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Maintenance and M&C platform user manual  
EASY-SIST-D6.2

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## 1 INTRODUCTION

### 1.1 SCOPE

This document shall be intended as the user manual of the service center platform used in EASY-PV project for PV plant inspections.

It includes the explanation about the relevant usage considering the users' perspective. It means that for each profile – identified for different targeted users (as per section 3) – relevant procedures are indicated to perform a dedicated task.

It is noteworthy that each task has been derived having in mind the reference [RD 1] reporting both the system requirements and the high level functionalities.

### 1.2 APPLICABLE DOCUMENTS

ID	Title
[AD 1]	GRANT AGREEMENT NUMBER - 687409 - EASY PV (25/11/2015)

*Table 1-1 Applicable Documents*

### 1.3 REFERENCE DOCUMENTS

ID	Title
[RD 1]	EASY-SIST-D5 2-EASY PV Platform Architecture Design v1.2
[RD 2]	EASY-AAL-D3 1-GNSS high accuracy for Energy domain v3.2

*Table 1-2 Reference Documents*

### 1.4 ACRONYMS

Acronym	Description
AF	Archiving Facility
CAA	Civil Aviation Authority
CDR	Critical Design Review
COTS	Commercial of The Shelf
CTG	Catalogue Manager



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Acronym	Description
DB	Database
EASY-PV	EGNSS High Accuracy System Improving Photovoltaic Plant maintenance
EDRF	External Data Reception Facility
FTP	File Transfert Protocol
HMI	Human Machine Interface
I/F	Interface
M&C	Monitoring and Control
MAIT	Manufacturing Assembly Integration Test
N/A	Not Applicable
PDR	Preliminary Design Review
PM	Production Manager
PM	Production Manager
PMS	Payload Management System
PMS	Payload Management System
PoC	Point of Contact
PV	Photovoltaic
RGS	RPAS Ground Station
RPA	Remotely Piloted Aircraft
RPAS	Remotely Piloted Aircraft System
S/S	Sub System
SC	Service Centre
SCO	Servie Center Operator
TEO	Thermographic Expert Operator
TIR	Thermal Image Camera
TRR	Test Readiness Review
VIS	Visual Information System
VTE	Visual Track Energy

Table 1-3 Acronyms



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## 2 REFERENCE ARCHITECTURE

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Details are reported in [RD 1], section 5.1.1.



### 3 TARGETED USERS (MARCO)

This section aims to explain the target users of the platform.

With reference to [RD 1], the following platform users are identified as reported in

Targeted User	Short description	Access management to the platform (current version, i.e, delivered at TRR)
RPAS remote pilot:	Professional Pilot in charge of PV Plant aerial survey with his RPAS equipment and payload	<p>He gets information about planned missions involving himself.</p> <p>The current version foresees such an interface to be managed offline, via mail. The SCO collects info about registered RPAS remote pilots, insert in the platform DB and exploits a dedicated functionality to export mission information to be sent to the pilot in charge of the mission implementation.</p>
RPAS Operator	Aerial Operator allowed by national CAA to perform specialized aerial work over a PV plant	RPAS Operator and RPAS remote pilot may be the same person in case of a micro registered business. In the EASY-PV framework RPAS remote pilot and Operator are assumed to be the same person.
Plant POC	Point of Contact with PV Plant Owners/ Maintainer. He is in charge to manage contractual and commercial exchanges with the final Owner/ Maintainer.	<p>He gets information about planned missions involving himself.</p> <p>The current version foresees such an interface to be managed offline, via mail. The SCO collects info about registered PoCs, insert in the platform DB and exploits a dedicated functionality to export mission information to be sent to the PoC in charge of the mission execution responsibility.</p>





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Targeted User	Short description	Access management to the platform (current version, i.e, delivered at TRR)
<b>Service Centre (SC) Operator</b>	Back-end (Service centre) Operator, in charge of Service Centre platform accounting	This is the main user, exploiting the platform for back end tasks realisation
<b>Thermographic Expert Operator</b>	Person with experience in thermographic image analysis who is in charge to draw-up the final Report about the plant status	He uses the platform to access to the collected mission data, analyse it and to generate a final report containing his approved judgement.

Table 3-1 Targeted Users of EASY-PV SC platform



## 4 FUNCTIONALITIES

This section aims to explain the platform functionalities also including traceability versus target users reported in section 3.

All EASY PV SC is composed of two platforms:

- ✓ PMS platform (also including PM, AF, CTG, EDREF using the same HMI as PMS) that will manage the data relating to mission and its results.
- ✓ VTE platform that will manage the plant monitoring and manage Plant information

For the end user the two platforms are integrated with each other allowing data exchange.

ID	Title	Description	Target User
1	Plants data entry	Allows to manage (insert, modify and view) the plant data, that will be available for the mission	SCO
2	Mission planning	Allows to build and send a mission	SCO
3	Plants synoptic analysis after mission implementation	Allows to analyse the result of mission and insert comment on each anomaly	TEO
4	Report generation	Generate automatically a report about plant status	TEO
5	Plant monitoring	Allows real-time monitoring of the plant production	TEO

Table 4-1 EASY PV Platform functionalities



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## 4.1 PLANTS DATA ENTRY

This section explain how to manage plant data within the VTE platform.

To see the plant stored in the database, click on “Plant” icon. A list of plant is displayed (Figure 1 – Plant List).

