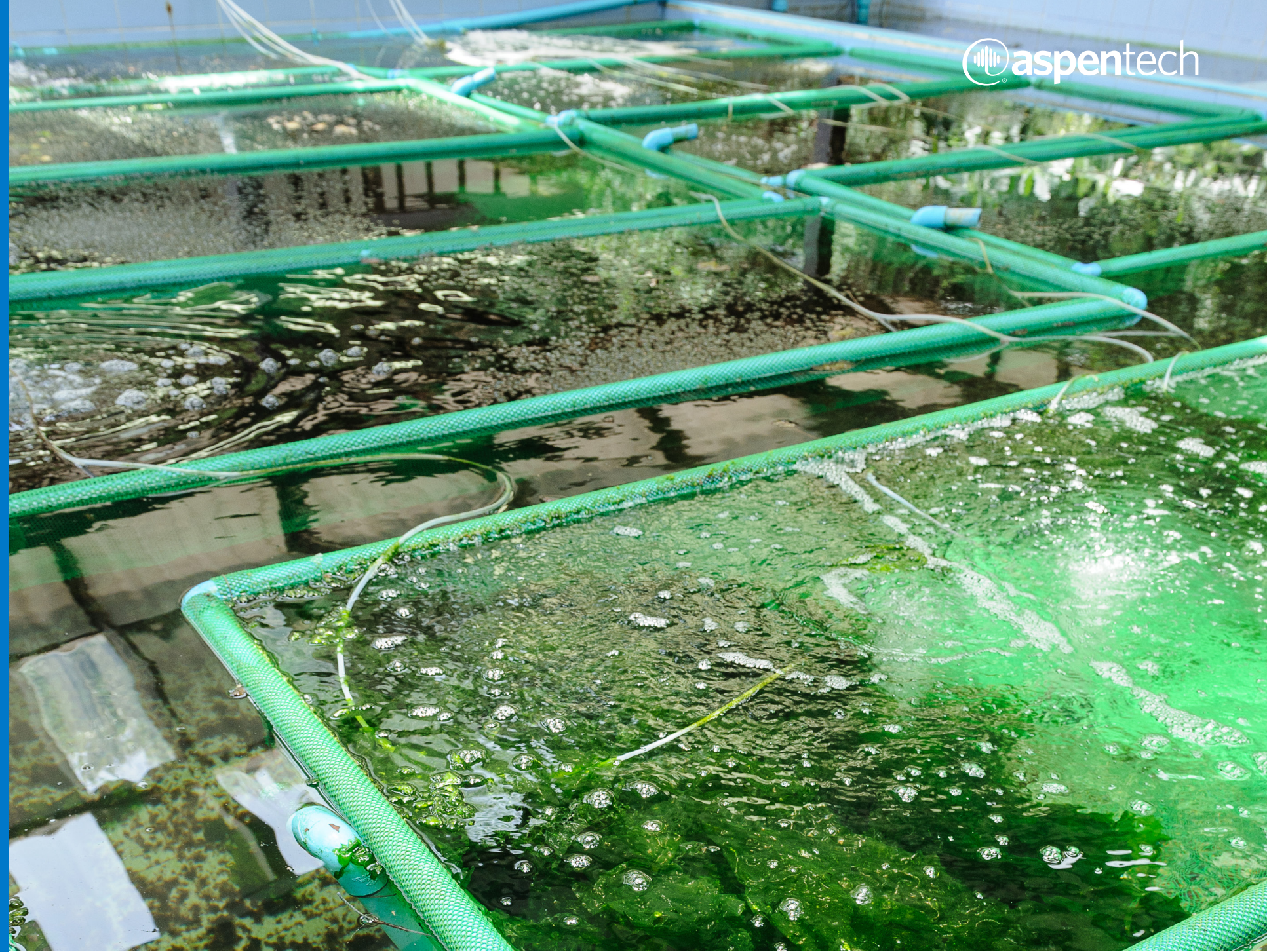


CASE STUDY



Bioprocess Innovator Relies on Process Modeling to Optimize Algae-to-Biofuel Conversion

"Aspen Plus® is a versatile and powerful tool for constructing models of our process concepts, and also provides key insights into how these systems will function on a commercial scale. The integration with economic evaluation models is critical in assessing the commercial viability of scaled-up systems."

