



# Third-party report for validation of solar tracker availability in PV PROJECT 1 & 2

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## ABBREVIATIONS

<b>BVS</b>	Bureau Veritas Solutions
<b>O&amp;M</b>	Operations and Maintenance
<b>M&amp;M</b>	Monitoring and Maintenance
<b>kV</b>	kiloVolt
<b>MW</b>	MegaWatt
<b>PR</b>	Performance Ratio
<b>PV</b>	Photovoltaic
<b>AC</b>	Alternating Current
<b>DC</b>	Direct Current
<b>LV</b>	Low Voltage
<b>MV</b>	Medium Voltage
<b>HV</b>	High Voltage
<b>BESS</b>	Battery Energy Storage System

## 1/. INTRODUCTION

### 1.1/ Background

BUREAU VERITAS SOLUTIONS IBERIA, S.L. (hereafter BVS) presents, in its capacity as independent Technical Advisor (TA), and at the request of Solar Steel (hereafter CLIENT), this third-party report for validation of solar tracker availability.

Specifically, BVS has analysed the specific case of two PV Plants proposed for the CLIENT checking their availability of solar trackers.

### 1.2/ Scope

The aim of this report is to analyse and verify the implementation and effectiveness of the tracking algorithm in solar trackers of large generation PV plants. In addition, with the information provided by CLIENT, the availability of the trackers will be checked in two plants located in Spain and Portugal respectively.

- PV PROJECT 1: M&M services implemented.
- PV PROJECT 2: M&M services no implemented.

For the preparation of this report, BVS has received relevant information from two PV plants: PV PROJECT 1 and 2. The information is the following:

- O&M reports
- Procedure for calculating the availability of solar trackers.
- Monitoring algorithm
- Access to the monitoring platform of both PV Plants.



## 2/. PV PLANT DESCRIPTION

### 2.1/ PV PROJECT 1

#### 2.1.1 PV Plant characteristics

BVS has had access to the main characteristics of the PV plant, which are shown in the following table:

PV Plant characteristics	
Parameter	PV PROJECT 1
Location	Portugal
Power Peak (MW)	19 MW
TSMs Installed	5
TSCs Installed	565

Table 1 PV Plant characteristics - PV PROJECT 1



Figure 1 Layout – PV PROJECT 1

## 2.2/ PV PROJECT 2

### 2.2.1 PV Plant characteristics

BVS has had access to the main characteristics of the PV plant, which are shown in the following table:

PV Plant characteristics	
Parameter	PV PROJECT 2
Location	Spain
Power Peak (MW)	48.4 MW
TSMs Installed	14
TSCs Installed	1415

Table 2 PV Plant characteristics - PV PROJECT 2



Figure 2 Layout - PV PROJECT 2

### 3/. ANALYSIS OF O&M REPORTS

#### 3.1/ PV PROJECT 1

BVS has received 20 monthly Operation and Maintenance reports from the PV Project 1.

The PV Project 1 has the following components considered for O&M reports: 565 TCUs, 565 Motors, 5 NCUs , 5 RSUs , 4 Anemometers and 1 Ultrasonic.

The following graph shows the number of failures that occurred from January 2022 to August 2023 according to component type:

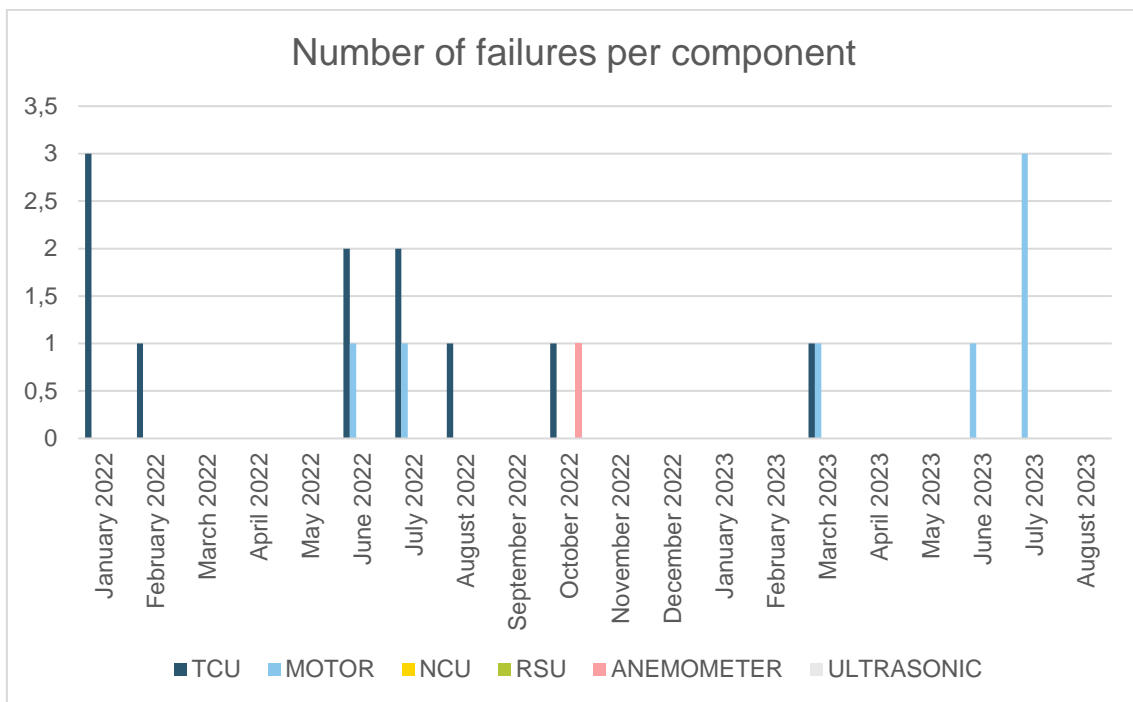


Figure 3 Failure per component - PV PROJECT 1

- TCU: 11
- Engine: 7
- NCU: 0
- RSU: 0
- Anemometer: 1
- Ultrasonic: 0

On the other hand, the number of replacements produced at the PV Project 1 during the 20 months have been the following:

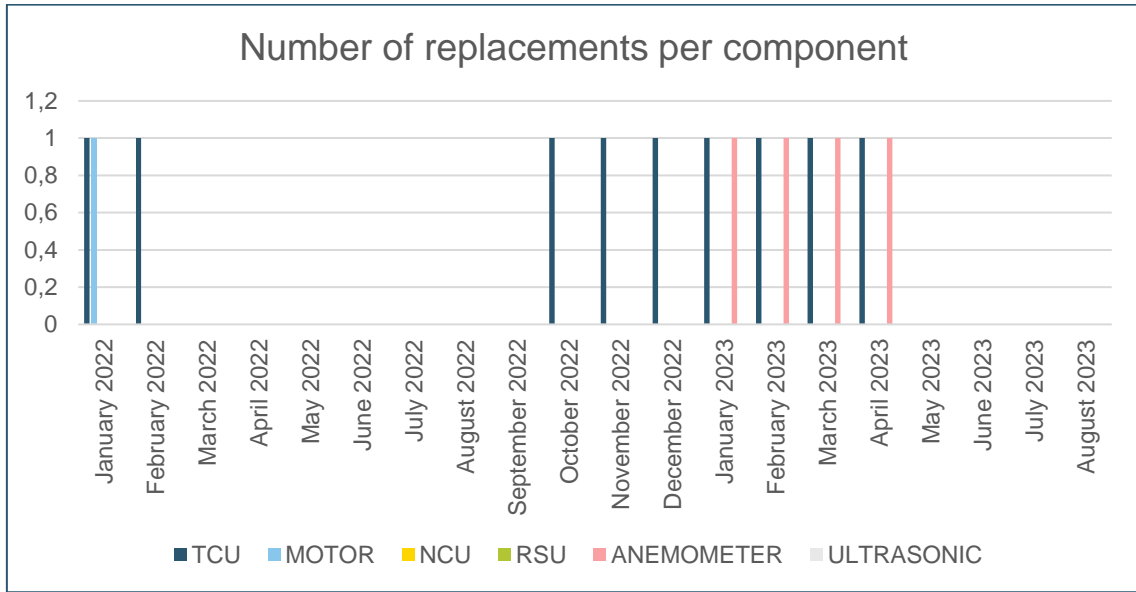


Figure 4 replacement per component - PV PROJECT 1

- TCU: 9
- Engine: 1
- NCU: 0
- RSU: 0
- Anemometer: 4
- Ultrasonic: 0

### 3.2/ PV PROJECT 2

No O&M reports received for PV PROJECT 2 PV Plant.

## 4/. AVAILABILITY ANALYSIS PROCEDURE

BVS bases the calculation of availability on the procedure received where two different moments are considered:

- Jc: correct operation, when the difference between real and target angle does not exceed  $2^\circ$ .
- Ji: incorrect operation, when the difference between real and target angle exceeds  $2^\circ$ .

In order to have an approximation of tracker operation in a specific day, a single tracker is taken as a reference for each plant in order to check the difference between the real angle and target angle.

In the following graphs it is shown the lag between the real angle and the target one for PV Project 1 and 2.

