

HYLIION is on a Mission to Revolutionize the Long Haul Trucking Industry with their New Hybrid Electric Technology that will impact the Environment, Driver Comfort and Fleet Profitability



Thomas Healy
Founder and CEO

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CEOCFO: *Mr. Healy, you are founder and CEO of HYLIION. Would you give us a little of your background and what lead you to create such a revolutionary company?*

Mr. Healy: I actually started HYLIION while I was in college. I was doing a Master's program at Carnegie Mellon University and started HYLIION during that time. That was about three years ago now. We have had a lot of success and a lot of exciting things happened over the last couple of years to get us to where we are today. What got me into this was that my upbringing was all in motor sports and automotive racing. I knew a lot about cars and automobiles and it was one of those questions of why do cars have hybrid technology, but tractor-trailers do not? What spun the whole idea, was looking at a way that we could add hybrid electric technology to tractor-trailers but to do it as an add-on and retrofit product as opposed to having to change the whole vehicle.

CEOCFO: *Before we talk about your solutions, would you walk us through what it took to get us to the point where you have such a very comprehensive solution for the trucking industry? How long did it take? Did you acquire the solutions, or did you have to have the engineering and computer expertise in house? What role did you play in the development of your solutions?*

Mr. Healy: Just like any other startup company out there, one of the biggest hurdles has been actually getting funding to start the company. We took a very unique approach where in the beginning we went out and competed in business plan competitions. We competed in competitions like the Rice Business Plan, Mass Challenge, the Department of Energy Clean-tech Competition, and NASA Create the Future Award. Throughout



all those competitions, we were able to bring in over \$250,000 of completely free money with no strings attached. Those funds allowed us to go out and build a proto-type. You asked if this was something we acquired or if we had the expertise in-house, and this was all done in-house. We went out and hired engineers and brought in classmates from Carnegie Mellon and built a team. Then we built the first prototype. From there, to date we have closed just shy of \$30 million worth of fundraising which has gotten us through the product development stage, the R&D stage, and we are now into production. Just a few weeks ago we launched our production down in Austin Texas and we are now producing units that we are delivering to the market.

CEOCFO: *What has been the reception so far from the trucking industry and how many fleets are you working with?*

Mr. Healy: We have been very fortunate to get a tremendous amount of interest from the industry, actually more than we ever could have imagined. When we first started, we realized that the trucking industry is a big industry and fleets have thousands of trucks out on the road. We figured the industry's approach was going to be, "Come back to us when you have a fully fleshed-out working product, then we will look at it and see if we want to adopt it." However, the response from the industry has actually been quite the opposite. Fleets have been extremely receptive to us and extremely eager to work with us. This has helped us move forward at a much faster pace because we have been able to leverage the knowledge and expertise of these fleets to develop the product specifically to their needs and they have been generous enough to give us vehicles to test on. They have been a part of HYLIIION and the development of our product from the very beginning. Your question about how many fleets are out there? I would say we are working with a little over 60 of the major fleets here in the US that have expressed to us that they want to be on the cutting-edge and be early adopters of the technology. A few of them include Mesilla Valley Transportation (MVT), Pam Transportation, and Ryder have been very closely working with us and are part of our initial beta roll-out for the product. We are excited about working with them.

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CEOCFO: *What is the return on investment for a trucking company that applies your technology?*

Mr. Healy: We are seeing a 30% reduction in fuel consumption which comes from three different aspects of technology. The first is the hybrid technology which works the same as a Prius works where if the vehicle is accelerating or going up a hill, the electric motor kicks in and gives you an extra bit of power so the diesel engine does not have to work as hard. Then capture energy when the vehicle is going down-hill or slowing down to recharge the batteries. That is the core of the technology. We also see other savings from our battery pack which is able to be used as an auxiliary power unit, an APU as it is referred to in the industry. Being the primary APU on the vehicle, we power an independent AC unit to supply cold air to the vehicle when drivers are staying overnight at rest stops. This avoids engine idling. We can also provide power to other electronic items such as phones or televisions. By allowing the driver to shut off the diesel engine while he is sleeping, drivers have a much more restful night. The third aspect is aero dynamics. We improve the way air flows around the tractor making less drag and reducing fuel consumption. Those three things, the hybrid, the APU and the aero dynamics add up to the 30% fuel reduction.

