



SYLVATEX

VIRGINIA KLAUSMEIER IS ON A MISSION TO USE NANOCHEMISTRY TO DISRUPT THE ENERGY INDUSTRY

AT A GLANCE



Founded: 2011



Location: Headquarters San Francisco, CA; Labs Berkeley, CA



Team Members: 10



Structure: For-profit

For many years, Dr. William Klausmeier used chemistry to evaluate and innovate less-harmful energy sources, making significant findings along the way. Tragically, in 2008, his untimely death cut his career short before many of his most important discoveries could be commercialized. His daughter Virginia, also a chemist, had a chemist who had assisted him with much of his research, was plagued by questions about her late father's work: what if he had discovered a game-changing

technology? What if this technology could make a significant dent in climate emissions? And what if the only reason this technology never made an impact was because no one attempted to commercialize it? With these questions at heart, at age 28 Virginia quit her corporate career to bring her and her father's new technology to the masses, and in 2011, Sylvatex was created.

At its core, Sylvatex is a green nanochemistry company. It uses the very simple technology of nanobubbles — very, very small bubbles — to change the interface of water and oil to solve big energy industry problems. The primary application of this technology to date has been as a fuel additive for petroleum diesel, biodiesel, and renewable diesel. When added to these fuels, the additive reduces emissions without affecting vehicle performance and reduces the carbon content of fuels. Carbon-intensive industries, such as trucking, purchase these fuel additives for their fleets to comply with EPA mandates. Using the fuel additives also creates a carbon offset that can be sold on the carbon market created under California's Cap-and-Trade Program. In 2017, the company will produce the least carbon-intensive diesel fuel produced in the State of California, and it already has multiple other applications for this technology in the works. We spoke with Klausmeier about the current state of the biofuels market and what prompted her to take the leap to continue her father's legacy.



Could you tell us about the genesis of the concept, and also the business?

Virginia Klausmeier: My late father spent about 10 years tinkering in the lab to explore different ways that he could blend renewable components into diesel fuel. He was trying to change the physical interface of the oil and water components so that he could put more water-based components into diesel fuel to reduce emissions. He did that for a number of years, and at a certain point in my career, I wanted to help him get to the next level with what he was doing. Luckily, I had been part of a leadership program where I met a recently retired state senator in California, and he wanted to help me to help my father. Through that, we were able to bring together a lot of the moving pieces, from our IP [intellectual property] lawyer to an emissions expert. We were able to get some early financing to work on the actual concept in the engine and test out different prototypes. We saw that we could, in fact, blend renewable components that are low-cost and readily available into a diesel fuel at a pretty high proportion — anywhere from 5 to 40 percent — and reduce emissions pretty substantially.

Unfortunately, the pivotal piece for me was that my father passed away from cancer pretty abruptly. The folks who had been working with us who wanted to keep this idea alive and had been self-incubating it with us said, “If you lead, we will follow you; we will support you.”



Virginia Klausmeier

VK: One of the things that I asked myself was, “If I was on my deathbed, knowing that my father had been so phenomenal, and literally a genius in the chemistry and bioeconomy worlds, would I always wonder if this technology that we created could be a game changer in the world for reducing carbon emissions and I just didn’t

“I realized that I needed to align my everyday movement, everything that I put my energy into, toward creating more impact.”

So after a couple of years of trying to bring together all the pieces, I finally jumped ship and shifted gears in my personal career, quit my job, and went full-time in 2011.

Our first application started from the roots of the company, which was creating cleaner-burning diesel fuels. Now we’ve evolved to having the lowest carbon intense diesel fuel product that will be produced in California, which will be on the California market likely at the beginning of 2017.

Could you talk a little bit about that moment in 2011 when you decided to jump ship and do this full-time? It is one thing to think about things; it is another to take action. What did that decision look like for you and why did you make it?

try to commercialize it?” That was something that kind of haunted me. It made me realize, after some time, that I had to at least try and give it my best go because it literally could change the amount of carbon that we, the human population, release into the atmosphere. That was a little heavy, but I think that definitely weighed on me when making the decision.

I also just realized that I had a lot more to offer than I was doing in a more formal fashion at a big company. I realized that I was served more by having a human impact and a positive impact. I had found myself in my position [at the large company] doing a lot of humanitarian work even though it was not part of my formal role, but I found myself working so that I could do that humanitarian work. I realized that I needed to align my



everyday movement, everything that I put my energy into, toward creating more impact.