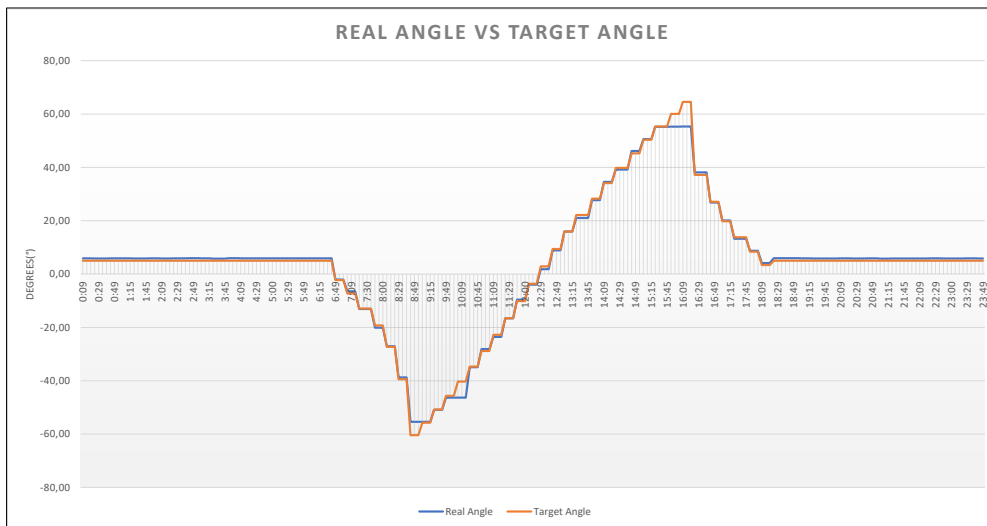


Figure 5 Real angle vs Target Angle - PV Project 1 - Tracker 1

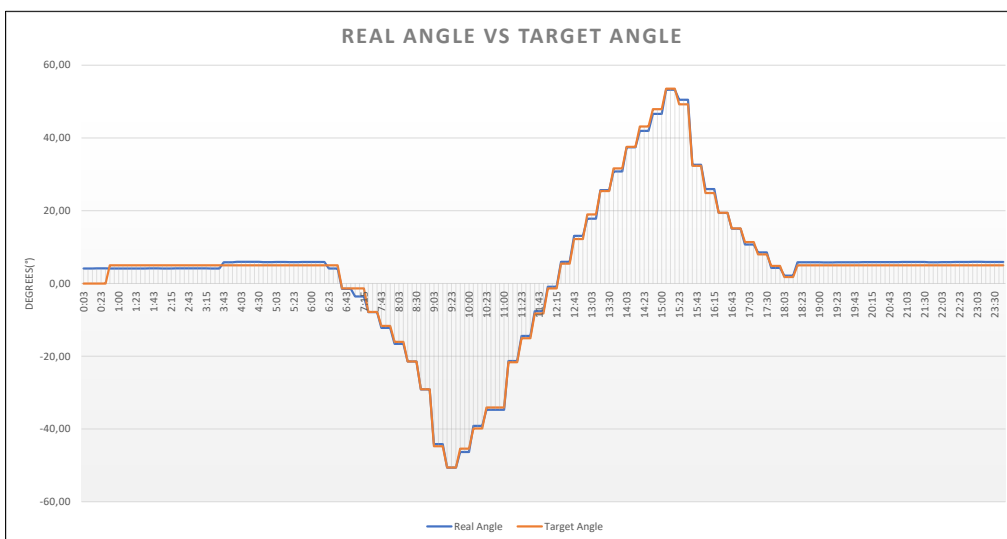


Figure 6 Real angle vs Target Angle - PV PROJECT 2 Tracker 1



## 5/. RESULTS OF ANALYSIS

### 5.1/ PV PROJECT 1

BVS has obtained the data from PV Project 1 during a period from the monitoring platform from 16/10/2023 to 01/01/2024.

BVS has analysed the 100% of trackers during this period to obtain the values in realistic terms as possible.

The Availability is calculated according to the procedure received. For PV PROJECT 1 PV the average of availability is about 99.9429%.

In the following table is shown the availability per day and per batch of trackers.