CEOCFO: *What does the solution mean personally to the driver?*

Mr. Healy: There are two ways to look at it. There is an over-the-road benefit and then while you are sleeping at the rest areas there is a benefit. I think that the biggest impact for the driver is getting a good night's sleep. With a normal diesel tractor-trailer, if you leave it running all night long to use the air conditioning, just imagine a 500 horsepower engine shaking and making noise you as you are trying to sleep. That does not make the best living arrangement. With us, you get to shut that diesel engine off and just run off electric power. Therefore, there are no longer any loud noises or vibration from a big engine. Instead you are using our battery pack to run air conditioning and anything else in the cab. When you look at it from an over-the-road standpoint, drivers have expressed to us that it is like driving a vehicle that weighs less. If you look at the normal 80,000-pound tractor-trailer, it is usually a struggle trying to climb a hill. The driver is downshifting and getting into a lower gear and losing speed while climbing the hill, versus the HYLIIION technology which provides that extra boost of power. That boost of power keeps the diesel engine in its sweet spot, so you do not have to downshift, so

you can stay in that higher gear and maintain more speed while climbing that hill because you are now using electric power in addition to the diesel engine.

CEOCFO: *Have you done studies to find out how big the need is for your solution?*

Mr. Healy: We joke, but you cannot find a product in your house or office that at one point in its life was not shipped on a tractor-trailer. Every product and good at some point needs a tractor-trailer. From the industry standpoint, there are a couple million trucks in the US that are directly applicable to our technology. When you look at that from a greenhouse gas emission standpoint, if every truck in the US were to adopt our technology, we would reduce US emissions by 2%. For one technology to have the ability to have that much of an impact on a global or US-wide number is pretty significant. From a competition standpoint, we have a leg-up on the competition. We are the first to bring this hybrid electric technology to the market and we are fortunate to have begun working with the truck OEMs so fleets will be able to buy a new truck with HYLIION technology already on it. From a fleet standpoint, they could retrofit their existing trucks and buy new trucks with our technology already installed.

CEOCFO: *What kind of fuel reduction can be expected and what is the return on investment?*

Mr. Healy: The fuel reduction is about 30%, which for a fleet that drives normal operating numbers; they are spending about \$60 thousand a year on fuel. So, 30% of \$60 thousand is \$18 thousand roughly. The fleets we are working with will see about a two-year payback on the product because the MSRP (Manufacturer's Suggested Retail Price) of our product is about \$39 thousand.

CEOCFO: *How much of the market do you think you could capture over the next year?*

Mr. Healy: Our struggle, and this will be for years to come, is going to be how many we can produce as opposed to the demand. When we look at our 2018 projection, we could sell all the units we are going to produce to just a couple fleets. Some fleets have tens of thousands of vehicles. Our struggle is with ramping up production and supply chain of the product. As a company, we are working as hard as we can to work closely with our suppliers to increase the production volumes and be able to try to make a bigger dent in this industry because the amount of demand and interest we have seen from fleets has been phenomenal.

CEOCFO: *Would you tell us about your fleet management real-time trailer location data, your HySight with an in-cab display?*

Mr. Healy: We are taking an innovating approach on telematics. We have GPS and cellular activity to the truck, so we know where the truck is located and how fast it is moving, all that normal information. We are able to take that information and send it up to the cloud with cellular connectivity and supply the information to the fleets. One of the really cool things we are doing comes from our battery pack which has a lot of sensors and allows us to grab much more information from our system, the vehicle, and road conditions to send up to the cloud as well. We are taking an innovative approach where we are not just supplying data to the fleets, but we are actually looking at it and determining how we can use that data to best help them. It is taking that next step in terms of telematics and not just supplying raw data but supplying solutions that can be implemented.