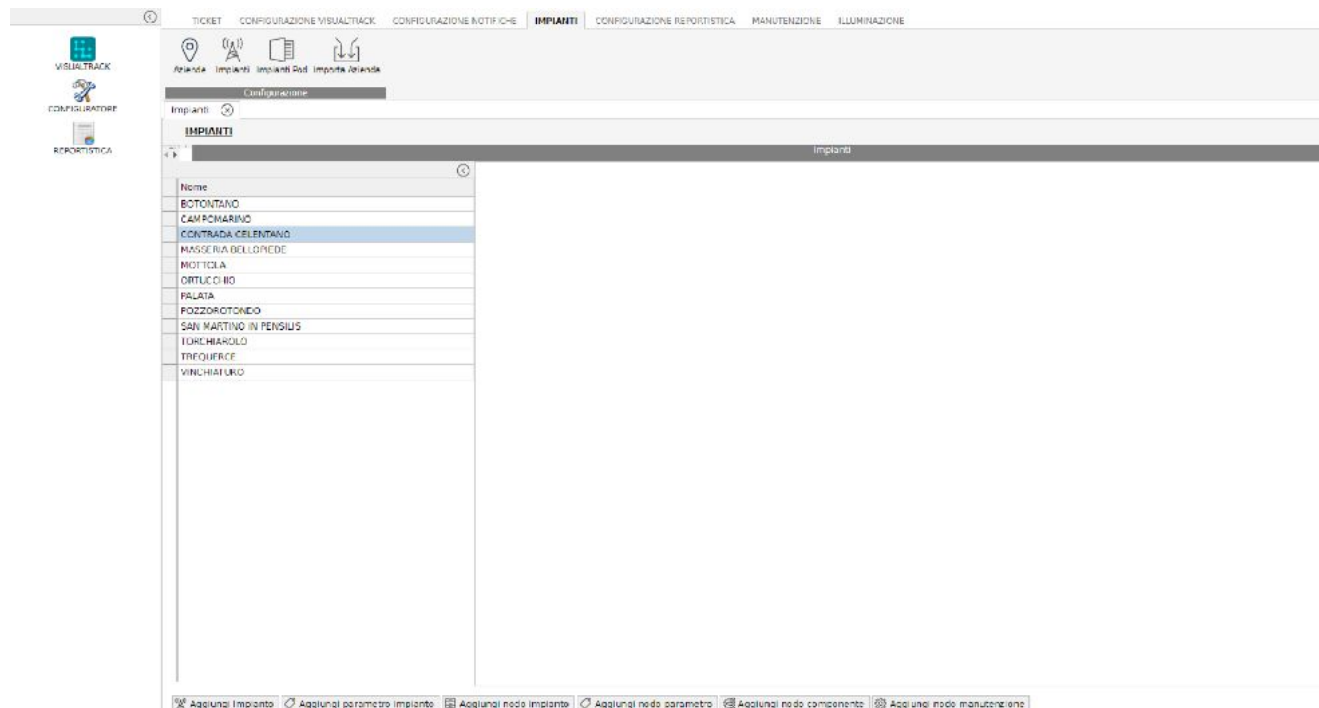


Figure 1 – Plant List

To see plant parameters select one of the plant and a new form will display all plant data (Figure 2 – View Plant Parameters)

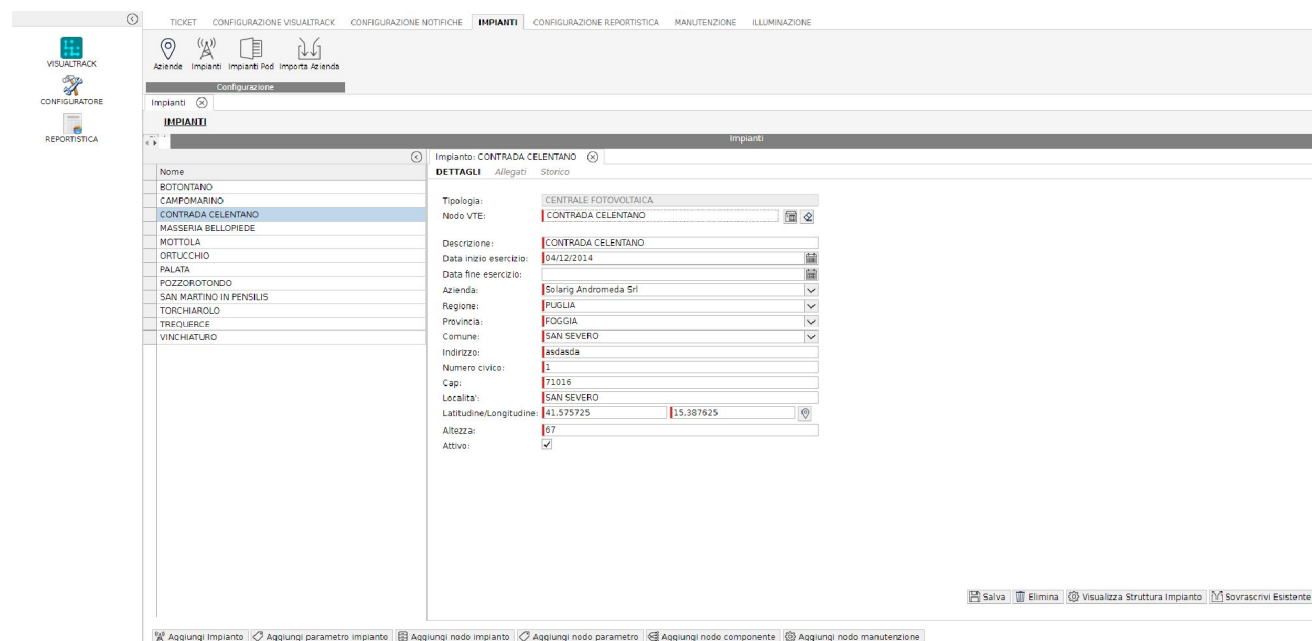


Figure 2 – View Plant Parameters



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To insert a new plant Click on “Add Plant”, a new form will be displayed containing the field that has to be filled to generate a new plant (Figure 3 – Insert Plant). The main parameters are:

- Plant name
- Start/End date
- Owner
- Positioning in terms of lat and lon
- Plant status

Figure 3 – Insert Plant



## 4.2 MISSION PLANNING

This section explains steps necessary for the mission generation by the operator.