	T001-T100	T101-T200	T201-T300	T301-T400	T401-500	T501-T565	AVAILABILITY
16/10/2023	99,9523%	99,9547%	99,8666%	99,9684%	99,9610%	99,9663%	99,9449%
17/10/2023	99,8378%	99,9701%	99,9737%	99,9819%	99,9860%	99,9866%	99,9560%
18/10/2023	99,9784%	99,9774%	99,8824%	99,9777%	99,9766%	99,9771%	99,9616%
19/10/2023	99,8783%	99,9657%	99,9203%	99,9638%	99,9677%	99,9742%	99,9450%
20/10/2023	99,9758%	99,9757%	99,8716%	99,9745%	99,9625%	99,9739%	99,9556%
21/10/2023	99,9794%	99,9788%	99,8938%	99,9770%	99,9748%	99,9772%	99,9635%
22/10/2023	99,9721%	99,9717%	99,8668%	99,9712%	99,9709%	99,9705%	99,9539%
23/10/2023	99,9657%	99,9682%	99,8639%	99,9681%	99,9690%	99,9691%	99,9507%
24/10/2023	99,9684%	99,6521%	99,7131%	99,9277%	99,8702%	99,7719%	99,8172%
25/10/2023	99,9610%	99,9660%	99,8623%	99,9649%	99,9651%	99,9648%	99,9474%
26/10/2023	99,9774%	99,9775%	99,8795%	99,9764%	99,9761%	99,9759%	99,9605%
27/10/2023	99,9626%	99,9467%	99,7987%	99,9427%	99,9528%	99,9275%	99,9218%
28/10/2023	99,9583%	99,9582%	99,8552%	99,9559%	99,9567%	99,9562%	99,9401%
29/10/2023	99,9559%	99,9570%	99,8649%	99,9549%	99,9547%	99,9548%	99,9404%
30/10/2023	99,9538%	99,9531%	99,8541%	99,9471%	99,9523%	99,9519%	99,9354%
31/10/2023	99,9484%	99,9493%	99,8563%	99,9478%	99,9492%	99,9496%	99,9334%
01/11/2023	99,9489%	99,9477%	99,8475%	99,9463%	99,9462%	99,9462%	99,9305%
02/11/2023	99,9858%	99,9854%	99,9853%	99,9855%	99,9856%	99,9858%	99,9856%
03/11/2023	99,9406%	99,9404%	99,8427%	99,9420%	99,9397%	99,9393%	99,9241%
04/11/2023	99,9852%	99,9766%	99,8648%	99,9435%	99,9738%	99,9712%	99,9525%
05/11/2023	99,9523%	99,9556%	99,8713%	99,9815%	99,9802%	99,9810%	99,9537%
06/11/2023	99,9742%	99,9754%	99,8815%	99,9814%	99,9784%	99,9808%	99,9620%
07/11/2023	99,9807%	99,9807%	99,7883%	99,9805%	99,9697%	99,9801%	99,9467%
08/11/2023	99,9805%	99,9822%	99,8052%	99,9859%	99,9804%	99,9850%	99,9532%
09/11/2023	99,9548%	99,9545%	99,7762%	99,9533%	99,9548%	99,9543%	99,9247%
10/11/2023	99,9573%	99,9557%	99,8092%	99,9535%	99,9505%	99,9548%	99,9302%
11/11/2023	99,9492%	99,9505%	99,8674%	99,9489%	99,9504%	99,9501%	99,9361%
12/11/2023	99,9525%	99,9529%	99,8638%	99,9487%	99,9485%	99,9492%	99,9359%
13/11/2023	99,9461%	99,9474%	99,8574%	99,9543%	99,9465%	99,9494%	99,9335%
14/11/2023	99,9416%	99,9409%	99,9099%	99,9542%	99,9486%	99,9527%	99,9413%
15/11/2023	99,9409%	99,9437%	99,9585%	99,9635%	99,9569%	99,9626%	99,9543%
16/11/2023	99,8124%	99,9472%	99,9572%	99,9616%	99,9461%	99,9603%	99,9308%
17/11/2023	99,9766%	99,9328%	99,8991%	99,8884%	99,9649%	99,9716%	99,9389%
18/11/2023	99,9787%	99,9759%	99,9692%	99,9640%	99,9614%	99,9648%	99,9690%
19/11/2023	99,9820%	99,9822%	99,9813%	99,9797%	99,9719%	99,9792%	99,9794%
20/11/2023	99,9810%	99,9812%	99,9802%	99,9798%	99,9778%	99,9795%	99,9799%
21/11/2023	99,9818%	99,9813%	99,9801%	99,9799%	99,9704%	99,9808%	99,9791%
22/11/2023	99,9798%	99,9794%	99,9784%	99,9782%	99,9791%	99,9788%	99,9789%
23/11/2023	99,9792%	99,9725%	99,9695%	99,9689%	99,9644%	99,9702%	99,9708%
24/11/2023	99,9787%	99,9784%	99,9772%	99,9745%	99,9741%	99,9758%	99,9765%
25/11/2023	99,9780%	99,9780%	99,9776%	99,9770%	99,9767%	99,9770%	99,9774%



