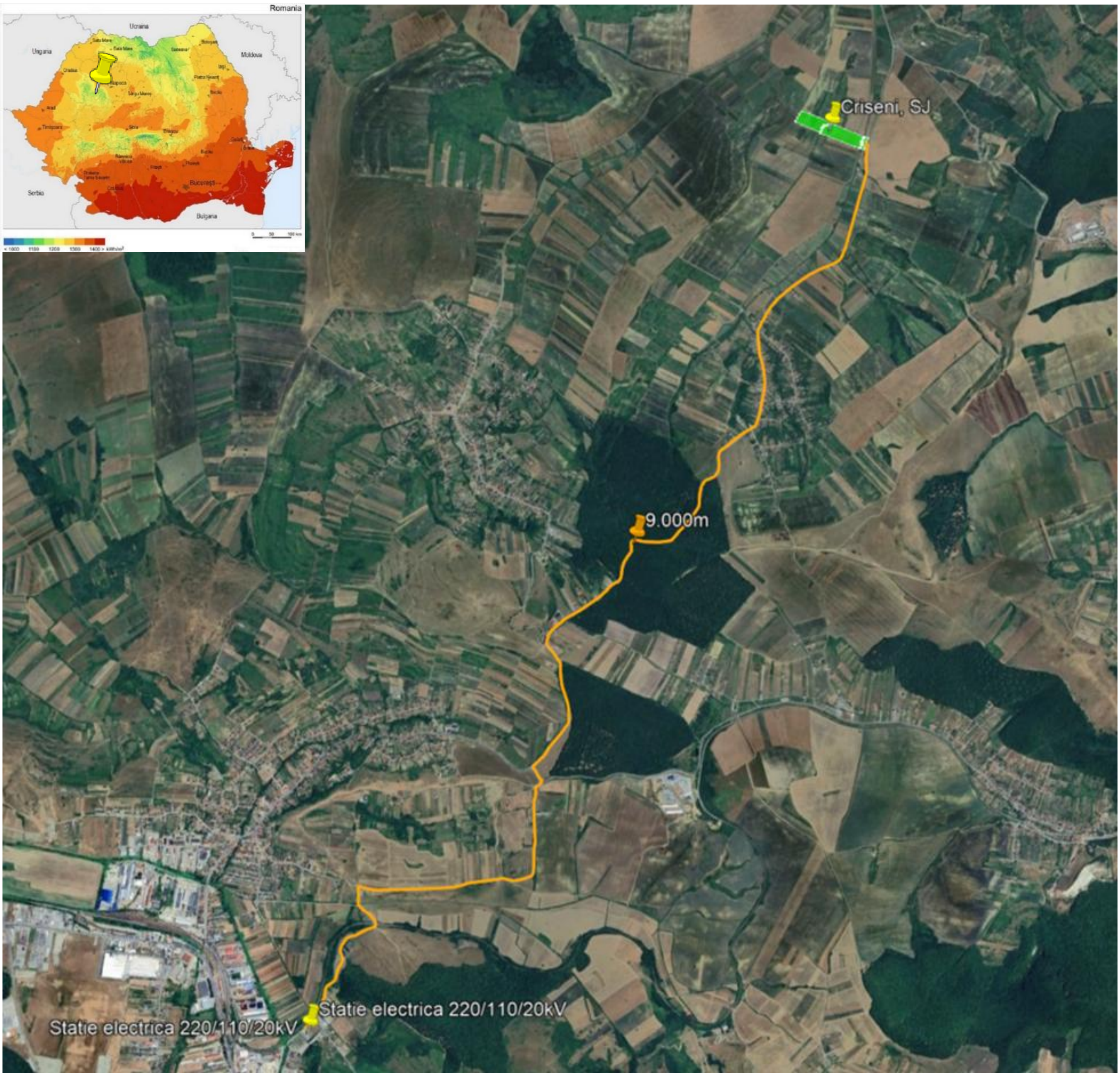
PV Park + BESS

Project: Adamant, SJ
Land Surface: 4,831 Ha
Installed PV Power: 4,8 MWp
BESS - Storage Capacity: 10 MWh