CEOCFO: *Can your solutions be installed piece-meal or is it one complete package or both?*

Mr. Healy: It is one complete package. You have an electric drive axle, a battery pack, a cooling system and then a control system. There are four components that go into making our technology. What we do is replace one of the axles on the truck with our electric drive axle and then we mount the battery box, the cooling system and the control system box directly to the frame of the vehicle. Conventionally it is just empty space. We are able to utilize an existing available space on the tractor and connect all the systems together. Now you have a hybrid vehicle. It is a pretty non-invasive process. We do not go in and change the diesel engine or swap out the transmission or anything like that. It is very much an add-on solution that now makes your vehicle a hybrid.

CEOCFO: *Is the installation done at your facility?*

Mr. Healy: Right now, all the initial early installs have been done at the HYLIION facility in Pittsburgh. As we move into production, we are working with service centers around the US that are able to do the installs, either in their facilities or at the customer's location. For new truck installations, we are also working with truck OEMs.

CEOCFO: *Where is the manufacturing process done?*

Mr. Healy: We are an assembly play, so we source batteries and controls and electronics from suppliers all around the world and then we bring them to Austin, Texas. We have an assembly facility that we are working with, Flextronics, which goes by Flex now. Flex does the assembly of the product and then ships it out directly to the customer.

CEOCFO: *Who are your customers? Is it just the fleets?*

Mr. Healy: Yes, it is the big fleets like Ryder and Pam Transportation. It is fleets like that who we sell directly to.

CEOCFO: *How are you reaching out? Do you have in-house sales staff or sell through distributors? Do you attend conferences or educate potential customers as well as the industry?*

Mr. Healy: That is where it all started, attending one of the industry tradeshows and then receiving interest from fleets. We started working closer with them. Going back to the supply constraints as opposed to demand constraints, we have an internal sales force that works closely with the fleets that are very excited about the technology.

CEOCFO: *Has the green and clean-tech world been excited about what HYLIIION is bringing to market?*

Mr. Healy: Yes, they have been. We are fortunate to be speaking at one of the Clean-tech forums out in California and I think it is just a week away now. The response from the Clean-tech side of things has been tremendous. If you look at the technology, it offers a wonderful opportunity to reduce greenhouse gas emissions. The trucking industry has been tasked by the government to reduce emissions and they are struggling to find solutions that can get to those emission reduction numbers. The exciting thing for us is by implementing the HYLIIION technology; it gets you to that new Phase II greenhouse gas emission reduction numbers that the government has set out. It speaks to that whole green-tech side of things. They have been very supportive of us and have been able to help us on numerous occasions.

CEOCFO: *What is next for HYLIIION?*

Mr. Healy: The next thing for us is to roll this technology out in the industry. Our goal as a company is to deploy thousands of these units and when you are driving down the highway you actively see them on the highway. For us, as a company, we are just making that transition now as we move into manufacturing and production and start delivering to fleets.

CEOCFO: *Do you have the funding to continue your growth or will you be reaching out to investors or partners?*

Mr. Healy: As a startup, I think we are never not fundraising; that is part of the territory. We are extremely fortunate, a few months ago we closed a Series A round of funding that was a little over \$20 million and that is enough funding to get us into production, get us delivering units out to customers and really growing the company. It is one of those things where we will do more fundraising. We have actually already started getting interest to do another round of fundraising, so just one of those natures of being in a startup.

CEOCFO: *What is behind the name HYLIIION?*

Mr. Healy: It stands for hybrid lithium-ion. It is a hybrid solution with a lithium-ion battery pack.

CEOCFO: *In closing, address our readers in the business, investment, trucking and clean-tech communities. Why is HYLIIION an important company?*

Mr. Healy: Our goal and mission here at HYLIIION is to engineer a revolution in the trucking industry. What we are doing is taking a new hybrid electric technology which is both good for the environment but also has an opportunity to greatly impact the profitability of the trucking industry. We are rolling it out on a very easy platform, so it can be an add-on or retrofit product. We see this as the next wave of technology that is coming into the trucking industry and we are excited about being thought-leaders and first to bring it to the market.