26/11/2023	99,9767%	99,9832%	99,9844%	99,9863%	99,9860%	99,9864%	99,9838%
27/11/2023	99,9748%	99,9745%	99,9742%	99,9737%	99,9551%	99,9737%	99,9710%
28/11/2023	99,9753%	99,9756%	99,9744%	99,9660%	99,9726%	99,9730%	99,9728%
29/11/2023	99,9798%	99,9792%	99,9756%	99,9723%	99,9584%	99,9733%	99,9731%
30/11/2023	99,9794%	99,9776%	99,9764%	99,9763%	99,9730%	99,9759%	99,9764%
01/12/2023	99,9449%	99,9529%	99,9383%	99,9356%	99,9321%	99,9339%	99,9396%
02/12/2023	99,9704%	99,9708%	99,9692%	99,9714%	99,9620%	99,9588%	99,9671%
03/12/2023	99,9708%	99,9709%	99,9706%	99,9714%	99,9680%	99,9698%	99,9703%
04/12/2023	99,9691%	99,9688%	99,9689%	99,9691%	99,9684%	99,9685%	99,9688%
05/12/2023	99,9650%	99,9668%	99,9666%	99,9679%	99,9674%	99,9672%	99,9668%
06/12/2023	99,9679%	99,9671%	99,9661%	99,9657%	99,9650%	99,9650%	99,9662%
07/12/2023	99,9884%	99,9887%	99,9891%	99,9890%	99,9892%	99,9887%	99,9888%
08/12/2023	99,4436%	99,6011%	99,5164%	99,6238%	99,5580%	99,4746%	99,5362%
09/12/2023	99,9626%	99,9627%	99,9577%	99,9596%	99,9601%	99,9596%	99,9604%
10/12/2023	99,9421%	99,9201%	99,9553%	99,8999%	99,8997%	99,8100%	99,9045%
11/12/2023	99,9566%	99,9607%	99,9608%	99,9596%	99,9577%	99,9582%	99,9589%
12/12/2023	99,9605%	99,9599%	99,9596%	99,9591%	99,9578%	99,9585%	99,9592%
13/12/2023	99,9589%	99,9601%	99,9600%	99,9598%	99,9589%	99,9591%	99,9595%
14/12/2023	99,9617%	99,9610%	99,9608%	99,9593%	99,9588%	99,9586%	99,9600%
15/12/2023	99,9586%	99,9581%	99,9600%	99,9592%	99,9448%	99,9576%	99,9564%
16/12/2023	99,9600%	99,9602%	99,9594%	99,9580%	99,9563%	99,9574%	99,9586%
17/12/2023	99,9591%	99,9601%	99,9588%	99,9570%	99,9574%	99,9569%	99,9582%
18/12/2023	99,9777%	99,7330%	99,5837%	99,2630%	99,2156%	99,2051%	99,4963%
19/12/2023	99,9599%	99,9600%	99,9568%	99,9551%	99,9559%	99,9568%	99,9574%
20/12/2023	99,9746%	99,9696%	99,9656%	99,9590%	99,9580%	99,9556%	99,9637%
21/12/2023	99,9593%	99,9586%	99,9579%	99,9567%	99,9475%	99,9568%	99,9561%
22/12/2023	99,9605%	99,9565%	99,9587%	99,9557%	99,9571%	99,9578%	99,9577%
23/12/2023	99,9606%	99,9535%	99,9590%	99,9576%	99,9585%	99,9579%	99,9578%
24/12/2023	99,9613%	99,9507%	99,9598%	99,9588%	99,9553%	99,9586%	99,9574%
25/12/2023	99,9620%	99,9507%	99,9390%	99,9206%	99,9512%	99,9598%	99,9472%
26/12/2023	99,9554%	99,9575%	99,9030%	99,9503%	99,9636%	99,9671%	99,9495%
27/12/2023	99,8427%	99,7788%	99,9386%	99,9482%	99,9513%	99,9229%	99,8971%
28/12/2023	99,9242%	99,9782%	99,9763%	99,9741%	99,9745%	99,9744%	99,9670%
29/12/2023	99,9800%	99,9798%	99,9782%	99,9757%	99,9770%	99,9768%	99,9779%
30/12/2023	99,9596%	99,9808%	99,9799%	99,9781%	99,9704%	99,9790%	99,9746%
31/12/2023	99,9423%	99,9823%	99,9815%	99,9799%	99,9775%	99,9795%	99,9738%
01/01/2024	99,9834%	99,9901%	99,9862%	99,9877%	99,9830%	99,9903%	99,9868%
<b>AVERAGE</b>	<b>AVAILABILITY IN PERIOD (16/10/2023 TO 01/01/2024)</b>						<b>99,9429%</b>

Table 3 Availability in a specific period - PV PROJECT 1

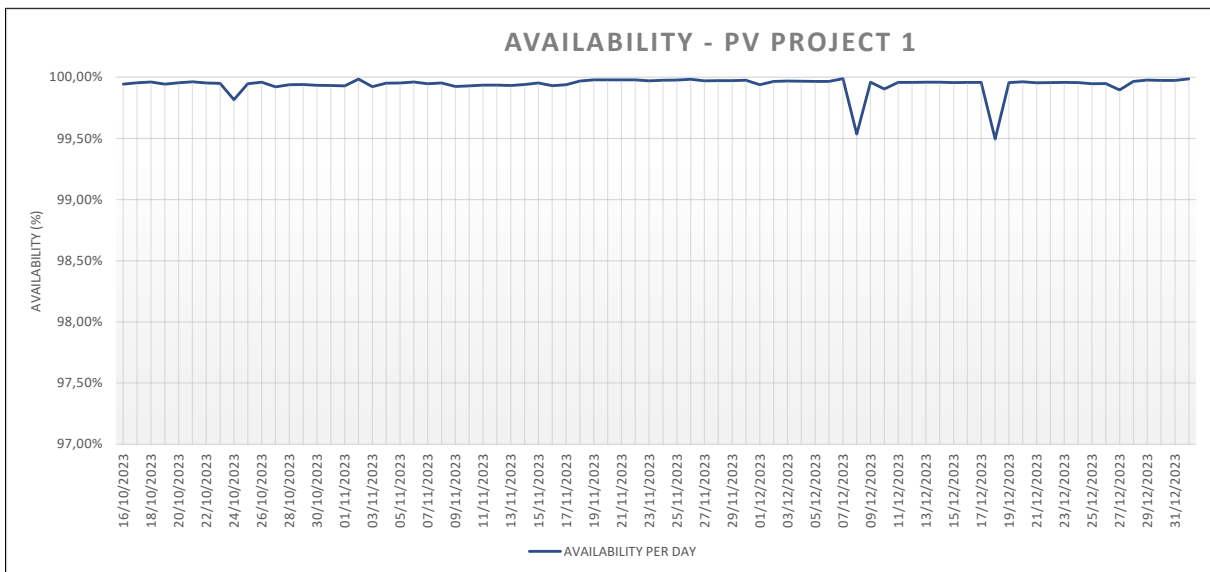


Figure 7 Availability Profile in a specific period - PV PROJECT 1



### 5.2/ PV PROJECT 2

BVS has obtained the data from PV Project 1 during a period from the monitoring platform from 13/10/2023 to 01/01/2024.