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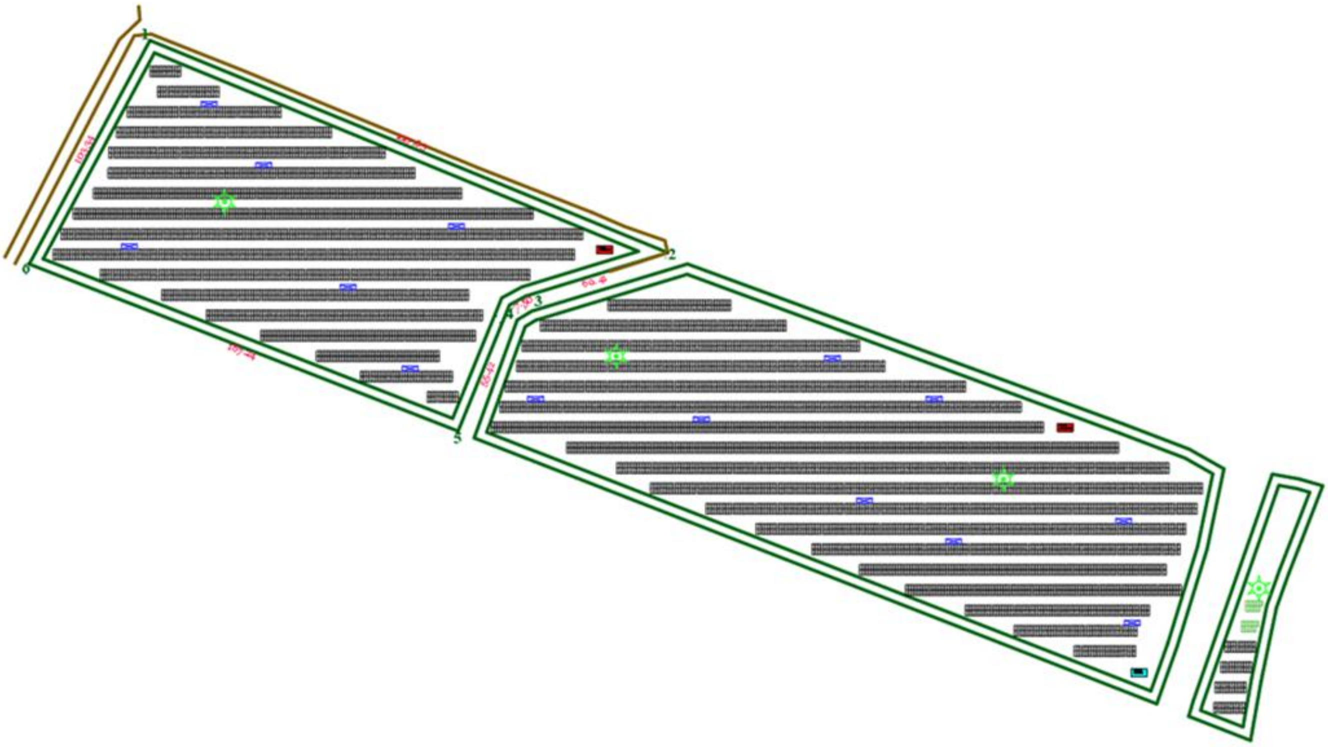
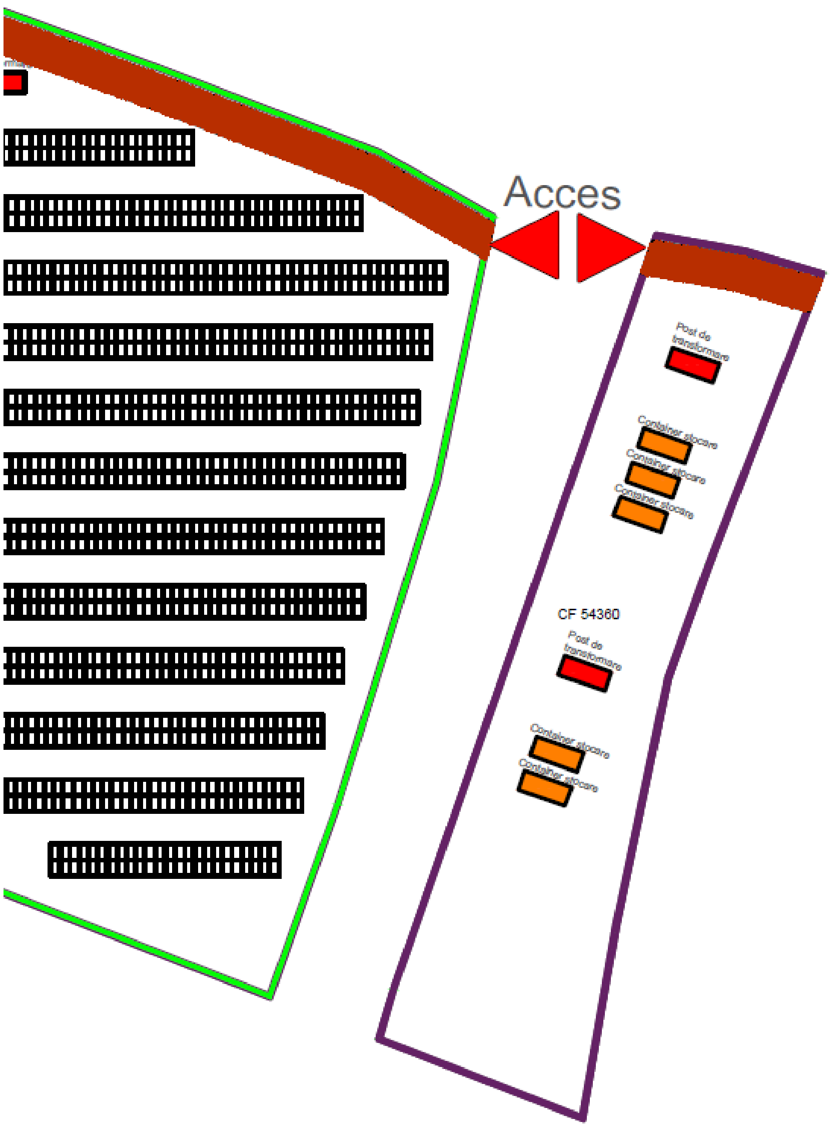
Curves Level