—Dr. Eric Dunlop, Principal, Pan Pacific Technologies



Pan Pacific Technologies is a specialized engineering consultancy based in Adelaide, Australia that focuses on new sustainable energy solutions. They have developed proprietary concepts and intellectual property for the commercialization of capturing and converting carbon to biofuels and other products using algae. The company recently joined the National Alliance for Advanced Biofuels and Bioproducts (NAABB), a consortium which is investigating innovations in processes using algae for the production of biofuels under a major U.S. Department of Energy research grant.

Pan Pacific Technologies was seeking a rigorous approach to validate the technical and economic feasibility of its proprietary algal conversion concepts. Through innovative use of Aspen Plus and Aspen Process Economic Analyzer, they developed successful technical and economic models with applications in both academia and industry.

Sustainable energy consultancy Pan Pacific Technologies uses groundbreaking approach to model biological processes with Aspen Plus.

CUSTOMER PROFILE - Pan Pacific Technologies - Biofuels

CHALLENGE

Evaluate technical and commercial feasibility of carbon-to-biomass conversion

SOLUTION

aspenONE Engineering Desktop for Small to Medium-Sized Businesses

BENEFITS

- Simulate a complex biological system that was previously difficult to model
- Improve understanding of process constraints and scale-up
- Complete techno-economic analysis from Aspen Plus outputs
- Access a large suite of industry-leading products from one affordable software package

CASE STUDY

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Pan Pacific's use of aspenONE® software for modeling and assessing algal-based biofuel processes within the NAABB provides a basis for evaluating current and future technological innovations in the biofuels industry.

RIGOROUSLY MODELING AND EVALUATING ALGAL BIOFUELS SYSTEMS

For Pan Pacific Technologies—a small company with powerful thought leadership in the area of algae to biofuels conversion—a key challenge was to find a modeling environment that would provide an effective way to capture and communicate their proprietary ideas to researchers worldwide.

Pan Pacific Technologies put their algae process knowledge, which previously had been modeled in Microsoft Excel®, into an Aspen Plus model. They experienced a breakthrough by predicting key limiting factors, allowing them to create a placeholder for otherwise unavailable algae property data.

The system and its economics have been independently reviewed by two international engineering companies, which have confirmed the validity of the approach and solution specifically in terms of concept design, development, and economics of commercial-scale biofuels from algae.

Through innovative use of aspenONE solutions, Pan Pacific Technologies was able to successfully produce an Aspen Plus model with results matching laboratory and industry data. With this baseline case, they further used the model, the energy balance, and the link to AspenTech's estimating system to understand scale-up constraints and the key economics of the process.

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VALUE TO PAN PACIFIC TECHNOLOGIES AND THE ALGAL BIOFUELS COMMUNITY

For Pan Pacific Technologies, the smallest company in NAABB, access and experience with aspenONE solutions allowed it to compete in a way that would not otherwise have been possible. The ability to model a brand new process concept in a widely accepted modeling environment enabled Pan Pacific to effectively demonstrate the feasibility of their algae-to-biofuel process to potential government and industry partners.

NEXT STEPS

With the Aspen Plus and Aspen Economic Evaluation model in place, Pan Pacific Technologies plans to evaluate the relative technical performance, strengths and weaknesses, and overall economics of different proprietary approaches under development in organizations such as NAABB. According to Dr. Kimi Coaldrake, CEO of Pan Pacific Technologies, because of the firm's limited resources, "the aspenONE Engineering Desktop provides our team with the only affordable approach for gaining access to the advanced tools we need to prove and present our concepts in a credible way to potential commercial partners."

AspenTech is a leading supplier of software that optimizes process manufacturing—for energy, chemicals, engineering and construction, and other industries that manufacture and produce products from a chemical process. With integrated aspenONE® solutions, process manufacturers can implement best practices for optimizing their engineering, manufacturing, and supply chain operations. As a result, AspenTech customers are better able to increase capacity, improve margins, reduce costs, and become more energy efficient. To see how the world's leading process manufacturers rely on AspenTech to achieve their operational excellence goals, visit www.aspentech.com.

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