



PV Park + BESS

Project: Cuza Vodă, CT
Land Surface: 18.34 Ha
Installed PV Power: 13.2 MWp
BESS - Storage Capacity: 50 MWh



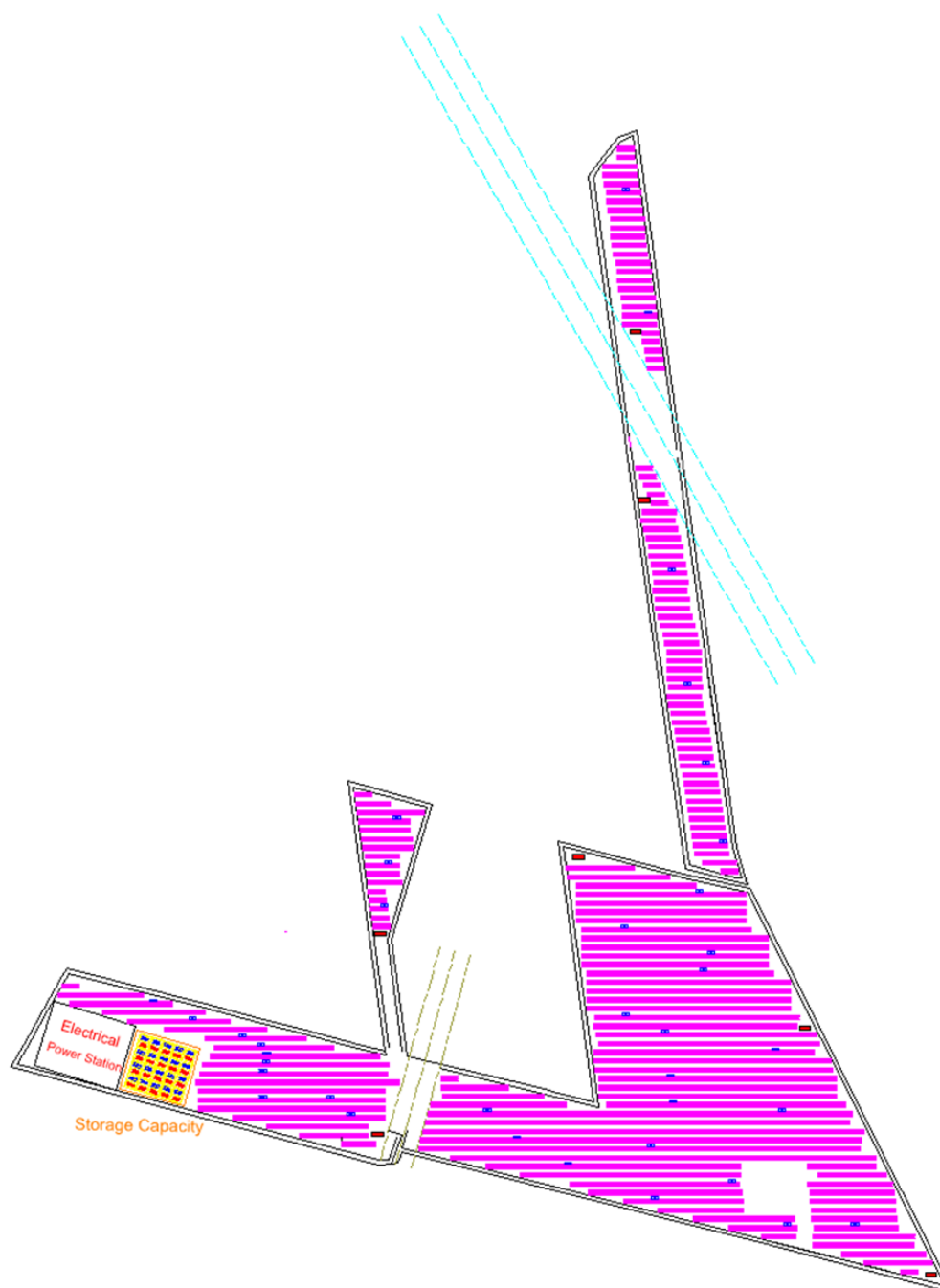


Curves Level





Photovoltaic Park & Storage Capacity Layout





PV Productions

Peak power: 13.2 MWp

Module surface: 54 023.8 m²

Total number of modules: 20 000

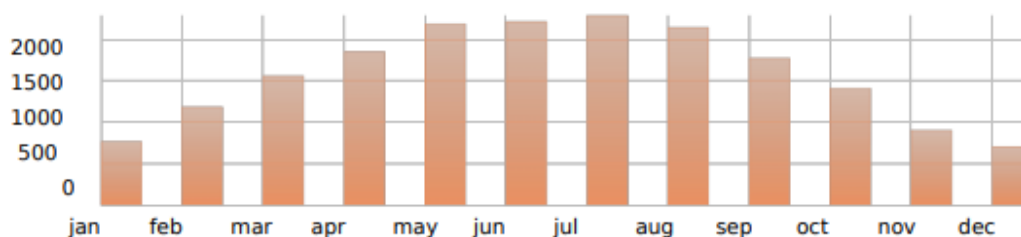
Total number of inverters: 125

Average values:

Annual production (DC) : 20 109 MWh

Annual production (AC) : 18 940 MWh

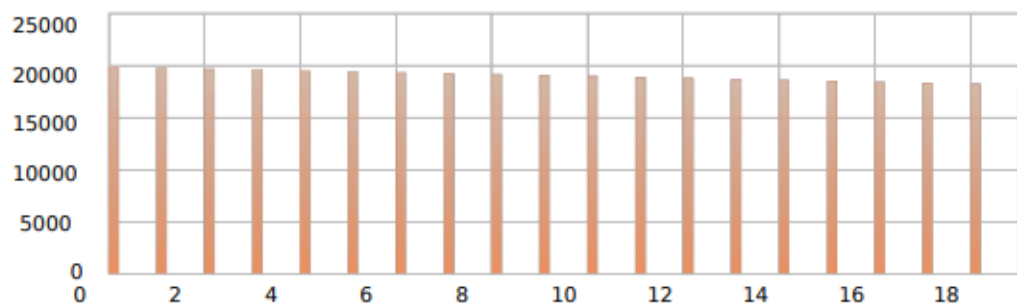
Monthly AC production (MWh/month):



Months	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sep	Oct	Nov	Dec
MWh	761	1 180	1 557	1 845	2 182	2 210	2 287	2 140	1 772	1 405	900	701



AC production year by year (MWh):



Years	1	2	3	4	5	6	7	8	9	10
MWh	19 823	19 728	19 634	19 539	19 445	19 352	19 258	19 164	19 071	18 978

Years	11	12	13	14	15	16	17	18	19	20
MWh	18 886	18 793	18 701	18 609	18 518	18 426	18 335	18 244	18 154	18 065

EMISSIONS AVOIDED: 7 575 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: 7.854 million EUR
Inverter renewal: 873 113 EUR
Maintenance: 1.00 %

Bank loan:

Amount: 7 854 000 EUR
Interest rate: 3.50 %

Discounting:

Inflation rate: 2.00 %
Equity rate: 3.00 %

Project type:

Total sale

Energy sales price produced:

0.0600 EUR/kWh

Price evolution:

