Applied Data Scientist – Market Analysis GEMS Romania : Use Case

Today you are a Market Analyst for GEMS Romania and have to make a presentation for an Engie audience who is not necessarily an expert in Data Science and in all the concepts discussed. Datasets are comprised of actuals publicly accessible on ENTSO-E Transparency Platform (entsoe.eu) and other exchange platforms, as well as forecasts coming from providers.

A : Data manipulation / resampling

1) Using the entsoe dataset provided, reconstruct the "Power Generation Stack" for Romania and Hungary from 2018 to today. The data must be aggregated weekly. What observations can you make?

2) Reconstruct the average Load (demand) in Romania for each day of the week (Monday to Sunday) and hour (0 to 23) on 2024 data only. What observations can you make? (if you wish you can switch the data to another time zone more representative for Romania)

B : Romanian DA Price Forecast

3) Compute a forecast for the Romanian Day Ahead price for year 2025 and back-test your model on the observed data. Please support your work with adequate data visualization and some comments about the performances/results of your model.

4) In reality, producing forecasts for this type of series is more complex. Through your knowledge of the sector or your research, share some ideas/parameters/features that could be used in addition to historical data to predict this price. Add those as limitations in your presentation.

C: Romania BESS business case

5) You are to present a case for operating a Battery Energy Storage System. The battery charges/discharges 1MW at 100% efficiency and has a 2MWh storage capacity. Using your freshly designed DA price model, build an algorithmic strategy for the battery, aiming to maximize the PnL generated over 2025 through the Day-Ahead market. Then using the real DA price, simulate and backtest your strategy to get the real PnL.

You must give us your notebook and a presentation (pdf, ppt...) with your findings and suitable data visualization of no more than 8 slides. Please send us your presentation and notebook at least 24 hours before the live presentation. The notebook needs to be playable. In case of any questions or remarks please contact eloi.kopp@engie.com