1. Click on “New” button at the bottom of the Mission page to generate a new mission.
2. On the right site will be displayed a form with the parameter that has to be filled in for a new mission (Figure 4 – Mission generation).

The screenshot displays the EASY PV software interface for mission planning. The top navigation bar includes 'PLANTS', 'CATALOGUE', 'MONITOR&CONTROL', 'ORDERING', and 'PE'. Below this, there are icons for 'Settings' and 'Mission Browser'. The 'Mission Browser' is active, showing a list of missions. Two missions are listed: 'Mission 4030' (IMPIANTO TE\_DTCURIA, Imported, 29/06/2017) and 'Mission 2836' ([1021] Impianto inesistente, Imported, 01/06/2017). A 'New' button is at the bottom of the list. To the right, the 'New Mission' form is open, showing fields for ID, Plant, Status (set to 'Planned'), Planning Date, Pilot, and Contact. The 'Cancel' and 'Save' buttons are at the bottom right of the form.

Figure 4 – Mission generation

Below are indicated the mandatory parameters to fill in:

- ✓ **Plant:** select one of the Plant already existing in the EASY PV database (Figure 5 – Plant selection)
- ✓ **Mission Date:** select a requested date for the mission (Figure 6 – Mission Date)
- ✓ **Pilot:** select one of the Pilot already existing in the EASY PV database (Figure 7 – Pilot selection) or insert a new one by click on the New button (Figure 8 – Insert New Pilot )
- ✓ **Contact:** select one of the Contact already existing in the EASY PV database (Figure 9 – Select Contact) or insert a new one by click on the New button



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**EASY PV** PLANTS CATALOGUE MONITOR&CONTROL ORDERING PE

Settings Mission Browser

General Missions

Mission Browser (X)

Missions

**Mission 4030** Imported 29/06/2017  
IMPIANTO TE\_DTCURIA  
Gilmour David

**Mission 2836** Imported 01/06/2017  
[1021] Impianto inesistente  
Gilmour David

New

**DESCRIPTION**

ID

Plant

Status

Planning Date

Pilot

Contact

Installations

EASY PV

VTS

Plants

IMPIANTO TE\_DTCURIA

IMPIANTO TE\_DTCURIA

FOTVOLTAICO

Operational start date

02/08/2016

Operational end date

Select

Cancel Save

Figure 5 – Plant selection

**EASY PV** PLANTS CATALOGUE MONITOR&CONTROL ORDERING PE

Settings Mission Browser

General Missions

Mission Browser (X)

Missions

**Mission 4030** Imported 29/06/2017  
IMPIANTO TE\_DTCURIA  
Gilmour David

**Mission 2836** Imported 01/06/2017  
[1021] Impianto inesistente  
Gilmour David

New

**DESCRIPTION**

ID

Plant

Status

Planning Date

Pilot

Contact

IMPIANTO TE\_DTCURIA

Planned

June

28 29 30 31 1 2 3

4 5 6 7 8 9 10

11 12 13 14 15 16 17

18 19 20 21 22 23 24

25 26 27 28 29 30 1

2 3 4 5 6 7 8

2016 2017 2018

Cancel Save

Figure 6 – Mission Date



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**EASY PV** **PLANTS** CATALOGUE MONITOR&CONTROL ORDERING PE

Settings Mission Browser

General Missions

Mission Browser (X)

Missions

**Mission 4030** Imported 29/06/2017  
IMPIANTO TE\_DTCURIA  
Gilmour David

**Mission 2836** Imported 01/06/2017  
[1021] Impianto inesistente  
Gilmour David

New

**DESCRIPTION**

ID

Plant IMPIANTO TE\_DTCURIA

Status Planned

Planning Date

Pilot

Contact

Search New

Surname	Name
Zappa	Frank
Plant	Robert
Gilmour	David
Waters	Roger
Young	Angus
Knopfler	Mark
Page	Jimmy
Blackmore	Ritchie
Young	Neil

Cancel Save

Figure 7 – Pilot selection

**EASY PV** **PLANTS** CATALOGUE MONITOR&CONTROL ORDERING PE

Settings Mission Browser

General Missions

Mission Browser (X)

Missions

**Mission 4030** Imported 29/06/2017  
IMPIANTO TE\_DTCURIA  
Gilmour David

**Mission 2836** Imported 01/06/2017  
[1021] Impianto inesistente  
Gilmour David

New

**DESCRIPTION**

ID

Plant IMPIANTO TE\_DTCURIA

Status Planned

Planning Date

Pilot

Contact

Surname

First name

Phone

eMail

Cancel Save

Cancel Save

Figure 8 – Insert New Pilot



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Figure 9 – Select Contact

3. After completing the compilation the data have to be saved click on the “Save” button (on the bottom right). In case of data error compilation or data missing an error message (pop up) will be displayed (Figure 10 – Error Message). The mandatory parameters are also highlighted by mouse-over (Figure 11 – Error Mouse over).