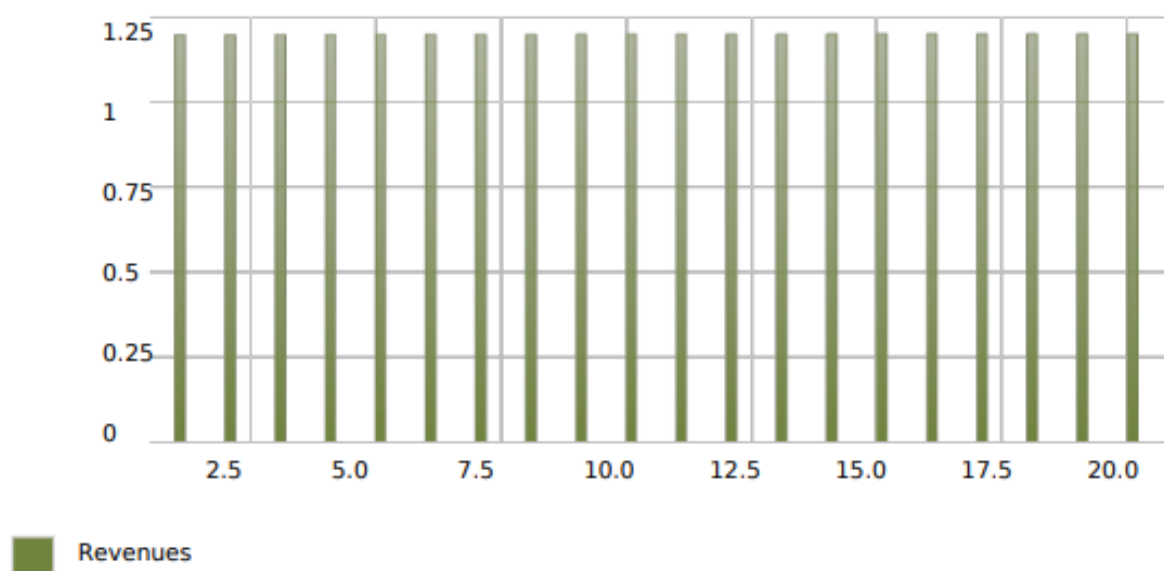
+ 0.5 %/year

Economic results:

Annual revenue: 1.197 million EUR/year
Cumulated revenues: 23.936 million EUR
Maintenance cost: 97 324 EUR/year

LCOE: 0.031 EUR/kWh
Net present value: 7.203 million EUR
Payback period: 8 year(s)
Discounted payback period: 9 year(s)
Internal rate of return: 12.40 %

Revenues year by year (million EUR):





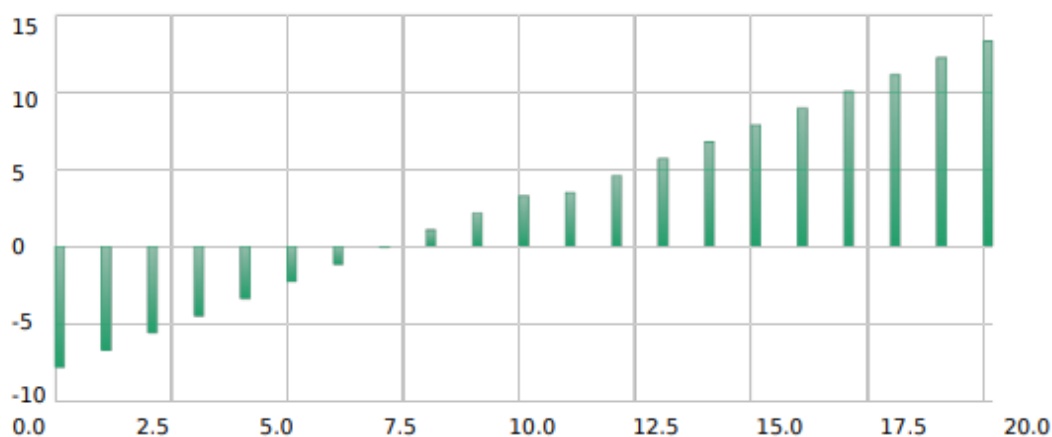
Estimated Results

Year	1	2	3	4	5	6	7	8	9	10
Production (kWh)	19 823 145	19 728 431	19 633 880	19 539 477	19 445 393	19 351 500	19 257 834	19 164 384	19 071 166	18 978 313
Selling										
Prices (EUR/kWh)	0.0603	0.0606	0.0609	0.0612	0.0615	0.0618	0.0621	0.0624	0.0628	0.0631
Sales revenue (EUR)	1 195 335.6	1 195 572.5	1 195 791.8	1 195 992.4	1 196 184.8	1 196 361.0	1 196 523.2	1 196 670.6	1 196 804.0	1 196 932.0
Total (EUR)										
Revenues	1 195 335.6	1 195 572.5	1 195 791.8	1 195 992.4	1 196 184.8	1 196 361.0	1 196 523.2	1 196 670.6	1 196 804.0	1 196 932.0
Maintenance	80 110.8	81 713.0	83 347.3	85 014.2	86 714.5	88 448.8	90 217.8	92 022.1	93 862.6	95 739.8
Inverter renewal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Results	1 115 224.8	1 113 859.5	1 112 444.5	1 110 978.2	1 109 470.3	1 107 912.2	1 106 305.4	1 104 648.4	1 102 941.5	1 101 192.2