Layout Photovoltaic Park



Layout BESS


Acces
Post de transformare
Container stocare
Container stocare
Container stocare
CF 54360
Post de transformare
Container stocare
Container stocare

PV Productions

Peak power: 4.83 MWp

Module surface: 19 767.3 m²

Total number of modules: 7 318

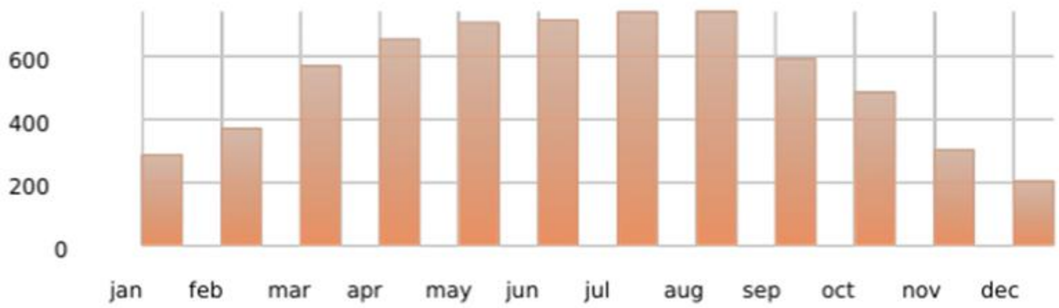
Total number of inverters: 46

Average values:

Annual production (DC) : 6 473 MWh

Annual production (AC) : 6 184 MWh

Monthly AC production (MWh/month):



Months	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sep	Oct	Nov	Dec
MWh	287	370	568	654	706	715	739	741	591	484	302	204