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The screenshot shows the EASY PV software interface. The top navigation bar includes 'PLANTS', 'CATALOGUE', 'MONITOR&CONTROL', 'ORDERING', and 'PE'. Below this, there are icons for 'Settings' and 'Mission Browser'. The 'Missions' tab is active, showing a list of missions on the left and a 'New Mission' form on the right. The mission list includes 'Mission 4030' (IMPIANTO TE\_DTCURIA, Imported, 29/06/2017) and 'Mission 2836' ([1021] Impianto inesistente, Imported, 01/06/2017). The 'New Mission' form has fields for ID, Plant (IMPIANTO TE\_DTCURIA), Status (Planned), Planning Date, Pilot, and Contact. The 'Planning Date' field is highlighted in red with an exclamation mark icon, indicating an error. An 'Error' dialog box is displayed in the center of the screen with the message 'Check wrong or missing values' and an 'OK' button. At the bottom right of the form are 'Cancel' and 'Save' buttons.

Figure 10 – Error Message

This screenshot shows the same EASY PV software interface as Figure 10. The 'New Mission' form is visible, and the 'Planning Date' field is still highlighted in red with an exclamation mark icon. A tooltip with the text 'Required value' is now visible next to the 'Pilot' field, indicating that this field is also required. The 'Error' dialog box is no longer present. The 'Cancel' and 'Save' buttons remain at the bottom right.

Figure 11 – Error Mouse over



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4. After entering and saving data mission it is possible send a notification to Contact and Pilot click on “Notify Mission” button (Figure 12 – Send data mission). The Contact and Pilot will receive an email with all mission data as attached.

The screenshot displays the EASY PV software interface. The top navigation bar includes 'PLANTS', 'CATALOGUE', 'MONITOR&CONTROL', 'ORDERING', and 'PE'. Below this, there are icons for 'Settings' and 'Mission Browser'. The 'Mission Browser' tab is active, showing a list of missions. The mission 'Mission 4030' is selected, with details: 'IMPIANTO TE\_DTCURIA', 'Imported', and '29/06/2017'. Below this, another mission 'Mission 2836' is listed with details: '[1021] Impianto inesistente', 'Imported', and '01/06/2017'. The main panel shows the details for 'Mission 4030' under the 'DESCRIPTION' tab. Fields include ID (4,030), Plant (IMPIANTO TE\_DTCURIA), Status (Imported), Planning Date (6/29/2017), Pilot, Contact, Full Topology, and Comments. A 'Message' dialog box is overlaid on the 'Pilot' and 'Contact' fields, displaying the text 'Mission notified to Pilot and Contact' and an 'OK' button. At the bottom right, there are buttons for 'Notify Mission', 'Create Report', 'Cancel', and 'Save'.

Figure 12 – Send data mission



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### 4.3 PLANTS SYNOPTIC ANALYSIS AFTER MISSION IMPLEMENTATION

The following steps explain how the operator interacts with the GUI interface to visualize the result of a mission.

1. The operator click on Mission Browser tab (Figure 13 - Home page) to visualize the complete mission list and relatives information such as (Figure 14 – Mission List):
  - Mission ID
  - Mission Status
  - Plant Name
  - Mission Date
  - Pilot Name