Year	11	12	13	14	15	16	17	18	19	20
Production (kWh)	18 885 727	18 793 314	18 701 191	18 609 350	18 517 584	18 426 165	18 335 124	18 244 494	18 154 317	18 064 591
Selling										
Prices (EUR/kWh)	0.0634	0.0637	0.0640	0.0643	0.0647	0.0650	0.0653	0.0656	0.0660	0.0663
Sales revenue (EUR)	1 197 048.2	1 197 146.7	1 197 234.8	1 197 312.0	1 197 364.9	1 197 410.9	1 197 452.1	1 197 490.8	1 197 529.8	1 197 569.2
Total (EUR)										
Revenues	1 197 048.2	1 197 146.7	1 197 234.8	1 197 312.0	1 197 364.9	1 197 410.9	1 197 452.1	1 197 490.8	1 197 529.8	1 197 569.2
Maintenance	97 654.6	99 607.7	101 599.9	103 631.9	105 704.5	107 818.6	109 975.0	112 174.5	114 417.9	116 706.3
Inverter renewal	873 112.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Results	226 281.1	1 097 539.0	1 095 634.9	1 093 680.1	1 091 660.4	1 089 592.3	1 087 477.2	1 085 316.3	1 083 111.9	1 080 862.9



Cash flow illustration (million EUR):



Years	1	2	3	4	5	6	7	8	9	10
million EUR	-7	-6	-5	-3	-2	-1	0	1	2	3

Years	11	12	13	14	15	16	17	18	19	20
million EUR	3	5	6	7	8	9	10	11	12	13



Economics PV + BESS

Project assumptions		
Project name	Cuza Vodă, Constanța	
PV Installed Capacity	13,2	MWp
Annual energy production AC/MWp	1.398	MWh/MWp/year
Annual PV pannel degradation	0,5%	p.a.
Installed Storage Capacity	50	MWh
Charge-Discharge Battery cycles/days	4	hours
Annual BESS degradation	3%	a
Energy produced base price	60	€/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)	10.000.000	€
Cost PV park	7.854.000	€
Customer-Side Works Tu	1.102	€
Grid Connection Installations Tr	4.172.954	€
Grid Reinforcement Ti specific	1.638.102	€
Grid Connection Route	20.000	€
TOTAL COST PV park + Storage	23.686.157	€
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	7.105.847	€
Loan Amount	16.580.310	€
Leverage	70%	%
VAT credit line (21% of CAPEX hard cost)	4.974.093	€
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	14%	%
IRR equity	35%	%
NPV project	4.541.208	€
Payback period	5	years



****According to www.opcom.ro**



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important pentru prosumatori
Prețul mediu ponderat pe PZU pentru august 2025: 409,45 lei/MWh

EU IPO
EUROPEAN UNION PUBLIC OFFER

	1	2	3	4	5	6	7	8	9	10	11	12	
ROPEX_DAM_Base	720,39	477,70	467,55	463,60	465,30	465,18	517,20	880,27	1.399,53	855,00	593,01	467,39	445,06
ROPEX_DAM_Peak	786,42	13	14	15	16	17	18	19	20	21	22	23	24
ROPEX_DAM_Off_Peak	654,36	413,25	406,34	443,30	462,11	545,36	874,78	1.769,40	2.162,00	884,87	688,65	600,00	542,46

ROPEX_DAM_H Piața pentru ziua următoare - Ziua de livrare 29/9/2025 [lei/MWh]

