

COMPANY: Hyliion | **NYSE:** HYLN
INDUSTRY: Electric Hybrid Trucks

<u>Price</u> <u>(as of 15Oct2020 close)</u>	<u>Market Cap</u>	<u>Average Daily Value</u> <u>Traded (30-Day)</u>
US\$ 28.27	US\$ ~4.5 billion	US\$ ~200 million

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Hyliion Holdings Corp. (NYSE: HYLN) (“Hyliion” or the “Company”) is a US\$ 4.5 billion market cap company that claims its current hybrid technology can be retrofitted to any Class 8 diesel truck for an immediate 30% fuel efficiency savings.

There is not one scientific paper or submission that would back up Founder & CEO Thomas Healy’s 30% fuel efficiency claim.

Evidence revealed that Hyliion’s proprietary battery management system technology was purchased for under US\$ 1 million, equal to less than US\$ 0.01 per Hyliion share!

On October 15, Jim Cramer’s Mad Money cautioned investors to be patient and that Hyliion is not a buy at these levels. If the bobblehead pundit doesn’t think your stock is a buy, who does?



Source: Jim Cramer’s Mad Money – October 15, 2020


We are short Hyliion and believe its stock is going lower.

THIS RESEARCH REPORT EXPRESSES SOLELY OUR OPINIONS. Use Bonitas Research LLC’s research opinions at your own risk. You should do your own research and due diligence before making any investment decisions, including with respect to the securities discussed herein. We have a short interest in HYLIION’ stock and stand to realize significant gains in the event that the price of such instrument declines. Because this document has been prepared without consideration of any specific clients’ investment objectives, financial situation or needs, no information in this report should be construed as recommending or suggesting an investment strategy. Investors should seek their own financial, legal and tax advice in respect of any decision regarding any securities discussed herein. This report and its contents are not intended to be and do not constitute or contain any financial product advice as defined in the Australian Corporations Act 2001 (Cth). For convenience purposes only, we have provided a Chinese translation of this report. Please refer to our full disclaimer located on the last page of this report.

HYLIION'S KEY TECH PURCHASED FOR LESS THAN US\$ 1 MILLION

Electric vehicles are heavily reliant on batteries and battery management systems (“BMS”) to store captured kinetic energy when going downhill or decelerating and deploy the energy effectively when required.

Hyliion’s June 2020 PPT presentation disclosed that its primary BMS tech was purchased from a public company in 2018. Desktop research revealed that Hyliion’s BMS system was acquired from Gentherm Inc. (Nasdaq: THRM, “Gentherm”) for less than US\$ 1 million.

ELECTRIC DRIVE COMPONENTS & MANUFACTURING	PROPRIETARY BATTERY SOLUTIONS
 <ul style="list-style-type: none"> Industry leading supplier of drivetrain, axle and electrified propulsion components Collaboration areas include: co-development of strategic components, supply chain, full system assembly, sales & marketing and OEM partnerships 	 <p>BATTERY MANAGEMENT SYSTEM (BMS)</p> <ul style="list-style-type: none"> In-house BMS solutions with over a decade of development (<i>acquired battery division of a publicly traded company in 2018</i>) Scalable to support a variety of battery configurations and pack sizes
<p>DATA & ANALYTICS</p>  <ul style="list-style-type: none"> Innovative sensor and controls company Collaboration focused on high-power electronic components and advanced data analytics & predictive maintenance 	 <p>PROVEN CELL TECHNOLOGY</p> <ul style="list-style-type: none"> Lithium titanium oxide (LTO) battery cells are supplied by Toshiba Proven reliability & durability with 30,000+ charge cycles One of the safest Li-Ion chemistries
	 <p>ADVANCED BATTERY PACKAGING</p> <ul style="list-style-type: none"> Custom module design with optimized packaging for high-volume manufacturing Leading cooling technology to increase cell life Robust modular design scalable to various voltages

Source: Hyliion Investor Presentation https://s25.q4cdn.com/501989927/files/doc_downloads/Hyliion-Tortoise-Overview-Presentation.pdf

We spoke to a former manager with almost 2 decades of experience in BMS who was in charge of both Gentherm & Hyliion’s Battery Tech Center (“BMS Manager”). The BMS Manager told us that Gentherm supplied the complete battery solution for Hyliion’s Hybrid 6x4HE (“Hybrid-X”) system.

