



## Stanford eCorner

### Case Study: Innovation in Waste Refuse and Local Green Energy Production

Steve Perricone, *BioFuelBox*

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**Video URL:** <http://ecorner.stanford.edu/videos/2243/Case-Study-Innovation-in-Waste-Refuse-and-Local-Green-Energy-Production>

Steve Perricone, Co-founder of BioFuelBox, explains how his alternative fuel company solves multiple problems in waste refuse, energy production and distribution, across multiple platforms. By converting industrial food waste into biodiesel in remote areas, the company is reducing refuse by repurposing free raw materials into fuel, and reducing the resources necessary to ship fuel to remote and isolated areas. In this clip, Perricone's investor, Jennifer Scott Fonstad, Managing Director of Draper Fisher Jurvetson, also explains interest in the idea from a VC perspective and their belief in its global potential. Perricone also explains the BioFuelBox business model, which simply sells the recovered fuel back to the production plant, and gives them financial incentive as part of the revenue-share.



#### Transcript

Steve Perricone: Where is the biggest cost in the price of a gallon of fuel? It's the feedstock or the raw material. If you can solve waste problems, can you lock up that raw material for free? Yes, you can. If you can get that for free, can you be the low cost producer of fuel? Yes, you can. Host: But that's one of the reasons why the people who care about the environment are upset with the first generation biofuels company as well, right? Because it cuts down rainforest in order to grow... Steve Perricone: And they're driving up food prices. And so we're considered really a second-use feedstock whereas the fats, oils, and greases that we convert into biodiesel really have no other use. They're being landfilled, or incinerated, or otherwise disposed of today. Host: So are you in the fuel business or in the waste - what I get like a remediation or what would you call... Steve Perricone: We view ourselves really as a waste water treatment or remediation company with biofuel or biodiesel as a revenue generating byproduct that we use not only to continue to drive the company forward and give great returns to investors. But also, to incent those that have those waste streams, through a profit share to give us those waste streams for 10 years.

Host: So what attracted DFJ to invest in this folks originally? Jennifer Fonstad: So DFJ was a very early investor in clean energy and we think about clean energy as scarce resources. And so we've looked at a whole host of different areas where we're trying to identify how to better extend scarce resources, and solve some of those problems fundamentally. One of the exciting things that we thought about BioFuelBox was really fundamentally about that feedstock and the opportunity to take advantage of eliminating wastes on a fully distributed localized basis. So waste is expensive to get rid of, it's messy, and it's fundamentally local. It's distributed all over the United States and it's a local business and folks have to figure out hairy ways to

try and to get rid of it. And so, it was exciting to be able to take what is fundamentally a waste product and a problem and solve it by turning it into a, in this case a scarce resource, which is a fuel solution. And we had looked at a lot of these first-generation solutions that's like ethanol and passed on that because it didn't seem to exacerbate the fundamental challenge of scarce resource. And scarcity versus trying to identify how to solve those problems and diversify our energy inputs, so that was a driver. Host: Yeah, go ahead. Steve Perricone: Just like to add one thing to what Jennifer touched on: Localized energy production, which I alluded to in the beginning.

We've not built large centralized plants. What we've done is we've created a BioFuelBox; it's actually a set of boxes now that are co-located at the waste stream. So co-located in industrial food locations where there are fats, oils, and greases coming through the wastewater stream or municipalities so we localized our energy production. As part of doing that, not only we do we lower the cost but we also eliminate transportation issues associated with putting carbon in the air to move liquids around. Host: So do you have one installed anywhere now? Steve Perricone: We have our first fully-scaled plant nearly installed up in Idaho taking fats, oils, and greases from a potato food processing plant and converting it into biodiesel. Host: French Fried potatoes? Steve Perricone: French fries, hash browns. Host: I remember that in college. Steve Perricone: Yeah. But it's contaminated with things like sand because it's the grease that hit the wastewater streams so it's not actually all grease. Host: So it takes that, goes in this collection of boxes, and out comes diesel that just...

Steve Perricone: Low-quality, low-sulfur biodiesel. Host: And when that gets up to full production, that set of boxes, that plant if you will, how much diesel would that really produce? Steve Perricone: A million gallons a year per set of boxes. So we could scale it up by adding an additional sets if the waste streams... Host: I got it. Jennifer Fonstad: But I want to pause and I'm really critical point that Steve pointed out about this which is - this is taking local wastes and turning it into diesel or biofuel at a local level. And one of the things many folks don't appreciate about the fuel business is that when you see prices of barrel of oil going up and down it's fundamentally a commodity when you think about it and how they trade futures and all of the stuff that they write about in the New York Times. But the challenge is, is that when you are talking about trying to deliver fuel to distributed regional locations: Idaho, Colorado, New Mexico. There's expensive transportation to bring them from a cheap port like Oakland or L.A. and getting that into those communities. And so actually the most expensive gas to deliver is often in some of the more remote and distributed areas of the United States or other parts of the world.

And so, when you talk about what BioFuelBox is trying to accomplish, where they're taking a local waste stream and eliminating that, and then providing the fuel at that locale, you're actually eliminating two problems. Which is that challenge of bringing in an expensive commodity into that region but also eliminating that local source. And the cost effectiveness of that is also the nice little benefit that comes as a result. Host: Right, and how do you make money? So what's the business model? Steve Perricone: Selling fuel...We're owners and operators of these plants. One of the other thing that we recognized was, the producers of this waste material, they didn't want to become a biodiesel company. They didn't want to have to change - it's not their core business. So the potato processor didn't want to become a fuel company, so instead we just make it easy to say, "Yes, we cover all the capital cost, we staff it, we run it, we sell the fuel and we simply profit share back."