General

Background:

- I’ve built a simulation application, that’s to help my users to set their business goals and run multiple simulations till the best results presents itself.
- The user is able to perform 2 major tasks:
    - Set up the simulation parameters and run it
    - View the results

- Backend is coded in python with django as the server framework.
- Frontend was implemented through react

MVP is up and running

- What is required:
- Need to refactor the backend code as it was coded by a non-profession sw developer
- Next, to migrate from development environment to production environment and maybe to perform some devops tasks
- Last but not least, need to further develop new functionalities (will be defined later)

Current code architecture:

Snapshots of the user interface

For now please find in the next slide the ui as a reference, later i’ll share it of course

Snapshots of the user interface

E.T. ENERGY TRADING

Emek_Sadot

Executive summary

Configuration

Customer name: customer test 423

Simulation name: simulation test 2

Battery size: 10 (MWh)

Battery power: 2 (MW)

Battery cost: 3,000,000 ($)

PV size: 1 (MW)

PV cost: 800,000 ($)

Grid connection: 1 (MW)

Results

Return on Investment: 5.0 (years)

Investment: 11,060,000 (NIS)

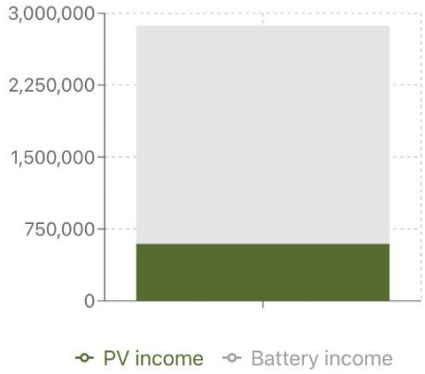
Yearly cost: -7,227,841 (NIS)

Yearly income: 9,459,347 (NIS)

Yearly p&l: 2,231,506 (NIS)

Simulation id: 2

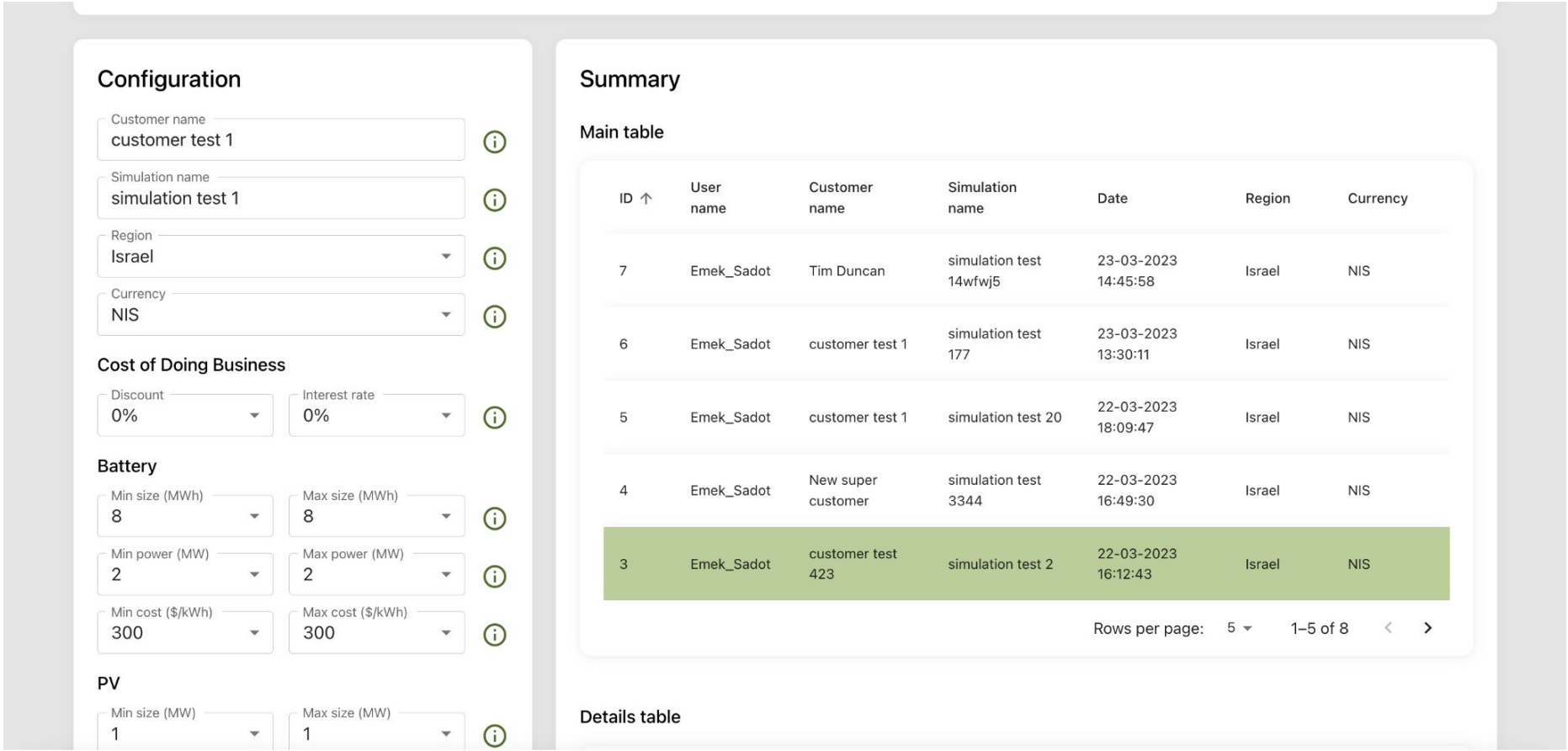
Yearly contribution (NIS)