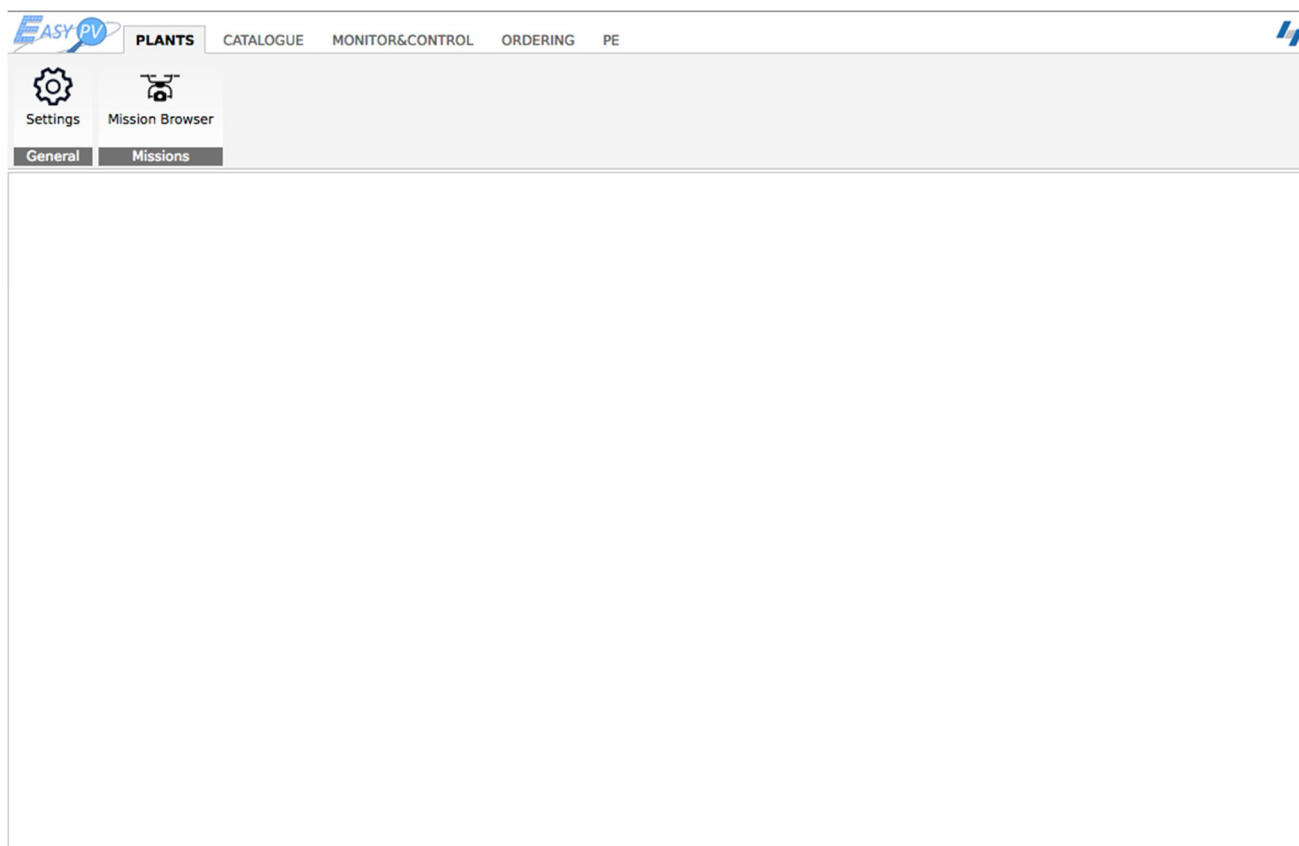


Figure 13 - Home page



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The screenshot shows the EASY PV web interface. At the top, there is a navigation bar with the EASY PV logo and a menu with 'PLANTS', 'CATALOGUE', 'MONITOR&CONTROL', 'ORDERING', and 'PE'. Below this is a sub-menu with 'Settings' (gear icon) and 'Mission Browser' (drone icon). The 'Mission Browser' is active, showing a 'General' tab and a 'Missions' tab. The 'Missions' tab is selected, displaying a list of missions. The list has a search icon in the top right corner. The missions listed are:

Mission ID	Mission Name	Status	Date	Pilot
Mission 4030	IMPIANTO TE_DTCURIA	Imported	29/06/2017	Gilmour David
Mission 2836	[1021] Impianto inesistente	Imported	01/06/2017	Gilmour David

At the bottom right of the mission list, there is a 'New' button.

Figure 14 – Mission List

2. It is possible to filter the mission list with the following parameters (Figure 15 – Mission function search) to found specific Mission:
  - Mission ID
  - Plant name
  - Pilot
  - Contact name
  - Planned date (from/to)
  - Executed date (from/to)



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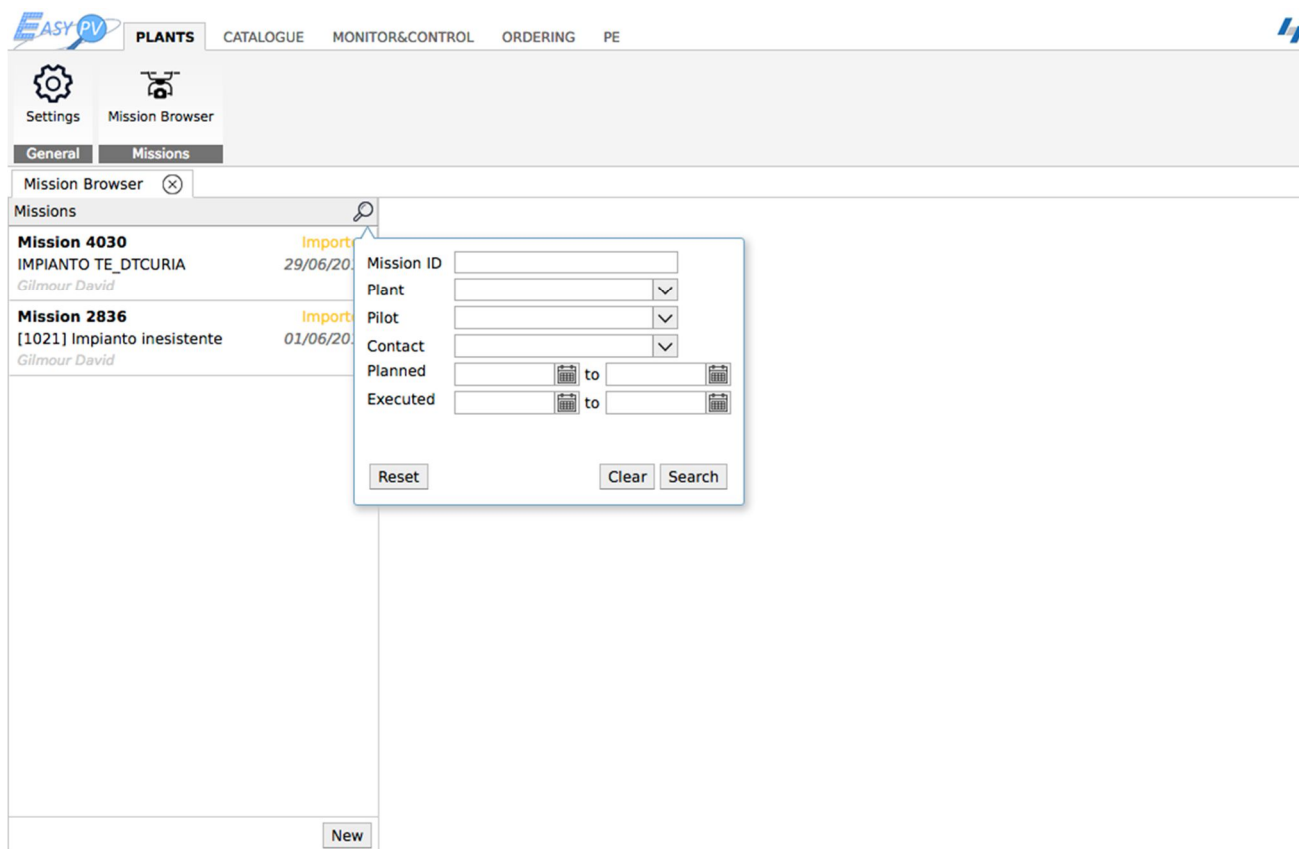


Figure 15 – Mission function search

3. To visualize the information of each Mission filtered, the operator has to click on one of the Mission record (Figure 17 – Mission ). After the click will be presented on the right a new window with the following Menu:
  - **Description:** filled with the main item of Mission (Figure 16 - Mission Description tab)
  - **Topology:** represents on the right the view of the plant layout with each Panel localized by border line, on the left the list of Panel with id and number of anomalies (red button) (Figure 17 – Mission Topology tab).