“Hyliion was our only customer for a certain battery that we made called a ‘Slick’”.

The BMS Manager also revealed that Healy grossly exaggerated demand for Hyliion’s Hybrid-X system which strained relationships between Gentherm and Healy:

“Hyliion ran this financial stuff, they were extremely optimistic about revenue projections, and they overdid that so they had to retract so they pulled.”

“Hyliion was saying we need all these batteries, these huge numbers the forecast, and then it gets smaller and smaller, and we at Gentherm were trying to figure out ... because it keeps changing”

When asked directly about the 30% fuel efficiency claim, the BMS Manager simply said:

“They are touting 30% or 30%+. I think it might be that same exaggeration because I just don’t see that as being even possible, you know, just on a pure Physics level.”

After two years in operation, Gentherm’s total tech R&D investment in the BMS system was US\$ 1.8 million.¹ Gentherm sold its BMS division in 2018 to Hyliion for US\$ 698,000 in cash and recorded a loss of US\$1.1 million.

If Gentherm’s BMS technology was revolutionary, Gentherm wouldn’t have sold the two year old division to Hyliion at a 60%+ loss.

Advanced Research and Development Rationalization and Site Consolidation

In June 2018, Gentherm completed a sale of its battery management systems division located in Irvine, California. A loss on the sale of \$1,107 was recognized in restructuring expenses during the nine-month period ended September 30, 2018.

Source: Gentherm’s 3Q2018 10-Q, page 7

¹ Source: Gentherm’s 2Q2018 10-Q

DANA NOT INTERESTED IN USING HYLLION SOLUTION THEMSELVES

“Since Day 1 of the inception of Hyllion it’s been on Dana axles” – Thomas Healy, March 2019²

In 2019, Dana Inc. (NYSE: DAN, “Dana”) invested in Hyllion, had a Hyllion board seat pre-SPAC reverse merger, and was a key supplier offering Hyllion full drivetrain solutions including e-axles, motors, inverters, thermal management solutions, driveshafts, etc.³ This put Dana in the best possible position to understand the commercial viability of Hyllion’s hybrid powertrain.

In 2018, Dana highlighted that besides Hyllion, Dana partnered with Nordresa and Spicer to customize and convert fleet trucks into hybrid electric solutions. Since then, Dana had acquired Nordresa, the SME Group, Rational Motion (both in Europe), TM4 (in Canada) and a few others to boost its electric truck capability with a complete in-house solution. Rational Motion’s client list and partnerships include Toyota, Borg Warner and John Deere, to name a few.⁴



Source: https://www.dana.com/globalassets/2018.2_danasustainabilityreport.pdf

In its 2Q'20 earnings release, Dana disclosed its 3rd significant electric truck program which uses Dana’s own proprietary powertrain solution, not Hyllion’s product.

New Business: European Electric Truck

Dana's 3rd Significant Electric Truck Program

Complete Dana e-Powertrain:

- Electrodynamic components
- Complete vehicle integration
- Embedded software and controls

Power Cradle
Electric Charger, Converter, & Auxiliaries Management

Power Pack
Battery Modules, Thermal Management, & Battery Management System

e-Drive
Electric Motor, Inverter, & Axle

e-Power System

e-Propulsion System

DANA **SPICER**

- Major European manufacturer
- Multi-year program
- Launching in 2021

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Source: <https://www.sec.gov/Archives/edgar/data/26780/000119312520203346/d948072dex991.htm>

A Dana technical manager familiar with the matter concurred with the BMS Manager on Hyllion’s 30% fuel efficiency claim and stated **“30%? Not sure that’s really going to be attainable.”**

He also confirmed that Dana is not using any of Hyllion’s technology.

Dana continues to implement strategic developments to create an in-house electric solution of their own without Hyllion. What does that say about Hyllion’s technology?

² <https://www.fleetowner.com/fleet-management/people/article/21703600/hyllion-wunderkind-ceo-electrifying-industry>

³ <https://www.hyllion.com/electrification-company-hyllion/>

⁴ https://www.dana.com/globalassets/2018.2_danasustainabilityreport.pdf

HISTORY OF FAILED PILOT PROGRAMS

Hyliion's Hybrid-X failed to generate follow-on orders.