BVS has analysed the 100% of trackers during this period to obtain the values in realistic terms as possible.

The Availability is calculated according to the procedure received. For PV PROJECT 2 PV the average of availability is about 97.003%.

In the following table is shown the availability per day and per batch of trackers.

	P1	P2	P3	P4	P5	P6	P7	P8	AVAILABILITY
13/10/2023	99,894%	99,358%	99,756%	99,357%	95,784%	94,283%	99,064%	96,987%	98,061%
14/10/2023	97,617%	98,006%	97,470%	99,540%	99,159%	92,362%	97,073%	96,534%	97,220%
15/10/2023	99,891%	99,423%	95,621%	99,453%	97,343%	94,586%	99,837%	99,342%	98,187%
16/10/2023	99,919%	99,428%	99,878%	97,526%	97,226%	94,673%	99,856%	97,058%	98,195%
17/10/2023	96,974%	95,788%	99,889%	99,513%	99,746%	94,652%	99,648%	98,047%	98,032%
18/10/2023	99,372%	95,039%	99,773%	97,234%	96,812%	93,975%	99,114%	98,640%	97,495%
19/10/2023	99,826%	98,884%	99,721%	96,746%	96,770%	94,670%	97,108%	93,648%	97,172%
20/10/2023	99,662%	99,387%	99,796%	99,459%	99,715%	93,794%	92,570%	90,122%	96,813%
21/10/2023	95,522%	92,332%	96,709%	97,191%	97,380%	92,326%	97,180%	97,387%	95,753%
22/10/2023	98,882%	96,865%	95,292%	99,522%	98,237%	92,043%	96,458%	95,890%	96,649%
23/10/2023	97,722%	99,175%	99,868%	98,578%	99,872%	94,638%	99,652%	99,276%	98,598%
24/10/2023	98,342%	99,428%	95,287%	92,791%	96,831%	94,323%	99,621%	99,335%	96,995%
25/10/2023	99,937%	96,640%	92,572%	97,053%	95,029%	94,113%	98,666%	96,771%	96,348%
26/10/2023	96,691%	90,617%	94,892%	93,215%	96,178%	90,967%	99,684%	99,212%	95,182%
27/10/2023	97,108%	90,365%	93,609%	95,658%	95,811%	92,909%	96,143%	97,332%	94,867%
28/10/2023	97,181%	96,602%	98,855%	95,296%	94,466%	91,382%	96,609%	94,507%	95,612%
29/10/2023	99,687%	96,037%	98,197%	91,055%	99,200%	94,521%	95,855%	98,317%	96,609%
30/10/2023	96,321%	99,534%	97,079%	95,990%	97,130%	94,317%	99,700%	99,249%	97,415%
31/10/2023	95,474%	97,320%	99,668%	99,612%	99,100%	94,171%	99,525%	99,315%	98,023%
01/11/2023	99,696%	98,732%	96,605%	93,069%	98,014%	91,423%	99,292%	99,200%	97,004%
02/11/2023	90,068%	95,128%	94,879%	98,520%	92,985%	85,535%	90,386%	94,648%	92,769%
03/11/2023	96,063%	99,573%	99,776%	99,727%	99,674%	93,365%	94,135%	95,124%	97,180%
04/11/2023	91,823%	93,809%	96,007%	95,387%	95,399%	91,041%	99,804%	99,217%	95,311%
05/11/2023	97,101%	99,671%	99,741%	99,613%	94,400%	89,443%	92,446%	93,817%	95,779%
06/11/2023	99,938%	99,825%	99,733%	99,228%	94,366%	89,190%	94,393%	96,539%	96,652%
07/11/2023	99,882%	99,180%	99,816%	99,687%	99,556%	94,360%	99,707%	99,356%	98,943%
08/11/2023	99,727%	97,496%	99,891%	97,348%	97,206%	92,593%	97,522%	97,010%	97,349%
09/11/2023	99,901%	97,780%	99,883%	99,629%	98,574%	90,946%	94,365%	93,905%	96,873%
10/11/2023	99,709%	97,256%	99,845%	99,653%	99,771%	94,276%	99,760%	99,303%	98,697%
11/11/2023	95,796%	99,726%	99,810%	99,542%	99,955%	91,972%	99,885%	99,332%	98,252%
12/11/2023	96,877%	99,824%	99,920%	97,044%	99,301%	94,101%	99,283%	98,990%	98,167%
13/11/2023	99,280%	94,453%	94,403%	94,229%	94,230%	91,981%	93,967%	93,609%	94,519%
14/11/2023	99,619%	99,452%	94,840%	89,880%	88,719%	87,171%	94,553%	96,524%	93,845%
15/11/2023	99,817%	99,416%	93,007%	94,948%	93,764%	89,537%	99,234%	96,573%	95,787%
16/11/2023	93,323%	97,071%	94,454%	98,201%	99,623%	93,937%	99,822%	98,554%	96,873%
17/11/2023	99,469%	97,179%	97,274%	96,968%	97,910%	92,974%	99,864%	96,237%	97,234%
18/11/2023	99,732%	97,305%	97,610%	98,256%	99,930%	94,734%	99,934%	99,173%	98,334%
19/11/2023	95,210%	99,746%	99,807%	99,599%	97,487%	94,611%	99,890%	99,313%	98,208%
20/11/2023	99,081%	94,811%	98,363%	97,061%	97,344%	92,170%	99,634%	99,094%	97,195%
21/11/2023	94,610%	99,665%	94,401%	94,459%	96,424%	92,241%	94,854%	96,534%	95,398%
22/11/2023	99,884%	99,724%	98,613%	99,336%	99,774%	91,483%	95,878%	97,058%	97,719%
23/11/2023	98,977%	98,432%	97,223%	97,313%	95,237%	92,045%	95,048%	97,669%	96,493%
24/11/2023	99,912%	97,367%	97,951%	98,572%	97,271%	92,590%	97,436%	94,968%	97,008%
25/11/2023	99,966%	97,354%	97,419%	97,354%	98,076%	90,080%	99,649%	98,033%	97,241%