It is possible browsing the page in two different way: click on a specific panel (on the right layout) or from the list of Panel (on the left). Function zoom available to customize the view of the layout (number of panel displayed).

  - **Products:** represents the list of all product catalogued and archived for the mission selected (Figure 20 – Mission Products).

The product list is composed by:

- Record Number (Product Id)
- Collection
- Description (Product Type)
- Processing Date

Selecting a single record are visualized all the product information: Mission Id, Plant Id, Product Filename, etc....). By the menu on the right is possible to delete a product or see the quick look image or download it (Figure 21 – Product Quick Look).



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The screenshot shows the EASY PV software interface. The top navigation bar includes 'PLANTS', 'CATALOGUE', 'MONITOR&CONTROL', 'ORDERING', and 'PE'. Below this, there are icons for 'Settings' and 'Mission Browser'. The 'Missions' tab is active, showing a list of missions on the left and a detailed description on the right. The mission list includes 'Mission 4030' (IMPIANTO TE\_DTCURIA, Imported, 29/06/2017) and 'Mission 2836' ([1021] Impianto inesistente, Imported, 01/06/2017). The description for Mission 4030 is shown, with fields for ID (4.030), Plant (IMPIANTO TE\_DTCURIA), Status (Imported), Planning Date (6/29/2017), Pilot (Gilmour David), and Contact. The 'New' button is at the bottom left, and 'Cancel' and 'Save' buttons are at the bottom right.

MISSIONS	DESCRIPTION	Topology	Products
<b>Mission 4030</b> IMPIANTO TE_DTCURIA Imported 29/06/2017	ID: 4.030 Plant: IMPIANTO TE_DTCURIA Status: Imported Planning Date: 6/29/2017 Pilot: Gilmour David Contact:		

Figure 16 - Mission Description tab

The screenshot shows the EASY PV software interface, specifically the 'Mission Topology' tab for Mission 4030. The top navigation bar is the same as in Figure 16. The 'Missions' tab is active, showing the same list of missions. The topology view for Mission 4030 is displayed, showing a grid of panels. The panels are labeled from 13152 to 13161. The topology is visualized as a grid of panels, with a red box highlighting a specific area. The 'New' button is at the bottom left, and 'Cancel' and 'Save' buttons are at the bottom right.

MISSIONS	DESCRIPTION	TOPOLOGY	Products
<b>Mission 4030</b> IMPIANTO TE_DTCURIA Imported 29/06/2017		Panel 13152 Panel 13153 Panel 13154 Panel 13155 Panel 13156 Panel 13157 Panel 13158 Panel 13159 Panel 13160 Panel 13161	

Figure 17 – Mission Topology tab



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Click on red button (Figure 18 – Mission Anomalies) are displayed the list of anomalies related to a specific panel selected. For each anomaly the operator can (Description Tab):

- add a text description
- put a flag in case if the anomaly has to be not considered

The screenshot shows the EASY PV software interface. The top navigation bar includes 'PLANTS', 'CATALOGUE', 'MONITOR&CONTROL', 'ORDERING', and 'PE'. The left sidebar has 'Settings' and 'Mission Browser' tabs. The main area is divided into 'General' and 'Missions' sections. The 'Missions' section shows a list of missions, including Mission 4030, Mission 2836, and Mission 4031. The 'Mission Anomalies' window is open, displaying a list of panels for Mission 4030. Panel 13181 is selected, and a red button with the number 1 is next to it. The 'Anomaly 48517' details are shown, including ID, Discarded status, and Comments. The 'Image' tab shows a satellite image of the panel area with a yellow box highlighting the anomaly.

Figure 18 – Mission Anomalies

and see (Image Tab) the image containing the anomalies (Figure 19 – Image with anomalies)



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**EASY PV** PLANTS CATALOGUE MONITOR&CONTROL ORDERING PE

Settings Mission Browser

General Missions

Mission Browser (X)

Missions

**Mission 4030** Imported 29/06/2017  
IMPIANTO TE\_DTCURIA

**Mission 2836** Imported 01/06/2017  
[1021] Impianto inesistente  
Plant Robert

**Mission 4031** Imported 05/07/2017  
IMPIANTO TE\_DTCURIA  
Gilmour David

Description TOPOLOGY

HotSpot 48517

Anomalies

**Anomaly 48517**

Description IMAGE

Panel 13176

Panel 13177

Panel 13178

Panel 13179

Panel 13180

Panel 13181

Panel 13182

Panel 13183

Panel 13184

Panel 13185

Panel 13186

Cancel Save

Notify Mission Create Report Cancel Save

OpenStreetMap contributors

Figure 19 – Image with anomalies

**EASY PV** PLANTS CATALOGUE MONITOR&CONTROL ORDERING PE

Settings Mission Browser

General Missions

Mission Browser (X)

Missions

**Mission 4030** Imported 29/06/2017  
IMPIANTO TE\_DTCURIA

**Mission 2836** Imported 01/06/2017  
[1021] Impianto inesistente  
Gilmour David

Description Topology PRODUCTS

Record Number Collection Description Valid Processing Date

11354 EPVIRG Thermal Image 29/06/2017 11:26:36

Attribute Value

Mission Id 04030

Plant Id 100

Product Filename 4030\_4.jpg

Acquisition Date 2017-06-29 11:26:36.0

Number of Anomalies 0

Scene Centre Horizontal (lo POINT(14.3426300 41.0610355))