In May 2019, after two years of testing Hyliion's Hybrid-X product, P.A.M. Transportation Services Inc. (Nasdaq: PTSI, "PAM") abandoned Hyliion's Hybrid-X because savings were "only a small %".⁵

Paul Pettit, vice president of maintenance for PAM was quoted:

"We're one of the original fleets to prototype this unit with the folks we're testing it with."

"So we've been going through repairs, upgrades from their beta test all the way through their production unit, with this unit. Just helping them get it out on the road, get testing data back and make adjustments and do it as they work through them."

"The goal is for a 30% improvement in fuel economy, and so far, the savings has only been a small percentage."

Healy claimed Hyliion had partnered with 50+ companies/organizations to test and roll out its hybrid technology in the last 5 years. Similar to PAM, most disclosed "customers" have not placed follow-on orders. A review of Hyliion's publicly disclosed customers from historical presentations is summarized below:

2015	2016	2017	2018	2020
JB Hunt	McDonald's	an undisclosed European food manufacturer	Mesilla Valley Transport	Wegmans
US Dept of Energy	C.R. England		PAM Transport	Penske
ISL	Navajo Express Fleet		Ryder	Ryder
Shell	PAM Transport			EGL
Autodesk	Giant Eagle			Idealease
Pittsburgh Power	JNJ Express			Eagle Transport
Pitt-Ohio	Smith			C.R. England
EV West	ATD Dynamics			
American Trucking Association				

Source: Bonitas Desktop Research

As of June 2020, Hyliion claimed it had its Hybrid-X truck deployed with at least 7 customers.



Source: Hyliion Investor Presentation https://s25.q4cdn.com/501989927/files/doc_downloads/Hyliion-Tortoise-Overview-Presentation.pdf

⁵ <https://talkbusiness.net/2019/05/p-a-m-hybrid-electric-truck-to-be-tested-in-northeast/>

Only 3 of the 7 “customers” listed in Hyliion’s PPT appear to have purchased any Hybrid-X systems. We identified a total of 7 systems sold to the above list of “customers today”, specifically 2 to Wegmans, 3 to Penske, and 2 to Eagle Transport.⁶

Ryder System Inc. (NYSE: R, “Ryder”), another fleet operator, was “testing” Hyliion’s product but appears to have little interest in placing follow-on orders.

Ryder Systems, another of the firms testing the Hyliion axle, said it is too early in the project to have meaningful data, according to a spokesperson. The third tester – New Mexico-based Mesilla Valley Transportation – didn’t respond to Trucks.com’s request for comment.

Source: <https://www.trucks.com/2018/11/08/hyliion-pitches-e-axles-eyes-international-growth/>

Ryder’s website listed Chanje and Workhorse as their strategic partners under “Advanced Vehicle Technology” towards “fuel efficiency and innovation”. Hyliion is not listed here or anywhere else on Ryder’s website.

Through strategic partnerships, Ryder continues to work towards promoting fuel efficiency and innovation.



Ryder and Chanje

As the exclusive sales and service provider for Chanje Electric Vehicles, discover how you can benefit from the first medium-duty electric vehicle in the industry for your last mile needs.

[LEARN MORE](#)

Workhorse

Ryder is the primary provider of service and support for Workhorse vehicles in the United States, Canada, and Mexico, as well as, the primary distributor of the E-100, E-GEN and W-15 electric pickup in North America.

[LEARN MORE](#)

Source: <https://ryder.com/solutions/fleet-leasing/advanced-vehicle-technology>

Hyliion listed Idealease, Inc. (“Idealease”) as a customer in its June 2020 PPT presentation. However, Idealease did not buy a single Hyliion Hybrid-X system. Instead, Hyliion gave one demo truck to Idealease to showcase at their dealerships in North America. Since when does a company call the recipient of a free sample a “customer”?

Hyliion Inc. is partnering with Idealease to get exposure — and orders — for its near-zero-emission diesel-electric hybrid powertrain system as the company’s public debut nears.