So I quit my job May 31st, 2011, and then, that following Monday, June 2nd, I pitched at a Silicon Valley pitch event and won the whole thing [laughter]. That was kind of a big wake-up call because I was so green going into that, but it at least made me feel that I had made the right choice. I knew that I had a lot of opportunity to learn and grow and do something impactful.

With this technology, who is your primary customer and what is the economic incentive for people to use your technology?

VK: One of the applications that we're most developed in is fuel, but we do have other applications that are in the earlier stages of development. For example, processing for lithium-ion batteries — cleaning up that production process with integration of technology. For the purposes of simplifying though, I am going to focus on the fuel applications, since we are the furthest along with that in terms of getting

a product into a larger-scale market. The main incentive for end-users is reducing carbon intensity to maximize the value of the carbon credits.

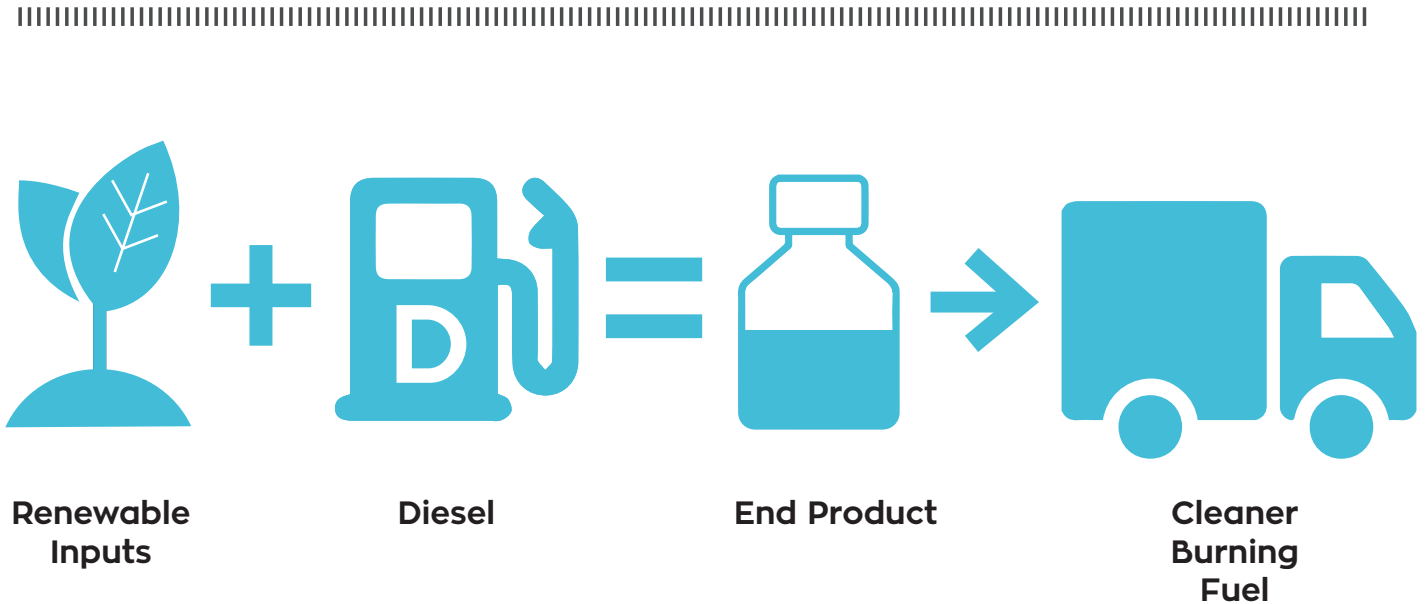
In terms of commercializing this [technology], we are partnering with existing bio-refineries and will produce our products at their facilities. So that means that the cost of production is really low because we are already using the current infrastructure and distribution system. And then, because we are using such low-carbon inputs, we are going to be able to get another revenue stream — not only selling our products into the fuels market for the price of wholesale diesel, but we'll also capitalize off of the carbon credits that are part of AB 32 [the California Global Warming Solutions Act of 2006] and the federal credits as well. We are targeting folks who have fleets that need to reduce emissions. So this is a way for them to potentially reduce emissions to meet their growing mandates, and they could extend the lifetime of their fleet another five or ten years, which means a lot of monetary value for them.

