



REPSOL deploys Materials Informatics platform to optimize R&D

Repsol is a global multi-energy company that is leading the energy transition with its ambition of achieving zero net emissions by 2050. Present throughout the energy value chain, the company employs 24,000 people worldwide and distributes its products in nearly 100 countries to around 24 million customers.



Repsol produces an average of 650,000 barrels of oil equivalent per day and boasts one of Europe's most efficient refining systems. The company is transforming its seven industrial complexes in Spain, Portugal, and Peru into multi-energy hubs through state-of-the-art projects that will reduce their carbon footprint and will enable it to be a benchmark in the production of renewable hydrogen and sustainable fuels by 2030.

Its customer-focused product and services portfolio is capable of meeting all consumer energy needs, whether at home or on the move. It leads the development of sustainable mobility solutions with increasingly efficient fuels, biofuels, Autogas, natural gas for vehicles, and electric vehicle charging solutions. Repsol is also a major player in the power and gas market in Spain, with 1.35 million customers and renewable generation assets with a total installed capacity of 1.1 GW.

To achieve zero net emissions by 2050, Repsol is deploying an integrated model of decarbonization technologies based on enhanced efficiency, increased renewable power generation capacity, production of low-carbon fuels, development of new customer solutions, the circular economy, and by driving breakthrough projects to reduce the industry's carbon footprint. In this context, The Repsol Technology Lab is an example of one of the most cutting-edge private R&D models in Spain. It's based on open innovation and a network of partnerships encompassing technology centers, businesses, and universities worldwide, whose objective is to seek sustainable solutions to achieve a more efficient and competitive lower-carbon business.

About Uncountable

Uncountable's platform provides scientists and formulators a tool that intuitively connects all of the different factors under consideration during product development: from raw materials and regulatory requirements or costing, to the formulations and processing, and finally all product testing requirements. Product developers can quickly search, analyze, visualize and model their development data without writing any code or complicated scripts.



Challenge

To develop more sustainable lubricants and fuels that meet Repsol's customers' requirements, scientists rely on massive libraries of raw ingredients (>1000) that need to be combined with new and not yet well studied low-carbon components obtained from different types of waste to minimize the carbon footprint of our new formulations.

To explore more efficiently the wide spectrum of possible ingredients combinations and solutions (>1x10⁶), Repsol Technology Lab chose Uncountable's platform to face this challenge.

Prior to Uncountable's platform, Repsol Technology Lab was using different software solutions to handle the more than 1200 formulations and results created per year, including Excel, custom-made outdated software and commercial solutions which remain unable to communicate amongst each other.

30-40% SAVINGS

CONSISTENT SAVINGS OF 30-40% OF FORMULATIONS
PER PROJECT OVER THE PREVIOUS PROTOCOL



During the initial proof of concept, the Advanced Mathematics team utilized the Uncountable platform in several back test scenarios where previous and current formulation optimization projects were evaluated. **After the back tests produced consistent savings of 30-40% of formulations per project over the previous protocol, the team decided to fully migrate their data and activities to the highly customizable Uncountable platform.**

“The array of tools that the platform offers has allowed us to generate agile workflows, facilitating communication between scientists and lab technicians, among different laboratories in Repsol Technology Lab and our Industrial plants, improving our efficiency along the whole product development chain. We have been able to significantly reduce overhead activities thanks to Uncountable’s replacement of spreadsheets, in-house request tools and potential of becoming the central hub for all R&D data.

In addition, the centralized data management system that Uncountable provides, has considerably decreased the experimental workload needed in our new products development cycle -using Uncountable’s native predictive tools- allowing the team to unleash the value of their historical data and optimize “in silico” formulations composition by suggesting to implement, in our labs, only those which have better chances to fulfill the product specifications required.”

Marco Bernabei / Senior Scientist & Member of the Advanced Mathematics group at the Repsol Technology Lab

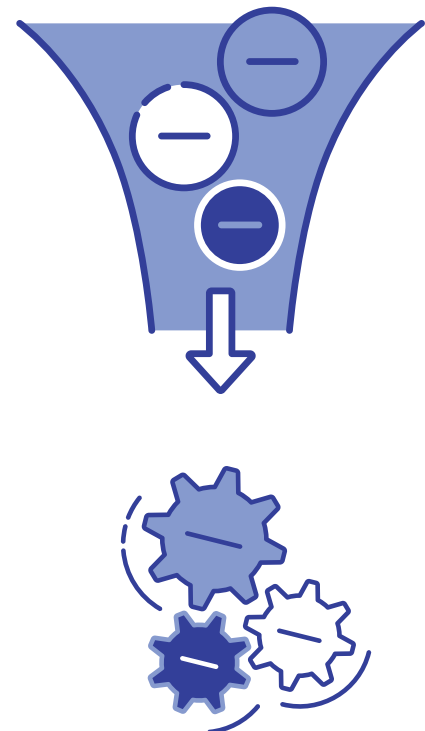
Solution

Uncountable’s platform is an ideal tool for collecting, cleaning and consolidating data from different sources and formats in an agile way. It is flexible enough for users to customize it when needed and has a user-friendly interface, which helps reduce the learning curve and introduce digital skills to your research team, such as a new culture of data management and machine learning.

Outcome

Using Uncountable’s solution, Repsol has been able to:

- Create, clean and consolidate a formulation data base with more than 10k data points from the last 20 years.
- Combine experimental data with other repositories of technical information creating a new custom database unique on its kind.
- Implement machine learning tools and sequential learning routines in our daily workflow.
- Improve communication among researchers and technicians among different labs and sites.
- Reduce new products development costs and accelerate the R&D cycle.



Quotes

“HA SIDO UN SALTO CUALITATIVO Y CUANTITATIVO EN NUESTRA FORMA DE TRABAJAR”.

Tomás Pérez / Specialized support manager in the lubricants BU
Santiago Maroto / Senior officer in lubricants BU

“IT’S BEEN A QUALITATIVE AND QUANTITATIVE LEAP IN THE WAY WE WORK”.

Tomás Pérez / Specialized support manager in the lubricants BU
Santiago Maroto / Senior officer in lubricants BU

“THIS TOOL RESPONDS TO OUR NEEDS FOR DIGITALIZATION AND PROCESS AUTOMATIZATION”.

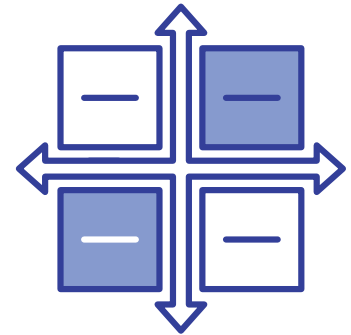
Ismael Vela / Senior officer in lubricants BU

“ESTA HERRAMIENTA RESPONDE A NUESTRAS NECESIDADES DE DIGITALIZACIÓN Y AUTOMATIZACIÓN DE LOS PROCESOS”.

Ismael Vela / Senior officer in lubricants BU

Current and future endeavors with the help of the Uncountable platform:

- Improve predictive models to further reduce experimental workload
- Integration with other tools
- Expansion to other areas in Repsol
- Strategic partnership to ensure a long-term relationship



For more details contact us at: info@uncountable.com