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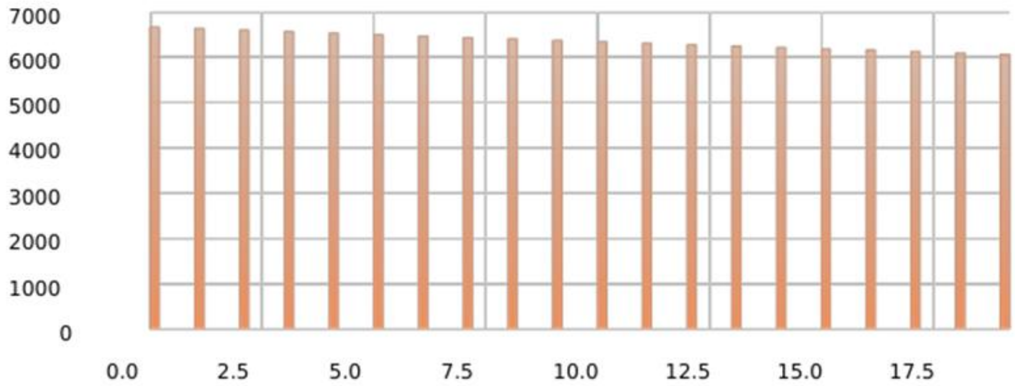
AC production year by year (MWh):



Years	1	2	3	4	5	6	7	8	9	10
MWh	6 665	6 632	6 599	6 567	6 534	6 502	6 470	6 438	6 406	6 374

Years	11	12	13	14	15	16	17	18	19	20
MWh	6 342	6 310	6 279	6 248	6 217	6 186	6 155	6 124	6 094	6 063

EMISSIONS AVOIDED: 2 544 CO2 equivalent (ton) *

* Quantity of greenhouse gases that would have been emitted during the observation period if this electricity had been generated through conventional means (20 g eq CO2/kWh)

* Important: this does not mean that all the emissions would be avoided, since the process of manufacturing and transporting PV modules also generates greenhouse gas emissions.

Costs:

Investment: 2.874 million EUR

Inverter renewal: 321 305 EUR

Maintenance: 1.00 %

Bank loan:

Amount: 2 873 850 EUR

Interest rate: 3.50 %

Discounting:

Inflation rate: 2.00 %

Equity rate: 3.00 %

Project type:

Total sale

Energy sales price produced:

0.0700 EUR/kWh

Price evolution:

+ 0.5 %/year

Economic results:

Annual revenue: 468 957 EUR/year

Cumulated revenues: 9.379 million EUR

Maintenance cost: 35 612 EUR/year

LCOE: 0.033 EUR/kWh

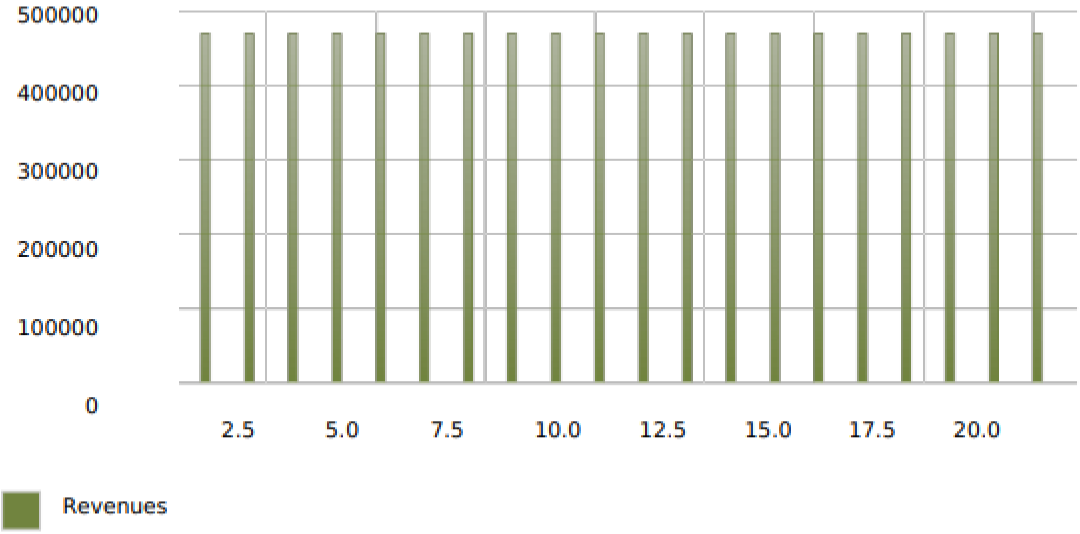
Net present value: 3.076 million EUR

Payback period: 7 year(s)