NPV & IRR

	10 years	15 years	20 years	25 years
NPV	2,651,638	5,913,012	7,938,069	9,195,469
IRR	15.33%	18.62%	19.62%	19.96%

Snapshots of the user interface



Snapshots of the user interface

Min cost ($/MW) 800

Max cost ($/MW) 800

Grid

Grid (MW) 1

UPLOAD DATA FILE

RUN SIMULATION

Total number of simulations: 1

Total time to run all simulations: 1s

The best result

Customer

THE BEST RESULT

ID	Battery size (MWh)	Battery power (MW)	Battery cost ($)	PV size (MW)	PV cost ($)	Grid connection (MW)	ROI (years)
0	8	2	2,400,000	1	800,000	1	4.7
1	9	2	2,700,000	1	800,000	1	4.9
2	10	2	3,000,000	1	800,000	1	5
3	11	2	3,300,000	1	800,000	1	5.1
4	12	2	3,600,000	1	800,000	1	5.1

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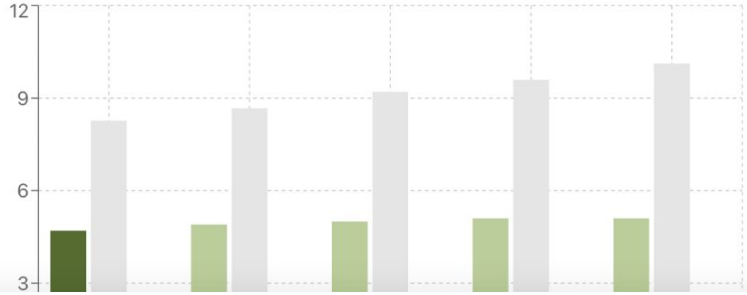
Key Financial Indicators

