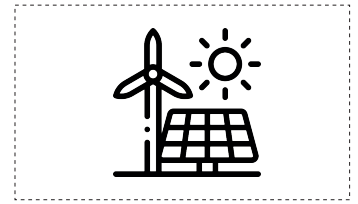


Success Stories

Analytical asset to consolidate, monitor, analyze, forecast, & optimize energy market business.



Client

Portuguese Energy Business

Industry

Utilities

Country

Portugal

AI & ML Services



TECHNOLOGIES LEVERAGED

Microsoft Azure:

- Data Lake
- Data Factory
- Databricks
- Power BI



HISTORY OF TRANSFORMATION

Recent events show a systemic shift in the energy market that has been accelerated, meaning that our client needs to ensure that their strategic positioning remains solid.

The project represents the push on the digitalization process and strengthens the relationship of the client with NTTDATA in advanced analytics applied to the energy market resulting in a global engagement with one of the biggest energy groups in Europe.



CLIENT CHALLENGE

Because of recent energy market changes, the client needed to enhance a set of analytical improvements focused on energy production and consumption, by selling and buying energy in the market in an optimized way. The customer required optimization, automation, and simplification of the several areas of action within the scope of Energy Trading operations.



SOLUTION OVERVIEW

The solution developed by NTTDATA includes the following components:

1. Developed a new product solution that has 3 core elements:
 - Data gathering and consolidation
 - Data Visualization
 - Advanced Analytics models
2. Gathered a set of relevant data (internal and external), linking them creating a holistic vision of the business.
3. Created a set of KPIs and dashboards to continually monitor the market, production, and energy needs.
4. Applied that data to a set of optimization models to identify optimum production, energy needs, and prices for the market.



BUSINESS VALUE & KPIS

The processing time for each energy buy offer and sale offer simulation scenario has been decreased by more than 10 times, enabling faster operations on the Iberian Peninsula's Day-Ahead Energy Market.

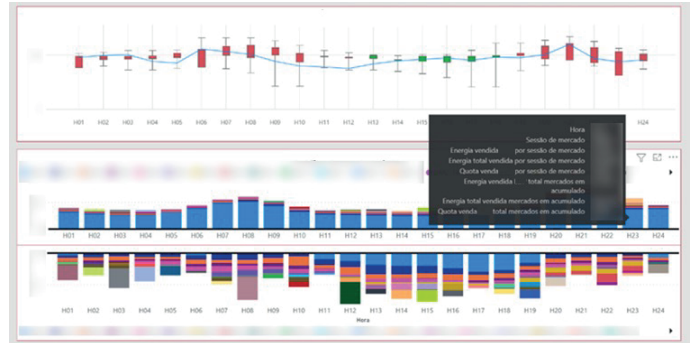
Centralization of all the operational data in reports resulted in:

- Obtaining key insights from the analysis of custom KPIs on operational performance.
- Support in the real-time definition of the market strategy.

The delivery of two analytical solutions provided data to decision-makers with a greater forecasting time window and detail, indicating a deeper and longer-term strategy.

The optimization of the pumping and turbine plans of the hydroelectric power plants, so that the client could make the best decisions regarding commercial margin.

- An optimization algorithm based on metaheuristics
- 2 Business Intelligence reports that centralize either the entire operational information as an operational cockpit, but also as a more high-level strategic vision.



Market Overview: Report that provides an high-level strategic vision



TECHNICAL SPECIFICATIONS

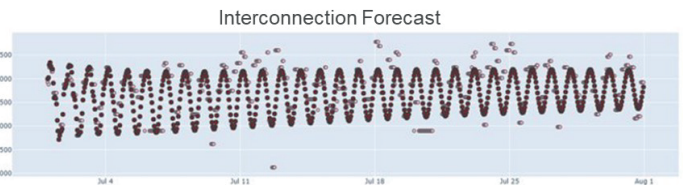
The solution delivered is framed within a set of 46 initiatives that constitute the client's roadmap up to 2025, which envisions the optimization, automation, and facilitation of the various areas of action within the scope of Energy Trading operations.

It includes 7 different analytical solutions that address problems related to:

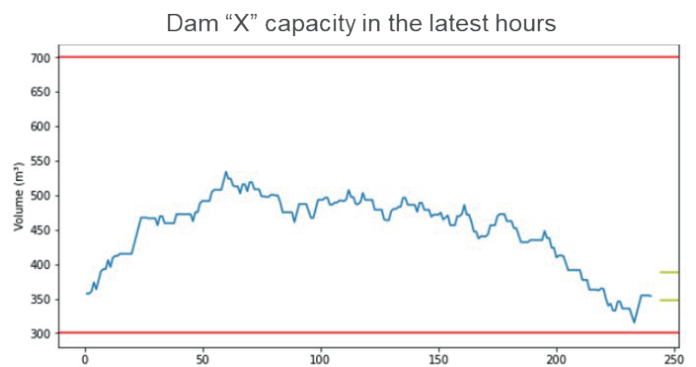
- The optimization of the analysis and generation of offers in the energy markets.
- The definition of the strategy for market operations.
- The optimization of energy production in light of the volatile prices observed in recent time windows.

Thus, the developed analytical solutions are composed of:

- Machine Learning Models that solve forecasting problems.
- An application that creates simulation scenarios more efficiently



Interconnection Forecast: a forecasting Machine Learning model



Calculation of Opportunity Cost: Optimization algorithm (metaheuristics)

"Energy sector is passing through great challenges. The way those companies monitor, manage, and predict their production capacity (especially in the renewables market) as well as the market consumption needs is a critical task for their business success. For NTTDATA, taking part of this huge data-centric change within this business as the provider is a massive challenge but also a great responsibility. This is a journey where data will play a critical role in the hyper optimization and automation of the energy markets processes and, in the end, in all our lives to ensure that every time we turn on the switch, the light turns on."

André Santos, Data & Analytics Senior Manager – NTT DATA

NTT DATA Corporation

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