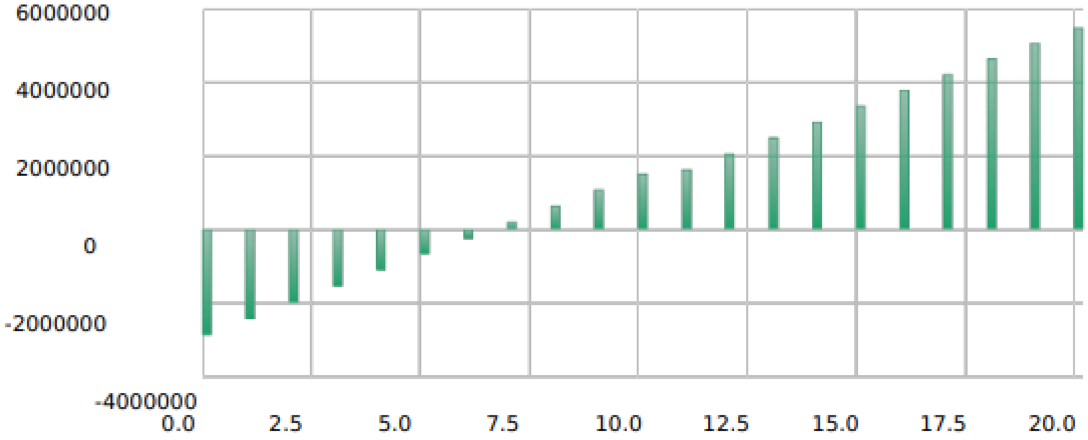
Discounted payback period: 8 year(s)

Internal rate of return: 13.70 %

Revenues year by year (EUR):



Cash flow illustration (EUR):



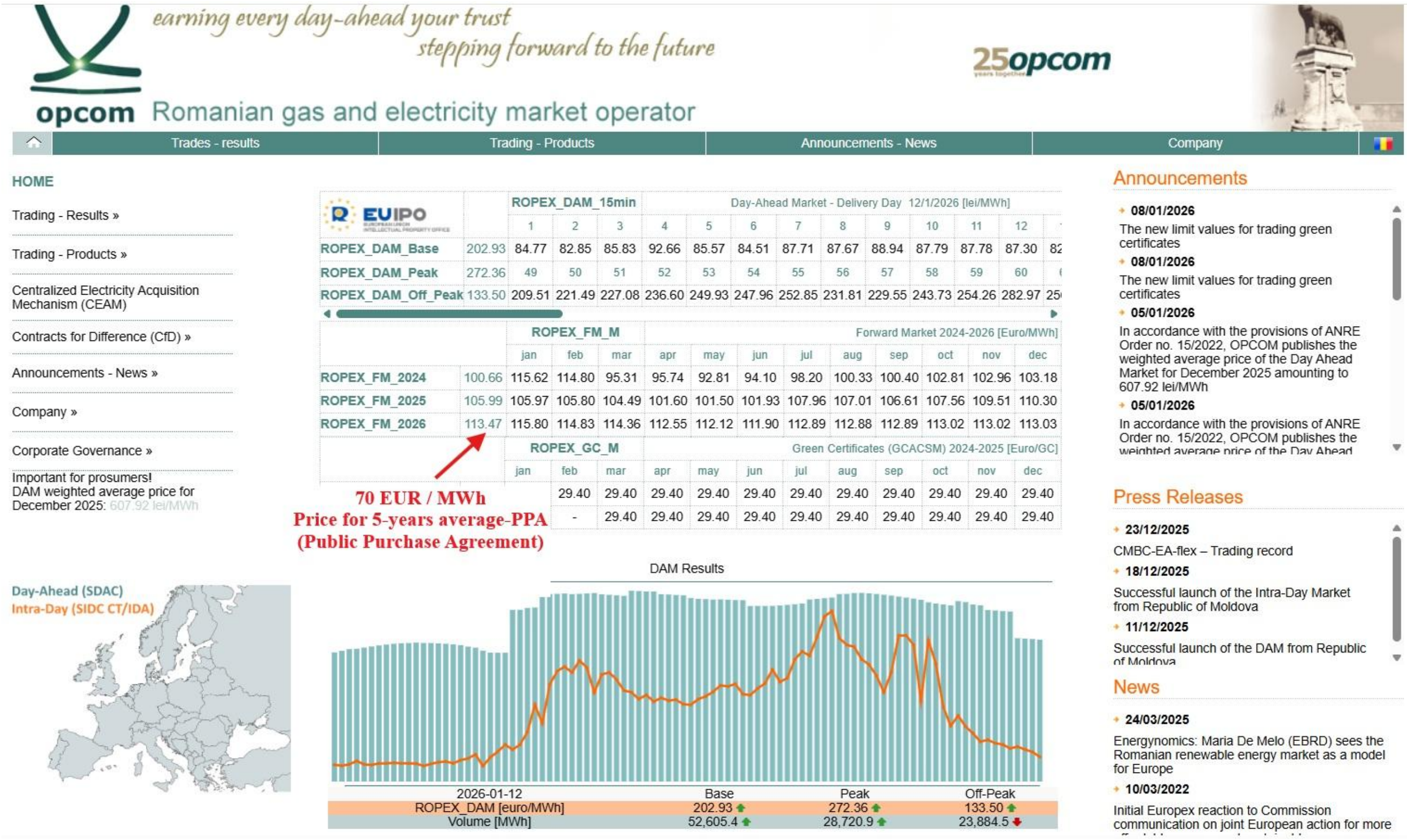
Years	1	2	3	4	5	6	7	8	9	10
EUR	-2 434 282	-1 995 282	-1 556 862	-1 119 036	-681 819	-245 224	190 731	626 032	1 060 664	1 494 611