	1	2	3	4	5	6	7	8	9	10	11	12	
ROPEX_DAM_Base	720,39	477,70	467,55	463,60	465,30	465,18	517,20	880,27	1.399,53	855,00	593,01	467,39	445,06
ROPEX_DAM_Peak	786,42	13	14	15	16	17	18	19	20	21	22	23	24
ROPEX_DAM_Off_Peak	654,36	413,25	406,34	443,30	462,11	545,36	874,78	1.769,40	2.162,00	884,87	688,65	600,00	542,46

ROPEX_FM_M Piața la termen 2024-2025 [lei/MWh]

	ian	feb	mar	apr	mai	iun	iul	aug	sep	oct	nov	dec	
ROPEX_FM_2024	498,90	570,29	566,27	471,77	473,65	459,20	465,66	486,90	497,59	497,97	510,17	511,08	512,15
ROPEX_FM_2025	525,77	526,85	526,01	519,46	505,10	504,57	507,20	538,41	533,26	531,11	536,01	539,70	539,40
ROPEX_FM_2026	568,76	571,01	571,01	571,01	567,55	567,49	567,55	568,20	568,13	568,19	568,16	568,15	568,20

ROPEX_GC_M Certificate Verzi (PCSCV) 2024-2025 [lei/CV]

	ian	feb	mar	apr	mai	iun	iul	aug	sep	oct	nov	dec
ROPEX_GC_2024	145,43	145,43	145,43	145,43	145,43	145,43	145,43	145,43	145,43	145,43	145,43	145,43
ROPEX_GC_2025	146,25	146,25	-	146,25	146,25	146,25	146,25	146,25	146,25	-	-	-

Opcom Anunțuri

- 08/05/2025
A fost publicat: Anunțul privind selecția membrilor Consiliului de administrație la Societatea Operatorul Pieței de Energie Electrică și de Gaze Naturale „OPCOM” S.A.
- 15/09/2025
Important: DECIZIA(UE) 2025/1771 A COMISIEI din 8 septembrie 2025 privind taxele datorate Agenției Uniunii Europene pentru Cooperarea Autorităților de Reglementare din Domeniul Energiei
- 12/09/2025
Vă informăm că a fost avizată de către ANRE Procedura privind constituirea și actualizarea garanțiilor financiare de către plătitorii de contribuție CFD și executarea garanțiilor financiare
- 01/09/2025
În conformitate cu prevederile Ordinului ANRE nr. 15/2022 OPCOM publică prețul

Raport de piață
Săptămânal / Lunar / Anual

Rapoarte de analiză a pieței

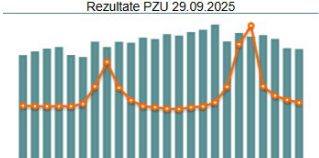
Progresul integrării pieței angro de energie electrică UE – Raport de monitorizare a pieței 2024

Documente REMIT - ACER

Documente REMIT - OPCOM

Cuplarea prin Preț a Regiunilor

Rezultate PZU 29.09.2025



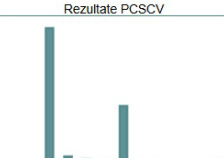
	Base	Peak	Off-Peak
ROPEX_DAM	720,39	786,42	654,36
Volum (MWh)	40.065,9	21.071,4	19.014,5

Rezultate cuplare: 29.09.2025

Day-Ahead (SDAC)
Intra-Day (SIDC CT/IDA)

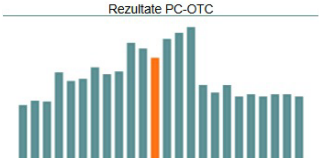


Rezultate PCSCV



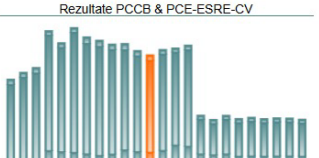
	3 sep.	17 sep.
Pret [lei/CV]	146,2532	-
Numar CV	50	0

Rezultate PC-OTC



	oct. 25	nov. 25	dec. 25
Pret [lei/MWh]	560,52	563,31	564,31
Volum (MWh)	521.105	546.640	571.000