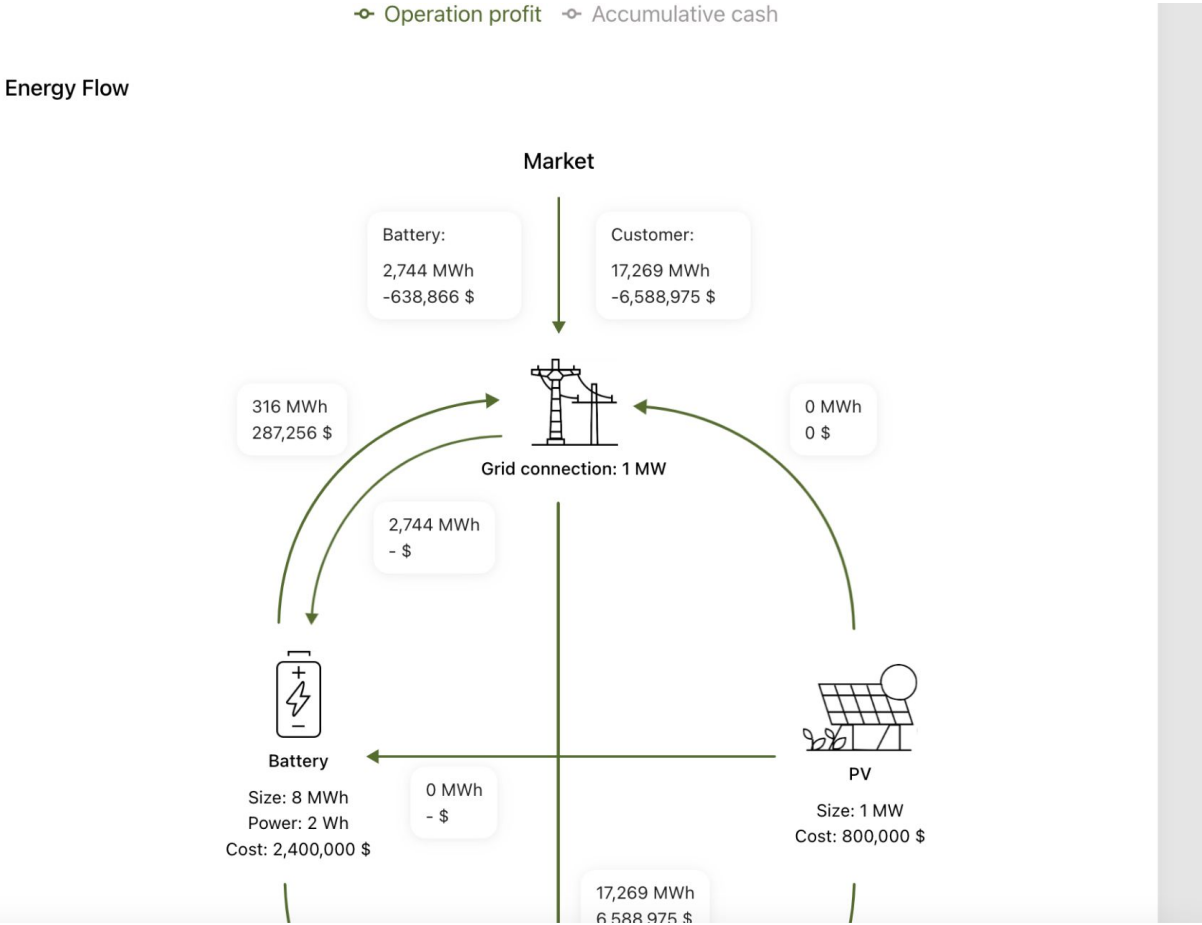


Snapshots of the user interface

Result

P&L - Cash Flow (NIS)

Snapshots of the user interface



Snapshots of the user interface

P&I Summary - Yearly

	2023	2024	2025	2026	2027	2028	2029
Investment ($)	-11,060,000						
Revenue ($)		9,459,347	9,459,347	9,459,347	9,459,347	9,459,347	9,459,347
Cost ($)		-7,227,841	-7,227,841	-7,227,841	-7,227,841	-7,227,841	-7,227,841
Operation profit ($)	-11,060,000	2,231,506	2,231,506	2,231,506	2,231,506	2,231,506	2,231,506
Accumulative cash ($)	-11,060,000	-8,828,494	-6,596,989	-4,365,483	-2,133,978	97,528	2,329,033

Snapshots of the user interface

P&L Details - Yearly

			Cost ($)	Income ($)
Investment ($)				
	Battery	10 (MWh)	-10,260,000	
	PV	1 (MW)	-800,000	
Total investment ($)			-11,060,000	

Operation		Action	From	To	Energy (MWh)	Cost ($)	Income ($)
	Energy	Buy	Supplier	Customer	17,269	-6,588,975	
	Energy	Buy	Supplier	Battery	2,744	-638,866	
	Energy	Sell	Supplier	Customer	17,269		6,588,975
	Energy	Sell	Supplier	Battery	2,744		
	Energy	Sell	Battery	Customer	2,424		1,986,578
	Energy	Sell	Battery	Supplier	316		287,256

Snapshots of the user interface

	Energy	Sell	PV	Customer	1,751		596,537
	Energy	Sell	PV	Battery	0		
	Energy	Sell	PV	Supplier	0		0
Total cash flow ($)						-7,227,841	9,459,347
Operation profit ($)							2,231,506
ROI (year)							5

DOWNLOAD DATA

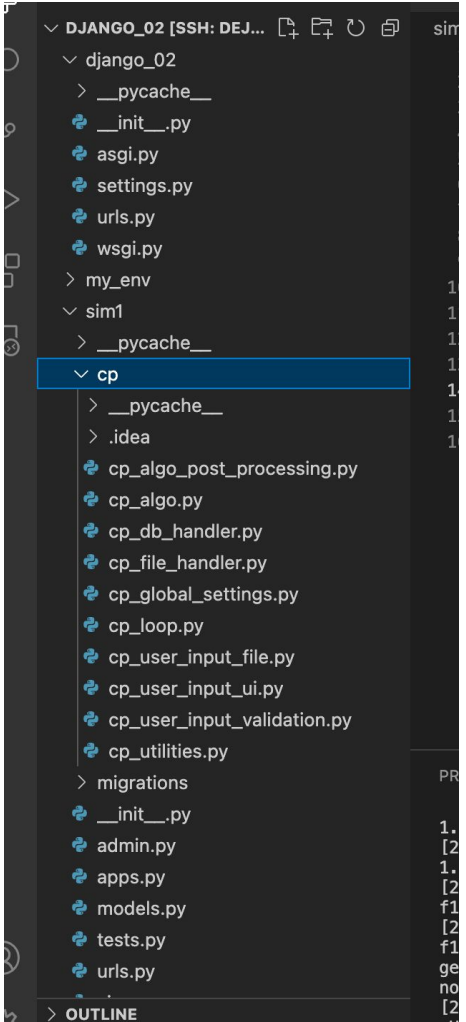
Refactoring

Go through the code and make it like a pro

Some specific points:

1. Current user authentication is propoitery (look for get_user_key() in view.py file), need to change to django built in authenticate
2. write_data function in cp_file_handler.py contains many calculation - need to move all calculation to cp_algo_post_processing.py file
3. there are case when calling or returning from a function include many variables - is there a better why?
4. get_all data(), simulation_main_table_selected_row() and simulation_details_table_selected_row() in view.py file are calling the same sub functionalities “get_p&l_data”, need to create a new function get_pl_data() and have these 3 function (above) calling get_pl_data
5. Remove prefix from the name of the downloaded file
6. Can we delete cp_global_setting() file?
7. Might be other tasks when we start to work together

- Change the structure to whatever make sense
- Change sim1 to simulation



From Development to Production

Perform all the needed tasks to move from django development environment to django production environment

New functionality