



DESTINATION STARTUP

OptiEnz Sensors

One-Sentence Summary of What You Do: OptiEnz Sensors has developed an instrumentation system, incorporating biosensors, for the continuous monitoring of organic chemical concentrations in water and aqueous solutions, with applications in the biopharma, biofuels, biotech, and beverage industries.

Affiliated Institution: Colorado State University

Have you formed a company yet? Yes

Funding/Financing: Grant Funding, Direct/Indirect University Support, Angel Funding, Venture Capital

Please describe your company and the problem you are trying to solve: OptiEnz Sensors, LLC, founded in 2010 as a Colorado State University spin-off, is an early-stage biotech company located in the Innosphere in Fort Collins, Colorado. OptiEnz Sensors has developed an analytical instrumentation system for the continuous monitoring of organic chemical concentrations in water and aqueous solutions. The company is in production and currently in product trials and sales with customers in the bioprocess monitoring business.

Continuous sensors exist for monitoring pressure, temperature, pH, and dissolved oxygen in water-based industrial processes. However, no such in-place, continuous monitoring devices exist for chemicals in water. Today, customers take samples, send them to a laboratory for analysis and wait hours, days, or up to a week for results. The average customer facility spends tens of thousands of dollars per year for external laboratory testing. They want more data but current methods are too costly. The testing, typically using a gas chromatograph, is complex, time-consuming, and requires sample pre-treatment, expensive equipment, and skilled labor. Without continuous data, process operators can't make real-time process decisions and automation is limited.

OptiEnz provides significant value by simultaneously reducing the cost of testing and providing continuous real-time data. This real-time data enables improved efficiency of industrial control processes, reducing the amount of energy and materials used, improving yields, reducing down time of equipment, and reducing the chances of process and regulatory violations. OptiEnz provides continuous, real-time measurements that lower costs of daily sampling and provide opportunities for automated process control and optimization.

What is/was your go-to-market strategy? Initial market entry is through demonstrations, subsequent paid product trials, and sales. These opportunities are identified through business development efforts, specifically contacts made via extensive networking, industry associations,



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and trade conferences. These trials and sales are currently supported by the R&D staff. A full-time application engineer and sales director will be hired to focus on managing and supporting the customer funnel.

The company has three different sales models – a product sale, a product lease-to-own, and possibly a service model. The product lease offers an advantage to customers compared with a product sale in that it does not require a capital equipment expenditure and OptiEnz would be responsible for the equipment maintenance. A service model is similar to a lease model but would add in the installation of equipment and the sensor caps would be automatically supplied as part of the monthly service fee. The service model offers the customer an advantage in that the customer reduces the cost of testing and does not have to incur the cost or hassle of ordering sensor caps on a monthly basis.

The company will sell to customers with direct factory sales, distribution channel partners, and partnerships with other complementary instrumentation companies, such as Ocean Optics (the company's manufacturing partner for the optical transceivers).

How will/do you generate revenue? OptiEnz generates revenue via sponsored customer projects and product sales to customers in beverage, biopharma, biofuels, and industrial biotech. Customer projects, totaling \$850,000 to date, primarily include developing sensors for new organic chemicals. Customers have included Coca-Cola, Shell, Baker Hughes, Novozymes, Biogen, and Pebble Labs.

Regarding product sales, the product consists of an optical measurement system (a small opto-electronic hardware device) connected to a sensor probe via a fiber optic cable. The probe includes a sensor cap that has sensor tips unique to the organic chemicals to be measured. The sensor caps have a lifetime of one month and then need to be replaced. A PC-based software application provides the user interface, as well as the configuration and calibration algorithms.

The company is focused on the R&D and manufacturing of the sensor caps, and has partners for the other system components. The optical transceivers are an OEM component from Ocean Optics. This partner customizes the optical transceiver measurement algorithms and the associated PC application software for OptiEnz. The optical transceiver, probe, and software are a one-time purchase, and cost \$10,950 for a single analyte system, and \$15,950 for a dual analyte system. There is a recurring revenue stream from the sensor caps, which need to be replaced weekly or monthly, and cost \$300 - \$500 per month. A unique sensor tip, on a sensor cap, is required for each analyte to be measured. Initially, approximately 40% of total sales will come from the sensor caps.

How will this showcase benefit your company or technology? OptiEnz is currently raising a \$3M series A to be used for ramping production and sales, as well as completing development of additional new sensors including fructose, sucrose, maltose, xylose, and glycerol for the bioprocessing market.



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The company will hire additional manufacturing engineers to ramp up production of the sensor tips. The funds will also be used to hire an application engineer and a sales director to develop and support the sales funnel for new customers. Additional R&D staffing is required for product development to expand the product portfolio to address new markets in biopharma, biotech, biofuels, and beverages.

In addition to funding, the company is seeking strategic corporate partnerships, primarily in the biopharma and biotech industries, in order to accelerate the adoption of this new technology.

Who are the members of your team and why is this the right team to get the job done?

- Steve Witt, the president and CEO, has extensive experience in test and measurement instrumentation, within large and small companies. He holds a BSEE from Michigan Technological University. He was previously the vice president and general manager for Agilent Technologies' Network Systems Test Division.
- Dr. Ken Reardon is the founder and CTO. He holds a B.S. degree in chemical engineering from the University of Pennsylvania, and M.S. and Ph.D. degrees in biochemical engineering from the California Institute of Technology. He is a Professor of Chemical and Biological Engineering at Colorado State University. His funded research is focused on environmental biotechnology, quantitative toxicology, and the development and design of biosensors and bioreactor strategies.
- Dr. Brian Heinze is the R&D Director. He holds a Ph.D. in biosystems engineering from the University of Arizona and has been with OptiEnz since its inception. He has 15 years of experience in the field of biosensors