NOBLEAI

USE CASE

Optimizing Catalyst Design for Oil and Gas Applications Using Science-Based AI

Streamline oil and gas operations by maximizing catalyst performance & sustainability through advanced AI applications

Target

Explore the potential of Science-Based AI to improve the development and optimization of catalyst formulations.

Challenge

Traditional catalyst development for complex refinery processes (i.e. FCC, hydro-cracking, hydro-treating, and reforming):

- Often time-consuming and expensive.
- Relies heavily on empirical testing, which can be inefficient and lack comprehensiveness.
- Leads to suboptimal catalyst performance, impacting product yield, energy consumption, and environmental footprint.

Solution

NobleAI SBAI models and Reactor platform offer a revolutionary approach to catalyst design. We can analyze historical data on catalyst performance, feedstock composition, and operational parameters to identify intricate patterns and relationships that might be overlooked by traditional methods.

SBAI can predict optimal catalyst properties, such as, material composition, pore structure, and active site distribution, specific to each refining process and desired outcome.

The Reactor platform can rapidly iterate through design options and pinpoint the most promising candidates for further testing. This streamlined process dramatically reduces development time and is more sustainable.