Scene Centre Vertical

Yaw

Pitch

Invalidate

Revalidate

Delete

Quicklook

Download

11353 EPVIRG Thermal Image 29/06/2017 11:26:35

11352 EPVIRG Thermal Image 29/06/2017 11:26:34

11351 EPVIRG Thermal Image 29/06/2017 11:26:33

11349 EPVIRG Thermal Image 29/06/2017 11:26:36

11348 EPVIRG Thermal Image 29/06/2017 11:26:35

11347 EPVIRG Thermal Image 29/06/2017 11:26:34

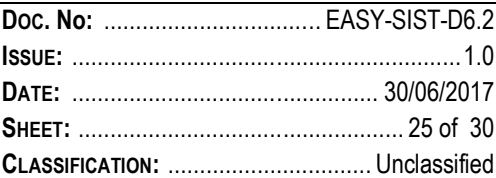
11346 EPVIRG Thermal Image 29/06/2017 11:26:33

Show deleted items Show invisible items

Cancel Save

Figure 20 – Mission Products





PLANTS

CATALOGUE

MONITOR&CONTROL

ORDERING

PE

Settings

Mission Browser

General

Missions

Mission Browser

Missions

Mission 4030

IMPIANTO TE\_DTCURIA

29/06/2017

Mission 2836

[1021] Impianto inesistente

01/06/2017

Gilmour David

Quicklook for Product 11354

Zoom

Fit

50%

100%

200%

Invalidate

Revalidate

Delete

Quicklook

Download

Valid	Processing Date
<input checked="" type="checkbox"/>	29/06/2017 11:26:36
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	26:36.0
<input type="checkbox"/>	300 41.0610355)
<input type="checkbox"/>	
<input checked="" type="checkbox"/>	29/06/2017 11:26:35
<input checked="" type="checkbox"/>	29/06/2017 11:26:34
<input checked="" type="checkbox"/>	29/06/2017 11:26:33
<input checked="" type="checkbox"/>	29/06/2017 11:26:36
<input checked="" type="checkbox"/>	29/06/2017 11:26:35
<input checked="" type="checkbox"/>	29/06/2017 11:26:34
<input checked="" type="checkbox"/>	29/06/2017 11:26:33

11346 EPVIRG

Thermal image

Show deleted items

Show invisible items

New

Cancel

Save



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#### 4.4 REPORT GENERATION

After the has been executed and analysis has been performed is possible for each mission generates a report performing the following steps (Figure 22 – Report Generation):

1. select the Mission that you want to generate a report
2. Click on Description tab
3. Click on “Create Report” button on bottom right

The screenshot displays the EASY PV software interface. At the top, there is a navigation bar with tabs: PLANTS, CATALOGUE, MONITOR&CONTROL, ORDERING, and PE. Below this, there are icons for Settings and Mission Browser. The main window is divided into two sections. On the left, the 'Mission Browser' shows a list of missions: 'Mission 4030' (IMPIANTO TE\_DTCURIA, Imported, 29/06/2017) and 'Mission 2836' ([1021] Impianto inesistente, Imported, 01/06/2017). On the right, the 'Description' tab for 'Mission 4030' is active. It contains a form with fields for ID (4,030), Plant (IMPIANTO TE\_DTCURIA), Status (Imported), Planning Date (6/29/2017), Pilot (Gilmour David), Contact, Full Topology (checked), and Comments (GE). At the bottom right of the form, it says 'Last import 2017-07-03 10:19:36.826707'. At the bottom of the interface, there are buttons: 'New', 'Notify Mission', 'Create Report', 'Cancel', and 'Save'.

Figure 22 – Report Generation

The report generated will be in pdf format and shall contains the following information (Figure 23 – Summary Report)



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Figure 23 – Summary Report

- ✓ Reference standard: describes the rules and standard applicable to all document
- ✓ Test Condition: contains the environmental data on which the mission was performed
- ✓ Plant Data: contains the main data of the plant
- ✓ Mission Data: contains the main data of the plant
- ✓ Survey Methods: contains a list of typical anomaly and how each of them is classified
- ✓ Survey results: contains a list of panel that with at least a defect. Also describes for each defective panel the following information
  - Panel location
  - Inspection date
  - thermal picture,
  - acquisition time
  - Anomaly type
  - thermographic expert opinion
- ✓ Conclusions: contains the general opinion by the thermographic expert operator on the mission results and on plant conditions



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## 4.5 PLANT MONITORING

The monitoring of a plant is made by Visual Track Platform that is integrated within Easy PV.

VT allows to represent a very effective set of frameworks on a home screen with all the most important information: logged in user, alarm summary, latest captured metrics, geographical position of a plant, etc....

It enables the capture, processing and validation of data from the periphery, generating and managing alarms and notifications, mapping of monitored plants (MAP tab - Figure 24 – VT Map View).

