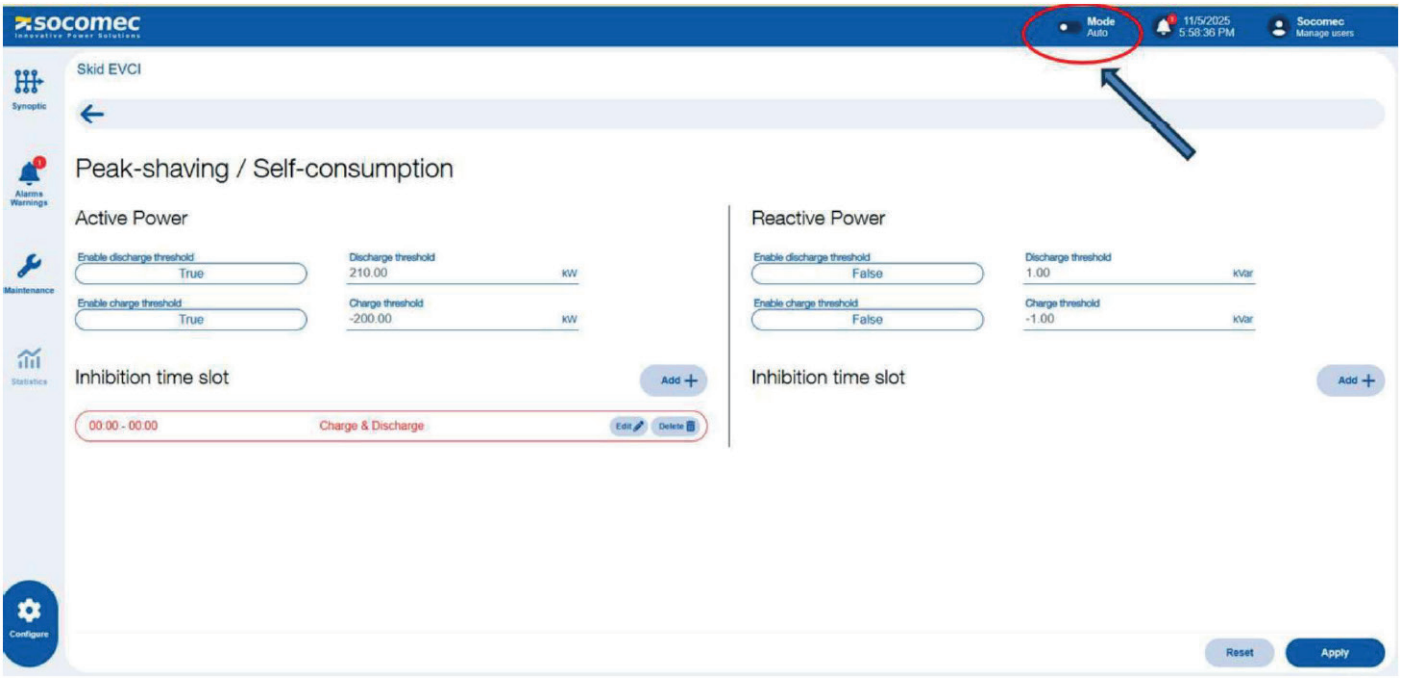

Figure 13. Manu to Auto button.

Note: Hours are defined from 0h00 to 24h00.

4.3.3.2. Production Schedule

The scheduler page enables users to define working profiles for the BESS. Each profile can be assigned to each working day. By turning ON this function, the system will execute the profile according to the settings.