26/11/2023	94,964%	95,081%	95,019%	92,724%	96,857%	92,258%	97,221%	97,943%	95,259%
27/11/2023	99,965%	97,303%	96,807%	95,053%	98,916%	91,983%	97,187%	96,680%	96,737%
28/11/2023	93,781%	99,905%	97,035%	94,209%	99,482%	94,612%	99,849%	99,149%	97,253%
29/11/2023	99,888%	99,842%	99,867%	99,806%	99,808%	94,636%	99,948%	97,875%	98,959%
30/11/2023	90,592%	98,478%	99,816%	99,823%	95,692%	90,317%	95,193%	94,826%	95,592%
01/12/2023	96,766%	96,264%	96,086%	96,889%	98,425%	92,075%	97,026%	96,634%	96,271%
02/12/2023	99,891%	96,841%	96,875%	96,821%	99,566%	94,404%	96,765%	96,332%	97,187%
03/12/2023	99,877%	99,874%	97,333%	97,385%	97,457%	92,490%	97,452%	97,772%	97,455%
04/12/2023	99,907%	91,332%	97,151%	99,852%	90,824%	88,440%	90,356%	95,939%	94,225%
05/12/2023	95,915%	97,086%	96,616%	99,694%	99,764%	94,128%	99,482%	96,036%	97,340%
06/12/2023	96,235%	99,735%	97,149%	96,979%	99,719%	94,612%	99,719%	99,224%	97,922%
07/12/2023	99,811%	99,869%	99,893%	96,924%	96,795%	88,268%	93,830%	94,524%	96,239%
08/12/2023	96,915%	96,763%	94,912%	93,861%	91,083%	92,176%	97,167%	98,910%	95,223%
09/12/2023	99,833%	99,583%	96,860%	96,561%	96,911%	91,561%	99,452%	98,995%	97,469%
10/12/2023	97,318%	99,473%	97,372%	97,575%	99,608%	92,199%	94,960%	96,803%	96,914%
11/12/2023	98,224%	97,263%	97,126%	99,828%	99,822%	94,644%	99,886%	99,344%	98,267%
12/12/2023	92,461%	97,497%	97,245%	99,748%	98,768%	94,541%	99,734%	99,336%	97,416%
13/12/2023	97,083%	99,821%	99,691%	97,002%	95,551%	91,879%	96,861%	95,032%	96,615%
14/12/2023	97,444%	96,033%	99,808%	99,736%	99,379%	92,073%	99,873%	99,390%	97,967%
15/12/2023	99,807%	97,306%	94,940%	97,267%	97,356%	92,183%	97,198%	97,495%	96,694%
16/12/2023	99,964%	99,891%	94,746%	94,781%	92,642%	91,751%	97,026%	96,527%	95,916%
17/12/2023	99,786%	99,836%	99,856%	99,762%	96,928%	94,702%	97,517%	99,350%	98,467%
18/12/2023	99,839%	97,374%	99,917%	99,775%	99,662%	92,748%	98,316%	99,346%	98,372%
19/12/2023	97,513%	99,898%	99,774%	99,774%	99,872%	93,766%	96,669%	94,451%	97,715%
20/12/2023	97,142%	97,156%	99,617%	96,782%	99,047%	94,534%	99,862%	98,994%	97,892%
21/12/2023	99,614%	94,847%	99,492%	97,067%	99,555%	94,275%	99,893%	99,323%	98,008%
22/12/2023	97,038%	99,798%	97,004%	99,693%	99,730%	91,903%	96,730%	96,228%	97,266%
23/12/2023	97,345%	94,947%	99,733%	99,652%	99,622%	92,377%	97,251%	97,869%	97,349%
24/12/2023	98,073%	98,287%	96,642%	96,475%	99,214%	94,628%	96,606%	96,127%	97,006%
25/12/2023	99,801%	99,930%	99,727%	97,222%	99,430%	94,448%	99,706%	98,737%	98,625%
26/12/2023	99,940%	99,866%	99,776%	96,918%	97,153%	92,007%	96,762%	94,048%	97,059%
27/12/2023	97,284%	99,847%	99,846%	97,217%	96,976%	92,110%	97,850%	99,305%	97,555%
28/12/2023	99,937%	97,210%	97,377%	96,607%	94,199%	91,994%	94,561%	92,136%	95,503%
29/12/2023	96,953%	99,792%	99,865%	99,853%	99,688%	94,584%	99,729%	99,320%	98,723%
30/12/2023	94,945%	99,901%	99,561%	99,703%	99,619%	94,611%	99,777%	99,386%	98,438%
31/12/2023	97,002%	99,770%	99,660%	99,701%	99,684%	94,603%	99,905%	96,409%	98,342%
01/01/2024	99,796%	99,873%	99,790%	97,338%	99,333%	94,214%	97,444%	99,296%	98,385%
<b>AVERAGE</b>	<b>AVAILABILITY IN PERIOD (13/10/2023 to 01/01/2024)</b>								<b>97,003%</b>