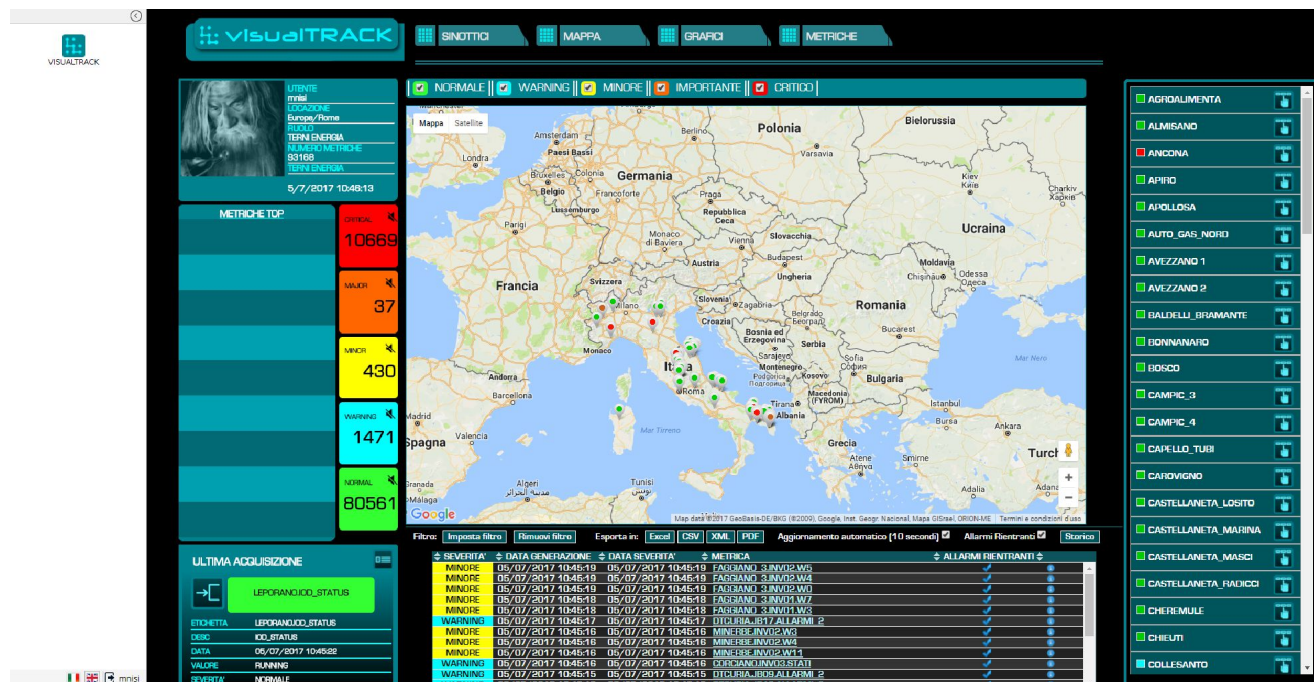


Figure 24 – VT Map View

Click on SYNOPTIC tab VT are displayed the list of each plant and its main parameter (Figure 25 – Plant View).

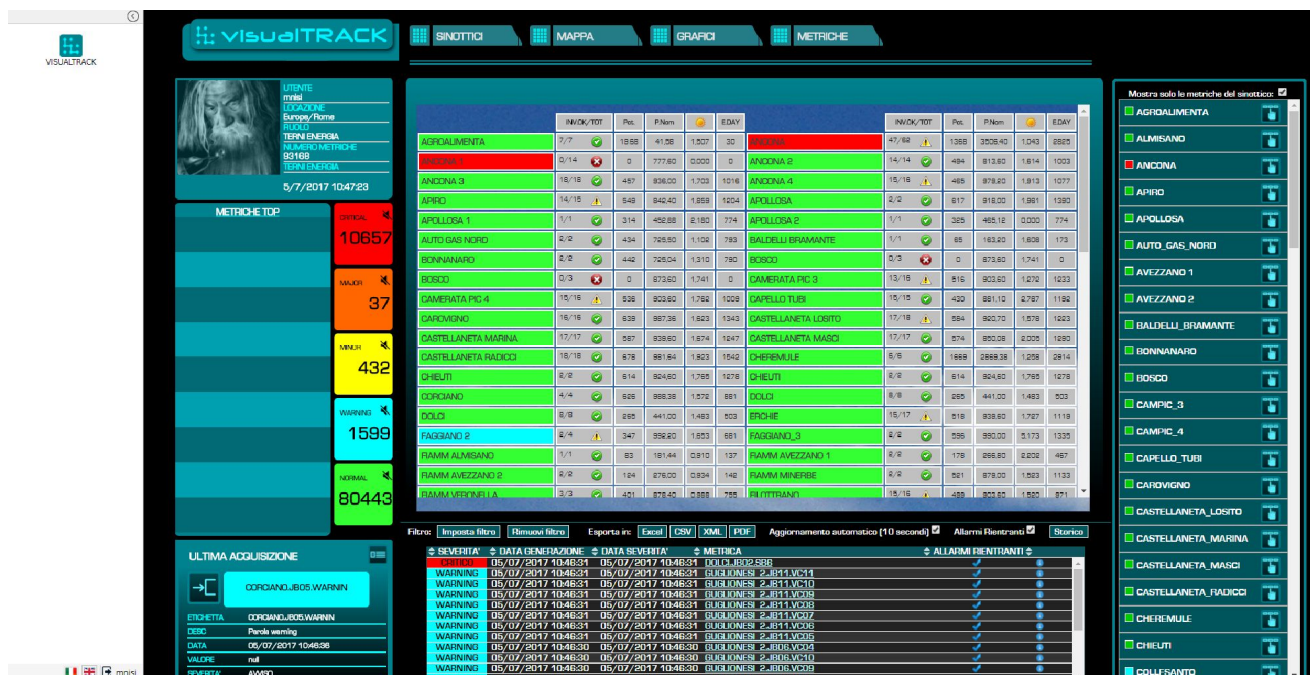


Figure 25 – Plant View

For each plant monitored is possible to see (click on Graphics tab) the production in terms of Power both in real time or during a period of time chosen by the operator (Figure 26 – Production ).



Figure 26 – Production Trend



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