The startup will offer short-term rentals of its hybrid diesel powertrain with supplier Dana Inc. (NYSE: DAN) at some of [Idealease’s 430 locations](#) in the U.S., Canada and Mexico.

Hyliion will use one truck for the demo program, moving from the eastern U.S. north to the Appalachian region and to the northwest U.S. based on key customers identified by Idealease, a Hyliion spokesperson said.

Source: <https://www.businesswire.com/news/home/20200819005438/en/Hyliion-Dana-Join-Forces-Idealease-Demonstrate-Hybrid>

We believe Hyliion failed to get follow-on orders for its Hybrid-X retrofit because its fuel efficiency claim is a lie.

⁶ Source: <https://www.foodlogistics.com/transportation/fleet-management/press-release/21196238/partnership-with-hyliion-allows-wegmans-to-imagine-a-fleet-without-diesel> ; <https://www.greencarcongress.com/2020/02/20200224-hyliion.html> ; <https://www.facebook.com/Hyliion/posts/d41d8cd9/3176618145683476/>

30% FUEL SAVING CLAIM DESPITE SIGNIFICANT CHANGES IN TECH AND DESIGN

Regardless of Hyliion's product developments, Healy stuck to his claim of 30% fuel efficiency savings for Class 8 diesel trucks.

We think Healy adopted a "lie 'til you die" approach to his first foray into the public markets by applying the same efficiency statistics from his college trailer dorm room project to every Hyliion product iteration since.

In 2015 and 2016, Healy's design was trailer-based and claimed 30% fuel reduction.



Source: https://www.youtube.com/watch?v=6O_bgwFbBI ; <https://www.youtube.com/watch?v=Eyu0FSXJypg>

In a 2016 investor presentation to European investors, Healy is seen multiple times over-embellishing Hyliion's product capabilities, partnerships, accolades, and fleet pilot programs for Hyliion's trailer product. Healy claimed:

"30+ fleets in pilot program including McDonalds"

"30% fuel reduction"

"1 month payback"

"We already have multiple demos out in the US that are proving out this fuel savings."

"Retrofit Product. Takes only 1 to 2 hours to install and can fit on all trailers on the road".

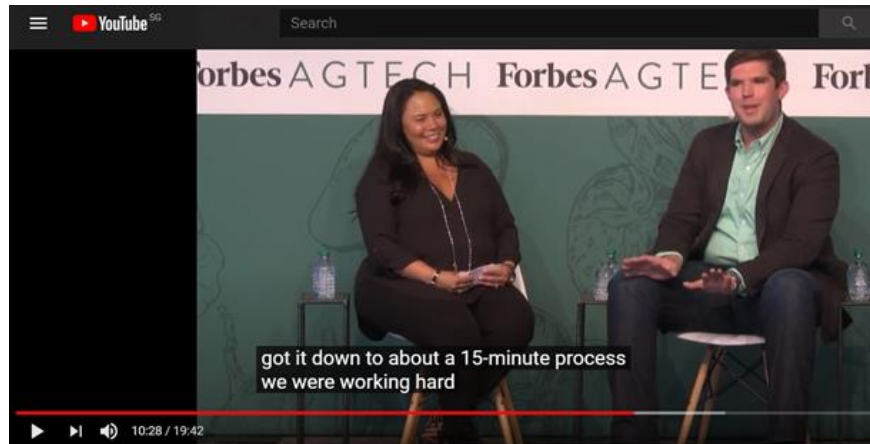


Source: https://www.youtube.com/watch?v=6O_bgwFbBI

In an August 2017 interview Healy claimed to work with 50+ fleets and that installation time was down to 15 minutes:

"In the US here we are working with about 50 fleets. Just a couple weeks ago we signed on the largest seller of foods who is going to be bringing the technology over to Europe."

