



Case Study

Client

Independent Energy Producer

Project Number

24010

Scaling Advanced Sulfur Removal Technology for Clean Energy Solutions

Client Overview

A leading company in the clean energy sector developed innovative sulfur removal technology to improve the efficiency and sustainability of hydrogen production and other energy processes. The challenge was to evaluate this breakthrough technology, benchmark it against existing sulfur removal solutions, and identify market opportunities for commercialization.

Challenge

Removing hydrogen sulfide (H₂S) from gas streams is critical in natural gas, refinery, and biogas industries. This company sought to:

- ❖ Validate the performance of its sulfur removal technology against industry-standard solutions.
- ❖ Develop a comprehensive testing and validation protocol to demonstrate the technology's effectiveness in real-world applications.



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- ❖ Identify key markets that require high-purity gas and stringent sulfur removal processes.

Our Approach

LEC Partners supported the client by conducting a detailed technology assessment and market analysis and assisting with the development of a rigorous testing plan.

- ❖ **Technology Assessment:** LEC Partners compared sulfur removal technology to established methods like amine absorption and adsorption systems. The new technology demonstrated superior H₂S removal to sub-1 ppm levels and offered the additional advantage of renewability, which positions it as a strong candidate for industries requiring high-purity gas streams.
- ❖ **Market Identification:** LEC Partners identified key markets where this technology could offer significant value, particularly in high-demand sectors such as:
 - Fuel Cells
 - Catalyst Guard Beds
 - Semiconductor Manufacturing



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- ❖ **Protocol Development:** LEC Partners worked with the client to design a testing protocol to validate the technology's performance across various conditions, including different gas compositions and operational environments. The team also identified testing partners capable of scaling up the validation process.

Results

Our work with the client highlighted the value of innovation in sulfur removal technologies for the clean energy sector. By leveraging advanced materials and optimizing processes, the client is well-positioned to meet the growing demand for high-efficiency, sustainable energy solutions.

Key Takeaways:

- ❖ Advanced sulfur removal technologies, when properly optimized, offer significant improvements in gas processing and environmental outcomes.
- ❖ Building a strong testing and validation framework is essential for demonstrating the technology's effectiveness in real-world applications.
- ❖ Strategic market analysis helped identify high-growth sectors that can benefit from these innovations.