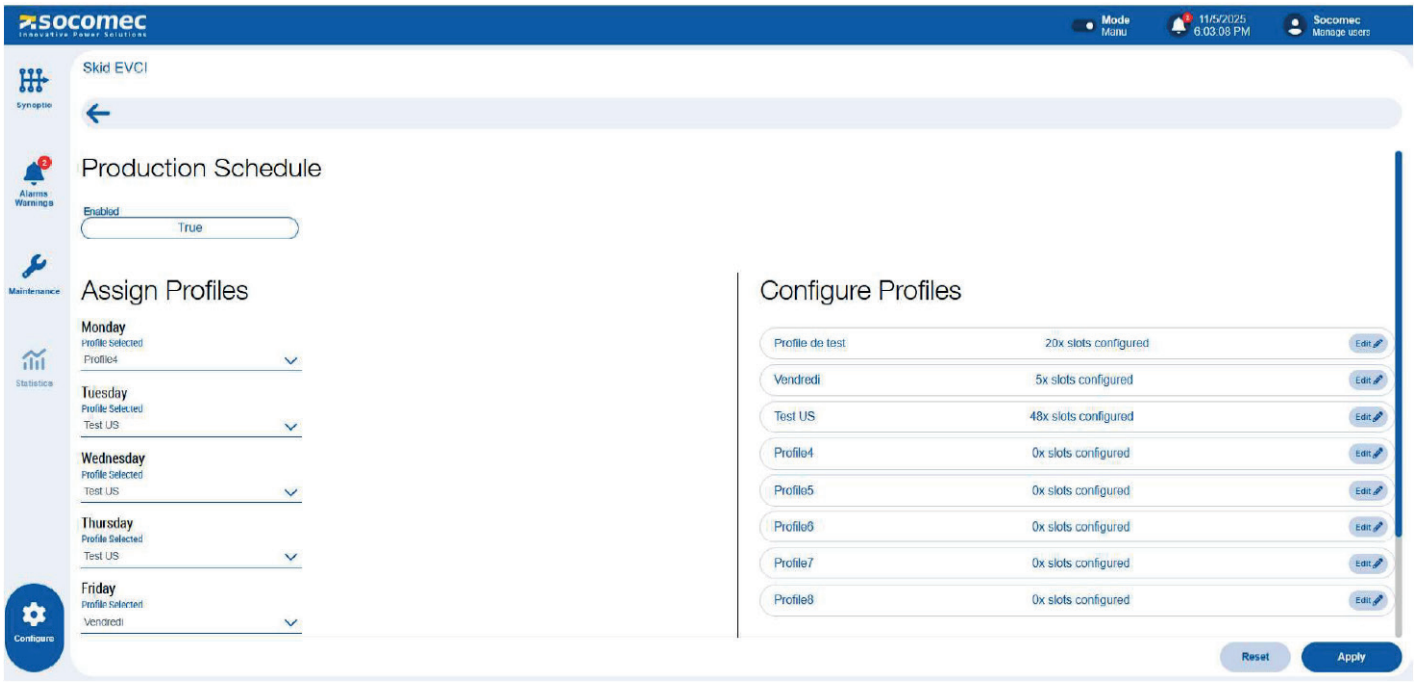

Figure 14. Scheduler configuration page

To configure profiles, follow the steps described in the below text and figures:

1. Click on "Edit". The window opens and then the user can tune P and Q setpoints with a step of 1min. Every time slot shall have a starting and ending point. Users can configure up to 48 time slots per profile. The time slots can be imported and exported.
2. Once configured, the user shall click o "Apply".
3. Assign the created profiles to a day.
4. Verify if the Enable button is set to TRUE.
5. Click o "Apply".
6. Turn to Auto the BESS mode.