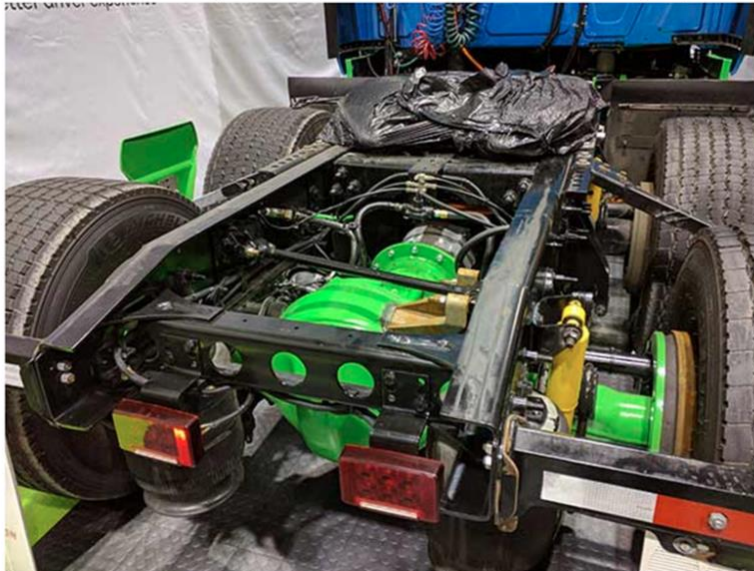
"5 Fleets in the US that will start deploying at the end of this summer"



Source: <https://www.youtube.com/watch?v=-qzKgBAuKig>

In November 2017, Hyllion's design switched from the trailer to the tractor (front part of the truck). Despite the product location change from trailer to tractor, Healy maintained his 30% fuel efficiency claim for the Hyllion's Hybrid-X.

According to the company, the Hyllion System uses hybrid electrification to deliver fuel savings, lower emissions, instant telematics and a better driver experience, for a total of 30% fuel and emissions savings. Fuel savings are delivered by the blend of three technologies: 15% electric hybrid drive axle, 12% APU, and 3% aerodynamics, the company added.



Source: <https://www.fleetequipmentmag.com/hyllion-6x4he-hybrid-electric-truck-axle/>

In a July 2018 article Healy explicitly stated that its Hybrid-X delivers fuel savings up to 30%.

Unlike other solutions on the market, the Hyllion 6x4HE is designed to capture wasted energy when traveling downhill and applies that power when traveling uphill to keep the engine in its most efficient operating range. Cost-optimized for the trucking industry, Hyllion uses hybrid electrification to deliver fuel savings of up to 30%, lower emissions, instant telematics and a better driver experience. It's easy to install and can be implemented onto new semi-trucks or seamlessly retrofitted onto any Class 8 vehicle. Hyllion utilizes the best battery cell technologies and chemistry with

Source: <https://www.prnewswire.com/news-releases/hyllion-acquires-battery-division-of-public-company-to-meet-growing-demand-for-hybrid-electric-long-haul-trucks-300678379.html>

In 2018 – 2019, Hyliion’s design underwent further changes after it acquired Gentherm’s BMS division and partnered with Dana. Regardless of these developments, Healy stuck to the 30% fuel efficiency savings claim.⁷

Repeating the same lies does not turn the lie into a truth.

The BMS Manager, who had intricate knowledge of Hyliion’s Hybrid-X system, said that Healy’s 30% fuel efficiency savings claim was **“not even possible on a pure Physics level.”**

As of October 2020, neither Hyliion or any of its customers, partners, or test pilot programs have presented evidence of 30% fuel efficiency savings.

Agility Public Warehousing Company K.S.C.P. (DFM: AGLTY, “Agility”)’s 1,000 Hypertruck ERX pre-order gave investors confidence that fleet operators have interest in Hyliion’s powertrain systems, but unless Hyliion can magically deliver on its 30% fuel efficiency claim, Agility appears no more than an opportunistic PIPE investor around a hyped SPAC deal.