What has been the biggest challenge for you so far?

VK: The biggest challenge has been staying very focused at solving one of the largest problems in the world, which is playing [out] in the liquid fuels space. There are a lot of companies that were trying to develop low-carbon, fuel-based products, and when the price of fuel dropped so significantly you saw a major shift in the industry.

For us — my team, our investors, our advisors — we were pretty focused on wanting to develop a product in whatever market that we could, but that [would still be] viable in the worst-market-case scenarios. It would have been a little bit easier to say, "Okay, let's just shift gears and figure out what type of products or applications will be easier to get into market right now and hit higher price points." But we took that energy and said, "Hey, we are still solving the same problem. The problem still exists: we need low-carbon fuels in the marketplace."

And to give you an example of how important low-carbon fuels





are for overall carbon reduction, recently there was a report that was put out looking at where the low-carbon came from to meet the mandates in California, and about 89 percent of that carbon reduction came from low-carbon fuels. So even in a very progressive state that is focused on electrification and integrating different technologies and energy efficiency, low-carbon fuels make a huge difference in the overall carbon outlet.

What advice do you have for other young entrepreneurs who are embarking on a capital raise?

VK: It is very important for entrepreneurs to kind of own their business before they go out and try to sell it. I tried to finance myself for a year before we really went out and asked people for funding. That was a valuable exercise because it taught me to be pretty nimble and cash-light, and also made sure that we had high stakes at the game. I would recommend to anyone who is going to be starting a company, expect that you are not going to have money to play with for a bit of the time, and develop a way that you can do that so that you don't need the funding immediately. You need to stay in your innovative, creative space before you start to go out to the marketplace and look for capital.

What is giving you hope for the future?

VK: What is giving me hope is that some major political leaders and industry leaders are recognizing that we need to start valuing environmental effects that we have due to normal, everyday business — and you are starting to see that happen more and more. And that companies and technologies are starting to advance to really start making a big impact. We are just on our first or second wave of innovation, and we are going to start seeing really impactful opportunities that are going to land and make a global difference.

I believe there are going to be a lot of success stories that are going to come from companies that have a conscious way of thinking about their carbon environment. Those are going to be the companies that will start winning in the public marketplace, and that is really what the everyday person will start to want more of, and value more — products that are actually thinking about doing things right from the beginning.

This is an amazing time to be in the green economy and the bio-based economy. I think that we are going to start seeing policy shifts and different things that are going to be more globally focused, which is going to drive huge market opportunities. ✨

Photo: Sylvatex

KLAUSMEIER'S TOP 3 PIECES OF ADVICE FOR YOUNG ENTREPRENEURS

1 DEVELOP A HIT LIST OF MENTORS THAT YOU WANT TO BE IN YOUR NETWORK

Identify folks in your industry who have done what is considered to be the gold standard, or developed business models that you think are really innovative and effective, and put them on your list of folks who you want to meet in one way or another. Ultimately, develop a strong Rolodex of advisors who are going to be instrumental to the various stages of development in your company.

2 IT'S GOING TO BE LONGER AND HARDER THAN YOU ANTICIPATE

Set appropriate expectations. Recently, there has been a huge amount of emphasis on all sorts of startups that are successful and stories of how you can make so much money so quickly, and I think that is kind of dangerous. Even though it looks like there is this pretty quick track, in reality it takes a few years and significant time to really develop a good application, product/market fit, and a business model that is sustainable and scalable. When people think about startups, they sometimes can be a little delusional [laughter].

3 TAKE CARE OF YOURSELF

Realize that you are quickly going to lose a lot of your time that you didn't even know you once had. I think it is really easy to potentially burn out from that. In the first year, you kind of think that it's a sprint, and you are running at this sprint pace where in actuality it is a marathon. It is really important to mentally prepare for it. Try to maintain that focus on your personal growth and well-being, because as a leader and a founder, that is going to trickle into every different level of your company as you start to grow and expand, and you will need that bandwidth. One thing that has really landed with me is that most young companies and startups fail because the founder just didn't have the bandwidth to continue. Before they have a chance to succeed, they give up because they burn out.