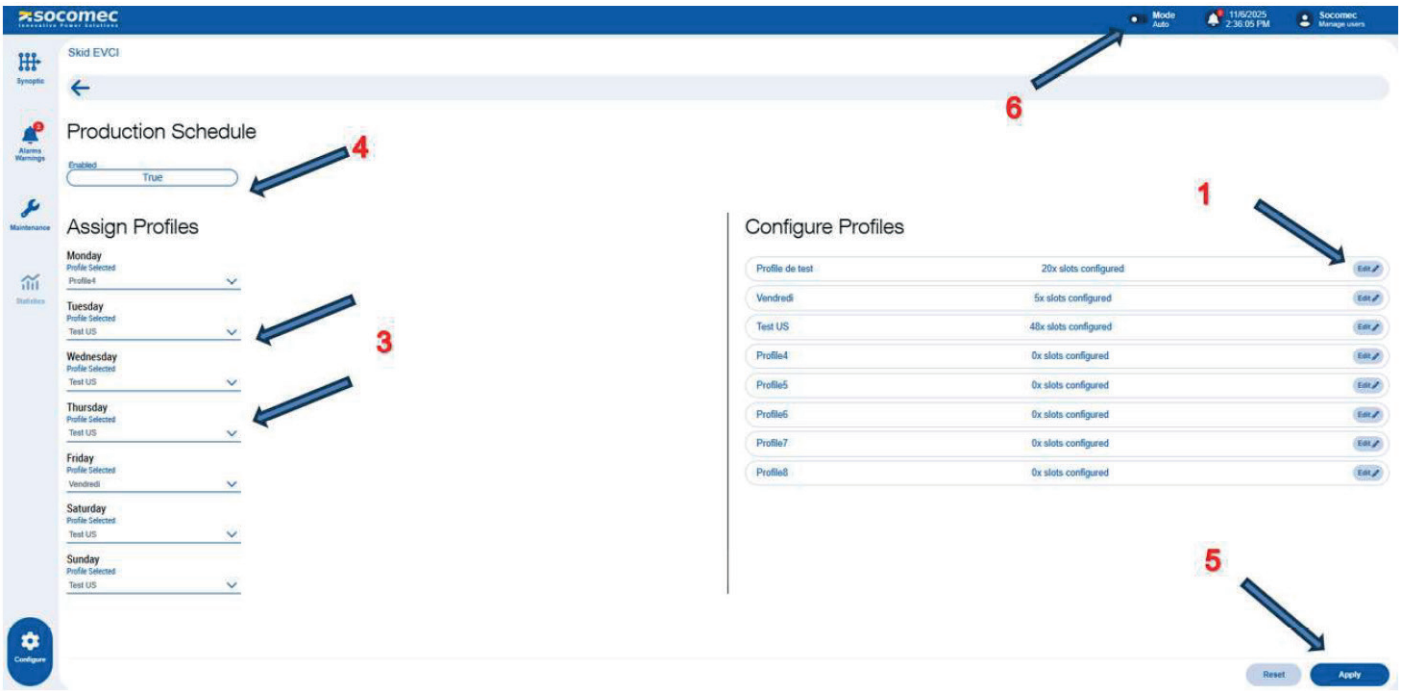

Figure 15. How to configure the Scheduler

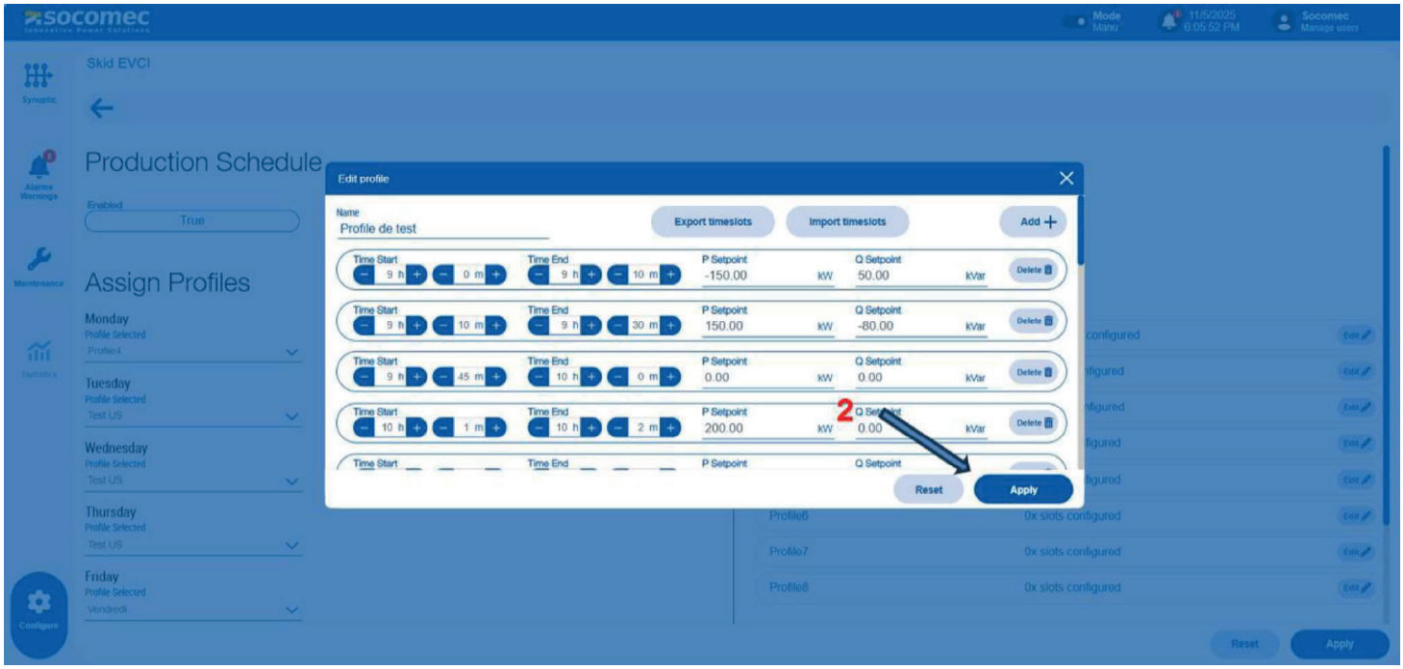

Figure 16. Time slots configuration window

4.4. Maintenance Service access

Service access level is reserved for Socomec Service team[2]. It allows extended functionalities to configure, debug, and administrate the system.

(2) Trained customers and qualified subsidiaries can have access under conditions.

	Guest	User	Service	Socomec
Visualization			✓	✓
Operations			✓	✓

For this purpose, "Maintenance" menu contains the following menus, as shown on the next view:

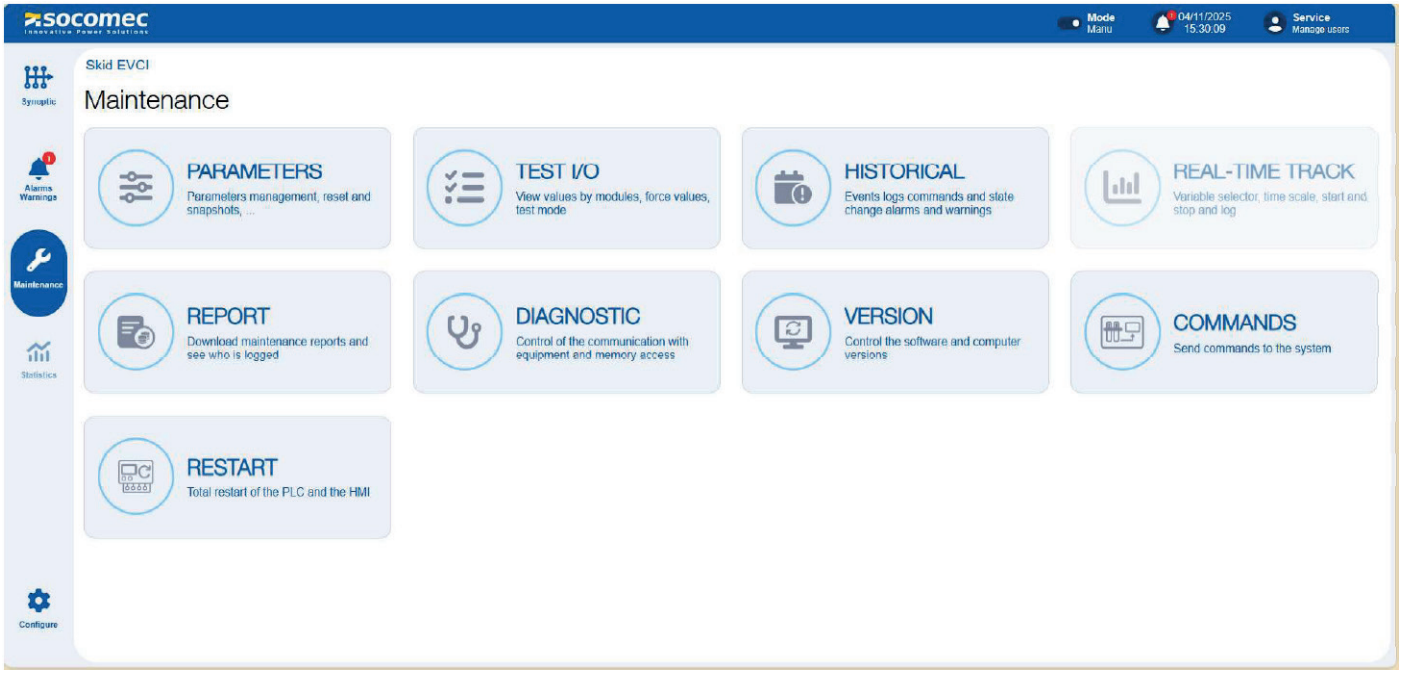

Figure 17. Maintenance page with Service access level

4.4.1. Parameters

In this view, you have access to:

- Restore ESS configuration
- Backup & restore a configuration snapshot
- Import & export settings

4.4.2. Test I/O

In the I/O test page, the PLC output can be manually activated. In addition, there is a view of the input/output status.

4.4.3. Historical

All actions and information that happened on the PLC can be found here.

4.4.4. Report

The report page gives several pieces of information. Each button will export the relative information to a .csv file.

4.4.5. Diagnostic

Diagnostic page gives essential information regarding PLC CPU, Disk, TwinCat, UPS etc. It is only for display purposes.

4.4.6. Version

The Version page collects and displays versions for all PLC components:

- PMS version
- Windows OS version
- TwinCat version
- HMI version
- C-CAB serial number

4.4.7. Commands

All maintenance commands linked to system elements are displayed on this page. For example, commands for ESS and/or PCC can be configured.

A - ESS maintenance commands page

1. Auto sequence
2. Calculate Battery Energy
3. Calibrate battery
4. Rack reconnection
5. Disable SoC Protection
6. Force DC Connection
7. RebootBDL
8. ShuntReconnectionTimers
9. Force P, Force Q setpoints

B - PCC maintenance page

4.4.8. Restart

The Restart page is used to restart the PLC component and the HMI. This interface shall be used to apply settings if a reboot is required.

4.5. Configuration Service access

"Configure "menu is expanded too. Precise configuration of the BESS and other loads and sources is possible. Several menus are available: Site, System, Inputs/Ouputs, EMS.

1. General system behavior
2. Battery
3. Converter
4. Meter AC
5. Meter AUX

4.5.1. Genset, Renew and Load editing settings

Like in the ESS editing settings page, there are similar input fields.

1. General
2. MeterAc and MeterAUX

4.5.2. PCC editing settings

1. General
2. FeederProtection
3. GridMeter
4. GridPWS
5. GroundingPWS
6. MeterAUX
7. MicroGridMeter
8. SynchroBoard

4.5.3. Site page SGM tab

4.5.4. System configuration page

4.5.5. Inputs / outputs configuration page

4.6. Socomec access

Socomec access level is the highest right access level. It is exclusively reserved for Socomec administrators and developers.

5. SESSION PASSWORD

Session passwords are managed at several levels. As mentioned, "Guest" access does not require any password.
"User" access can only change its own session password. "Service" access level can change "Service" and "User" passwords.
"Socomec" can change "User", "Service" and "Socomec" session passwords.

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