Table 4 Availability in a specific period - PV PROJECT 2

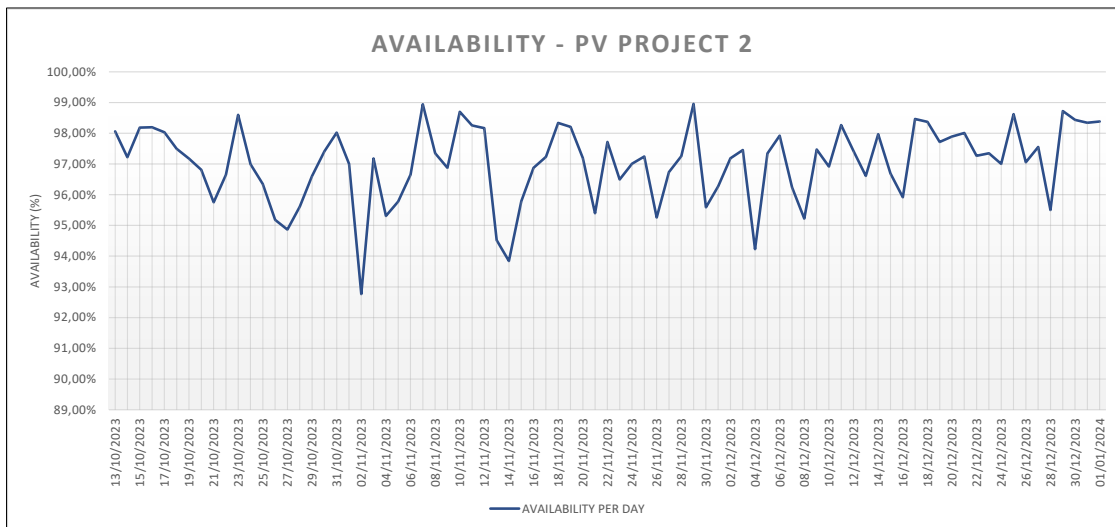


Figure 8 Availability Profile in a specific period - PV PROJECT 2

## 6/. PV PRODUCTION vs AVAILABILITY

### 6.1/ AVAILABILITY FOR PV PROJECTS

According to the analysis done for Project 1 and Project 2, the results, as follows:

AVAILABILITY (%)		
PV PROJECT 1	PV PROJECT 2	Difference
99,942%	97.003%	2.939%

Table 5 Availability values for PV PROJECT 1 and 2 vs Difference

### 6.2/ PV PRODUCTION

BVS has received the economical values for PV Project 1 and 2: Production loss due the unavailability.

In the following table it is shown the values regarding PV Project 1:

PV PROJECT 1	
Parameter	Value
Number of Total Trackers - units	565
Unavailability - %	2.939%
Number of unavailable trackers - units	17
Production loss due to unavailability € year/tracker - €	1,596.81**
Production € year	26,515 €

Table 6 Production € year vs unavailability PV PROJECT 1

\*\*Source: Client

In the following table it is shown the values regarding PV Project 2:

PV PROJECT 2	
Parameter	Value
Number of Total Trackers - units	1415
Unavailability - %	2.939%
Number of unavailable trackers - units	42
Production loss due to unavailability € year/tracker - €	1,420.65**
Production € year	59,080 €

Table 7 Production € year vs unavailability PV PROJECT 2

\*\*Source: Client

## 7/. CONCLUSIONS

- Regarding the O&M reports, the number of operations and replacements it is in value range for this type of plants and there anything unusual.
- Regarding the analysis of availability for the PV Project 1 and 2:
  - Based on the results obtained, it is concluded that the difference between applying the M&M services in PV Project 1 improves the availability of the plant, reaching a value in the analysed period of 99.942%. On the other hand, in PV Project 2, where the M&M services is not implemented, the availability reaches a value of 97.003%.
  - According to the analysed period, the implementation of the M&M services increases the availability to 2,939%.
  - Analysing the availability profile: the profile is more constant in PV Project 1 than 2, avoiding variation peaks in the PV Project 1, as it is shown in figure 11 and 12.
  - According to the economical values obtained and shown in tables 10 and 11, the implementation of M&M services has a positive impact.
  - In the following table it is shown the summary results:

SUMMARY RESULTS		
Parameter	PV PROJECT 1	PV PROJECT 2
M&M services	Implemented	No implemented
Availability %	99.942%	97.003%
Production € year according to 2.939% value obtained	26,515 €	59,080 €

Table 8 Summary Results for PV PROJECT 1 and 2