Years	11	12	13	14	15	16	17	18	19	20
EUR	1 606 553	2 039 086	2 470 889	2 901 947	3 332 245	3 761 768	4 190 498	4 618 417	5 045 508	5 471 752

Year	1	2	3	4	5	6	7	8	9	10
Production (kWh)	6 664 981	6 632 083	6 599 334	6 566 723	6 534 239	6 501 899	6 469 664	6 437 557	6 405 593	6 373 749
Selling										
Prices (EUR/kWh)	0.0704	0.0707	0.0711	0.0714	0.0718	0.0721	0.0725	0.0728	0.0732	0.0736
Sales revenue (EUR)	468 881.4	468 899.9	468 917.4	468 933.2	468 946.6	468 958.8	468 966.9	468 972.8	468 977.5	468 979.2
Total (EUR)										
Revenues	**468 881.4**	**468 899.9**	**468 917.4**	**468 933.2**	**468 946.6**	**468 958.8**	**468 966.9**	**468 972.8**	**468 977.5**	**468 979.2**
Maintenance	29 313.3	29 899.5	30 497.5	31 107.5	31 729.6	32 364.2	33 011.5	33 671.7	34 345.2	35 032.1
Inverter renewal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Results	**439 568.1**	**439 000.3**	**438 419.8**	**437 825.7**	**437 216.9**	**436 594.5**	**435 955.4**	**435 301.1**	**434 632.3**	**433 947.2**

Year	11	12	13	14	15	16	17	18	19	20
Production (kWh)	6 342 049	6 310 496	6 279 099	6 247 838	6 216 731	6 185 780	6 154 947	6 124 254	6 093 693	6 063 249
Selling										
Prices (EUR/kWh)	0.0739	0.0743	0.0747	0.0751	0.0754	0.0758	0.0762	0.0766	0.0770	0.0773
Sales revenue (EUR)	468 980.0	468 979.9	468 979.8	468 978.2	468 976.5	468 974.8	468 970.4	468 964.9	468 957.8	468 948.0
Total (EUR)										
Revenues	**468 980.0**	**468 979.9**	**468 979.8**	**468 978.2**	**468 976.5**	**468 974.8**	**468 970.4**	**468 964.9**	**468 957.8**	**468 948.0**
Maintenance	35 732.7	36 447.4	37 176.3	37 919.8	38 678.2	39 451.8	40 240.8	41 045.7	41 866.6	42 703.9
Inverter renewal	321 305.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Results	**111 941.9**	**432 532.6**	**431 803.5**	**431 058.4**	**430 298.2**	**429 523.0**	**428 729.5**	**427 919.3**	**427 091.3**	**426 244.1**