Rezultate PCCB & PCE-ESRE-CV



	oct. 25	nov. 25	dec. 25
Pret [lei/MWh]	513,11	519,09	517,95
Volum (MWh)	1.283.680	1.294.603	1.321.456

Disclaimer

Sitemap

Links

CV, PCV, EM POWER S.R.L. (PC-OTC), ECOTERRA BIOGAS S.R.L. (PZU), SHIKUN AND BINUI ENERGY SATU MARE S.R.L. (PZU, P)

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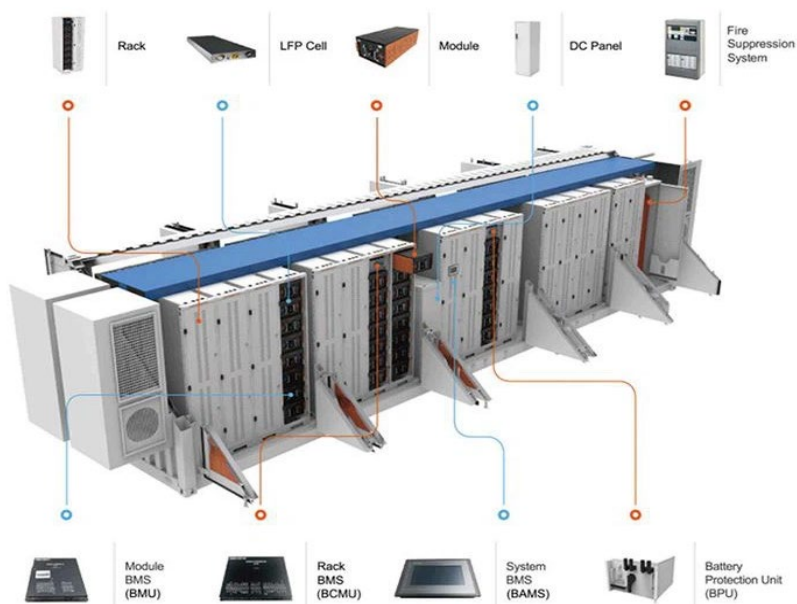
Știri

- 24/03/2025
Energynomics: Maria De Melo (BERD) consideră piața de energie regenerabilă din România drept un model pentru Europa
- 10/03/2022
Reacția Europei la "COMUNICAREA COMISIEI CĂTRE PARLAMENTUL EUROPEAN, CONSILIUL EUROPEAN, CONSILIUL COMITETUL EUROPEAN DE ENERGIE"



Technical description of the storage facility

- (Battery container)**



- Transformation unit - (MV SKID)**





Economic Data Storage Facility

1. Investment cost

	Storage Capacity 50 MWh	
Investment	EUR	10.000.000,00

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



Revenues produced by the storage facility

Year		1	2	3	4	5	6	7	8	9	10
50MWh 2.75 Cycles Charge/Discharge	Income	EUR 6.555.600,00	EUR 6.424.488,00	EUR 6.293.376,00	EUR 6.162.264,00	EUR 6.031.152,00	EUR 5.900.040,00	EUR 5.653.549,44	EUR 5.637.816,00	EUR 5.506.704,00	EUR 5.375.592,00
	Operational costs	EUR 458.892,00	EUR 449.714,16	EUR 440.536,32	EUR 431.358,48	EUR 422.180,64	EUR 413.002,80	EUR 395.748,46	EUR 394.647,12	EUR 385.469,28	EUR 376.291,44
	Profits	EUR 6.096.708,00	EUR 5.974.773,84	EUR 5.852.839,68	EUR 5.730.905,52	EUR 5.608.971,36	EUR 5.487.037,20	EUR 5.257.800,98	EUR 5.243.168,88	EUR 5.121.234,72	EUR 4.999.300,56

Cashflow

An	1	2	3	4	5	6	7	8	9	10
50 MWh 2.75 Cycles Charging/Discharging	-3.903.292,00 €	2.071.481,84 €	7.924.321,52 €	13.655.227,04 €	19.264.198,40 €	24.751.235,60 €	30.009.036,58 €	35.252.205,46 €	40.373.440,18 €	45.372.740,74 €