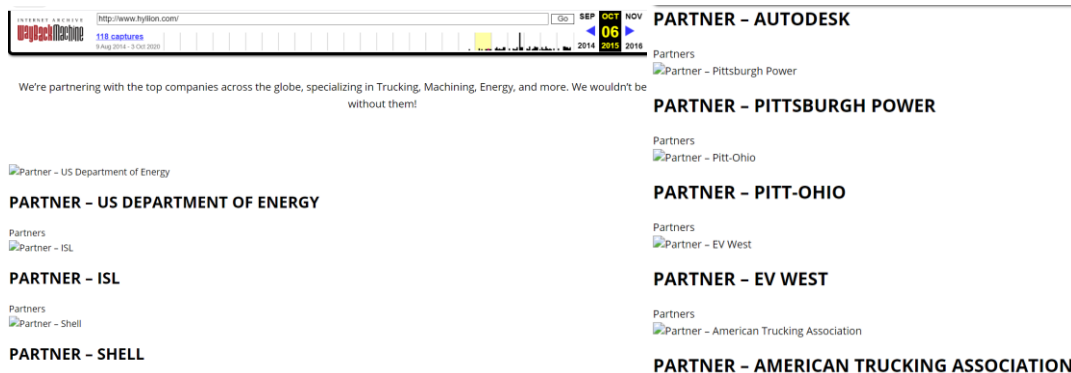
In our opinion, Healy’s claims are filled with over-embellishment, lies and false promises. We think that Hyliion would be better off with a truthful honest leadership that already has longstanding stellar reputation for engineering safety, product warranties, and a higher level of integrity regarding economic benefits to fleets and truck drivers.

⁷ <https://www.prnewswire.com/news-releases/hyliion-acquires-battery-division-of-public-company-to-meet-growing-demand-for-hybrid-electric-long-haul-trucks-300678379.html> ; <https://www.fleetowner.com/fleet-management/people/article/21703600/hyliion-wunderkind-ceo-electrifying-industry>

FAKE NASA CREDENTIAL

Healy's exaggerations extended to his list of accomplishments.

We confirmed that Hyllion won the 2015 Rice University Business Plan Competition whereby Hyllion received US\$ 150,000+ in prize money.⁸ The U.S. Department of Energy and Shell were sponsors of the 2015 Rice Business Plan competition and Autodesk was a sponsor of the 2015 Mass Challenge, yet Healy claimed the competition sponsors were "partners" on its website.⁹



Source: Wayback Machine

Healy was not truthful with other tech challenges. Healy claimed Hyllion won the "Nasa Create the Future Award". Turns out the supposed "NASA" award was run by a technology magazine publisher, Tech Briefs Media Group, not NASA.



Source: <http://www.techbriefs.com/legal>

⁸ Source: <https://www.energy.gov/eere/articles/hyllion-wins-us-department-energy-clean-tech-prize-2015-rice-business-plan-competition>

⁹ Source: https://www.youtube.com/watch?v=6Q_bgiwFbBI

Cryogas, a Polish natural gas station operator highlights fleet truck commercially available today that use their CNG and LNG fuels.

CNG/LNG-powered trucks – urban and regional traffic:

			
IVECO	RENAULT	SCANIA	VOLVO
Stralis NP 330 CNG/LNG	D Wide CNG	P 340 CNG/LNG	FE CNG
Engine: CURSOR 8	Engine: NGT 9	Engine: OC09 102 340 CNG	Engine: G9K320
Engine capacity: 7.800 ccm	Engine capacity: 8.900 ccm	Engine capacity: 9.300 ccm	Engine capacity: 8.900 ccm
Power engine: 330 KM 243 kW/2.000	Power engine: 320 KM 239 kW/1.950	Power engine: 340 KM 250 kW/1.900	Power engine: 320 KM 239 kW/2.100
Torque: 1.300 Nm 1.200-1.785	Torque: 1.356 Nm 1.100-1.250	Torque: 1.600 Nm 1.100-1.400	Torque: 1.356 Nm 1.300 - 1.400
Range: CNG do 500 km, LNG do 1.600 km	Range: 300 - 400 km	Range: CNG do 500 km, LNG do 1.600 km	Range: 300 - 400 km

Source and photo.: Iveco, Crogas, Scania, Volvo Trucks

LNG-powered trucks – long-distance traffic:

			
IVECO	IVECO	SCANIA	VOLVO
Stralis NP 400 LNG	Stralis NP 460 LNG	R 410 LNG	FH/FM LNG
Engine: CURSOR 9 LNG	Engine: CURSOR 13 LNG	Engine: OC13 101 410	Engine: G13C460
Engine capacity: 8.700 ccm	Engine capacity: 12.900 ccm	Engine capacity: 12.700 ccm	Engine capacity: 12.800 ccm
Power engine: 400 KM 294 kW/2.000	Power engine: 460 KM 338 kW/1.900	Power engine: 410 KM 302 kW/1.900	Power engine: 460 KM 338 kW/1.800
Torque: 1.700 Nm 1.200-1.600	Torque: 2.000 Nm 1.100-1.600	Torque: 2.000 Nm 1.100-1.400	Torque: 2.300 Nm 1.050-1.400
Range: do 1.600km	Range: do 1.600km	Range: do 1.600km	Range: do 1.000km

Source and photo.: Iveco, Cryogas, Scania, Volvo Trucks

Source: <https://www.cryogas.pl/en>

Simply put, Hyllion has no proprietary natural gas technology and its Hypertruck ERX technology is unproven versus competitors.

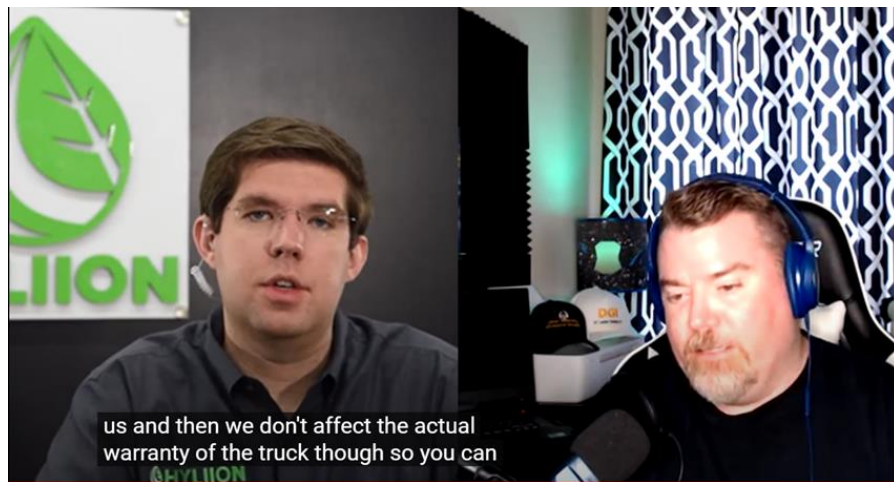
WARRANTY CLAIM UNTRUE

Since Hyliion's Hybrid-X product is a retrofit, does Hyliion take on the risk of system failure? Who is liable if something breaks after a truck has been modified from the factory?

Hyliion's Hybrid-X is not an authorized retrofit, so what happens if a truck driver retrofits a new Peterbilt with a Hyliion powertrain system and the truck loses power brakes or steering? Who is liable if a truck carrying 80,000 pound payloads going 70 miles per hour gets out of control and kills someone?

US and European highway safety requirements are strict for a reason. We think this is why Dana (and others) decided to launch a complete in-house solution so that Freightliner or Peterbilt can be comfortable working with a proven counterparty with product accreditation.

In a July 2020 interview, Healy clearly stated that its Hybrid-X retrofit *"does not affect the warranty of the truck"*.



Source: <https://www.youtube.com/watch?v=oarWCCH5AIU>

Healy told the Gentherm management the same lie. When asked about warranty, the BMS Manager told us that:

"Hyliion was saying ... apparently they had the buy-in from Peterbilt specifically on what they were doing. And not only that, they were working on a deal where somebody that wants to buy a new truck from Peterbilt could click a box on the order form and get the Hyliion system installed when it was delivered to the customer."

However, the BMS Manager revealed that when Gentherm management questioned PACCAR Inc (NASDAQ: PCAR, "PACCAR"), the parent company of Kenworth and Peterbilt trucks, about Hyliion's warranty claim, PACCAR said that **"there is no way in hell [PACCAR] would allow that."**

We understand why OEM's do not want their trucks retrofitted with an unauthorized third party electrical systems. There is too much risk.

Since its SPAC reverse-merger, Hyliion is cash rich and can potentially buy their way into a viable commercial product. However, with Healy at the helm lying to investors and partners about key developments and economic efficiencies, time will tell what happens next.

We are short Hyliion and believe its stock is going lower.

DISCLAIMER

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