**According to www.opcom.ro



EUIPO		ROPEX_DAM_15min			Day-Ahead Market - Delivery Day 12/1/2026 [lei/MWh]								
		1	2	3	4	5	6	7	8	9	10	11	12
ROPEX_DAM_Base	202.93	84.77	82.85	85.83	92.66	85.57	84.51	87.71	87.67	88.94	87.79	87.78	87.30
ROPEX_DAM_Peak	272.36	49	50	51	52	53	54	55	56	57	58	59	60
ROPEX_DAM_Off_Peak	133.50	209.51	221.49	227.08	236.60	249.93	247.96	252.85	231.81	229.55	243.73	254.26	282.97

		ROPEX_FM_M			Forward Market 2024-2026 [Euro/MWh]								
		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec
ROPEX_FM_2024	100.66	115.62	114.80	95.31	95.74	92.81	94.10	98.20	100.33	100.40	102.81	102.96	103.18
ROPEX_FM_2025	105.99	105.97	105.80	104.49	101.60	101.50	101.93	107.96	107.01	106.61	107.56	109.51	110.30
ROPEX_FM_2026	113.47	115.80	114.83	114.36	112.55	112.12	111.90	112.89	112.88	112.89	113.02	113.02	113.03

	ROPEX_GC_M			Green Certificates (GCACSM) 2024-2025 [Euro/GC]								
	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec
		29.40	29.40	29.40	29.40	29.40	29.40	29.40	29.40	29.40	29.40	29.40
		-	29.40	29.40	29.40	29.40	29.40	29.40	29.40	29.40	29.40	29.40

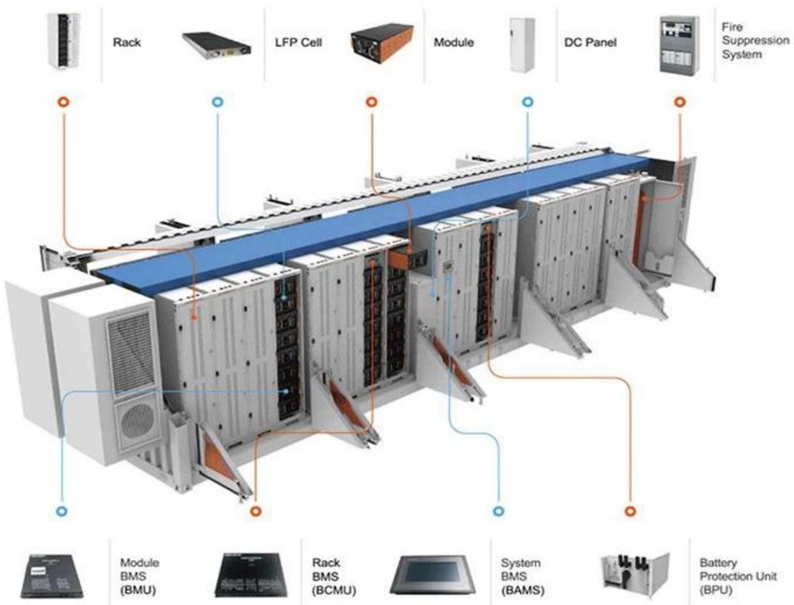
70 EUR / MWh
Price for 5-years average-PPA
(Public Purchase Agreement)

DAM Results

2026-01-12	Base	Peak	Off-Peak
ROPEX_DAM [euro/MWh]	202.93	272.36	133.50
Volume [MWh]	52,605.4	28,720.9	23,884.5

Technical description of the storage facility

- **(Battery container)**



- **Transformation unit - (MV SKID)**

Economic Data Storage Facility

1. Investment cost

	Storage Capacity 10 MWh	
Investment	EUR	2.000.000,00

2. Income

For an energy storage facility, there are several opportunities to utilize its electricity storage capacity, including:

- Balancing Market:
  - Revenues: €800–1,000/MWh
  - Charge/discharge cycles per day: ~0.2
- Day-Ahead Market (DAM) Arbitrage:
  - Revenues: ~€100/MWh
  - Charge/discharge cycles per day: ~1
- Intra-Day Market (IDM) Arbitrage:
  - Revenues: ~€200/MWh
  - Charge/discharge cycles per day: ~0.5–1
- Peak Production Curtailment Reduction:
  - Revenues: ~€100/MWh
  - Charge/discharge cycles per day: ~0.3–0.5
- Imbalance Compensation:
  - Revenues: ~€65/MWh
  - Charge/discharge cycles per day: ~1

For a combined scenario of using the storage facility, the following calculation will result, per MWh:

Combined scenario usage per MWh of storage			
	Cycles per day	Price [€/MWh]	Daily income [€]
Balancing market arbitrage	0,2	850	170
DAM arbitrage	0,7	100	70
IDM Arbitrage	0,75	166	124,5
Total			**364,5**

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Revenues produced by the storage facility

Year		1	2	3	4	5	6	7	8	9	10
10MWh 2.75 Cycles Charge/Discharge	Income	EUR 1.311.120,00	EUR 1.284.897,60	EUR 1.258.675,20	EUR 1.232.452,80	EUR 1.206.230,40	EUR 1.180.008,00	EUR 1.130.709,89	EUR 1.127.563,20	EUR 1.101.340,80	EUR 1.075.118,40
	Operational costs	EUR 91.778,40	EUR 89.942,83	EUR 88.107,26	EUR 86.271,70	EUR 84.436,13	EUR 82.600,56	EUR 79.149,69	EUR 78.929,42	EUR 77.093,86	EUR 75.258,29
	Profits	**EUR 1.219.341,60**	**EUR 1.194.954,77**	**EUR 1.170.567,94**	**EUR 1.146.181,10**	**EUR 1.121.794,27**	**EUR 1.097.407,44**	**EUR 1.051.560,20**	**EUR 1.048.633,78**	**EUR 1.024.246,94**	**EUR 999.860,11**

Cashflow

An	1	2	3	4	5	6	7	8	9	10
10 MWh 2.75 Cycles Charging/Discharging	-780.658,40 €	414.296,37 €	1.584.864,30 €	2.731.045,41 €	3.852.839,68 €	4.950.247,12 €	6.001.807,32 €	7.050.441,09 €	8.074.688,04 €	9.074.548,15 €

Economics PV + BESS

Project assumptions		
Project name	Criseni, Salaj	
PV Installed Capacity	4,831	MWp
Annual energy production AC/MWp	1.398	MWh/Mwp/year
Annual PV pannel degradation	0,5%	p.a.
Installed Storage Capacity	10	MWh
Charge-Discharge Battery cycles/days	4	hours
Annual BESS degradation	3%	a
Energy produced base price	70	€/MWh
Balancing Market energy price	900	€/MWh
DAM energy price	100	€/MWh
IDM energy price	200	€/MWh
Inflation rate	3%	p.a.
Project cost		
Storage equipment cost	150.000	€/MWh
Other cost related to storage (connection et	50.000	€/MWh
Cost PV park per MWp	595.000	€/MWp
Cost Storage Batteries (BESS)	2.000.000	€
Cost PV park	2.874.445	€
Customer-Side Works T_u	1.050	€
Grid Connection Installations T_r	101.239	€
Grid Reinforcement T_i specific	-	€
Grid Connection Route	360.000	€
TOTAL COST PV park + Storage	5.336.734	€
Operational cost		
Land lease	3.000	€/MWp/year
Insurance/ MW/year	3.000	€/MWp/year
Operation& Maintenance/ MW/year	3.000	€/MWp/year
Balancing & forecasting services	1.000	€/MWp/year
Accounting, bank, legal, Opcom fees etc	6.000	€/year
Utlities (energy and water)	2.000	€/MWp/year
Contingencies/year	5%	p.a.
Security services	1.000	€/MWp/year
Tax on land and construction	2.500	€/year
Financial assumptions		
Equity	1.601.020	€
Loan Amount	3.735.714	€
Leverage	70%	%
VAT credit line (21% of CAPEX hard cost)	1.120.714	€
Interest rate loan - Euribor 1 M	2,68	%
Interest Margin	4,00	%
Loan Maturity	10	years
Grace period	12	months
Monthly Instalments	108	months
Nominal cost of equity	15%	% p.a.
Cost of debt	6,4%	% p.a.
Tax rate	16%	% p.a.
WACC	8,3%	% p.a.
Financial ratios project		
IRR project	16%	%
IRR equity	41%	%
NPV project	1.484.677	€
Payback period	5	years

According to the approved Engineering Solution Study, the indicative cost of grid reinforcement works (TI) is estimated at approximately 131.408,08€. This value will be reassessed at the commissioning stage, and experience from similar projects shows that the final reinforcement costs tend to decrease significantly.