

### NEXT HYDROGEN SOLUTIONS INC. (TSXV:NXH; OTC:NXHSF)

Next Hydrogen Solutions Inc. CEO Raveel Afzaal  
Discusses the Company's Corporate Strategy,  
Recent Events, and Business Outlook

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#### KEY POINTS

- Next Hydrogen Solutions Inc. designs and manufactures alkaline electrolyzers that use water and electricity as inputs to generate clean hydrogen for use as an energy source. When the electricity used in this process is produced from renewable sources – such as solar, wind or hydro – the resulting hydrogen is “green”. In fact, this is the only way to produce green hydrogen.
- Many countries have established net zero carbon ambitions and many also have announced hydrogen strategies as part of their carbon reduction plans. It is estimated that the production of hydrogen to meet the CO<sub>2</sub> containment objectives of the Paris Climate Accord will require 270 GW's of electrolyzers by 2030, the cost of which have come down 40% in just the past 5 years alone.
- Next Hydrogen is the only publicly listed pure play electrolysis company in North America and has a differentiated technology platform. The company's 38 patents effectively combine the best features of alkaline electrolyzers with beneficial performance characteristics of proton exchange membrane (PEM) technology. This enables a number of important and unique advantages: (i) 2.5x traditional current density, so that greater hydrogen production is made possible from the same quantity of materials, (ii) superior dynamic response, capturing fluctuations in energy at 5% per second, and (iii) scalable design, permitting a 300% increase in power to achieve economies-of-scale and reduced cost.
- Next Hydrogen products have been validated in demonstrations with AECL and Canadian Tire. The company intends to deliver commercial products in the next 2 years and to scale the business as it attracts a share of the \$80bn TAM opportunity that is expected by 2030, from both industrial and transportation applications.

#### KEY STATISTICS

Price	C\$5.82
52-Week Range	C\$4.52-C\$10.25
Avg. Daily Vol. (MM)	7.87
Shares Out (MM)	22.9
Market Cap (\$MM)	C\$133.1
Enterprise Value (\$MM)	C\$88
Debt to Equity	N.M.
Revenue TTM (\$MM) Est.	C\$0.2
Fiscal Year End	December

Source: YCharts, \*As of November 17, 2021

#### COMPANY OVERVIEW

Next Hydrogen Solutions Inc. designs and manufactures alkaline electrolyzers that use water and electricity as inputs to generate clean hydrogen for use as an energy source. Next Hydrogen's unique cell design architecture, supported by 38 patents, enables high current density operations and superior dynamic response to efficiently convert intermittent renewable electricity into “green” hydrogen on an infrastructure scale. Next Hydrogen's redesign of the electrolyzer system architecture offers the potential to meaningfully decrease green hydrogen production cost. Next Hydrogen has worked with Atomic Energy Canada Limited (AECL) and has undertaken an onsite hydrogen production pilot with major retailer Canadian Tire, which resulted in two follow-on orders. The company also recently announced a partnership with Hyundai Motor Company and Kia Corporation, adding support for its innovative electrolyzer design. Following the successful pilots, Next Hydrogen is focused on scaling up its technology to deliver commercial solutions for decarbonization of the transportation and industrial sectors.

### ABOUT THE EXECUTIVE



#### Raveel Afzaal

President & CEO  
Next Hydrogen  
Solutions Inc.

Mr. Afzaal brings deep capital markets expertise through a distinguished career in equity research over the past decade, with a focus on Sustainability and Industrial Technologies. Prior to joining Next Hydrogen, he was an equity research analyst covering the Canadian Sustainability and Special Situations verticals for Canaccord Genuity. During his equity research career, Raveel was ranked in Brendan Wood surveys based on Buy Side nominations as well as by Thomson Reuters for estimates accuracy. Prior to joining equity research, Raveel worked in venture capital with XPV Capital. He graduated with a Bachelor of Mathematics and a Bachelor of Arts (Economics) from the University of Waterloo. He is also a CFA charter holder.

### EXECUTIVE DISCUSSION

**Shawn Severson:** Hello and thank you, everyone for joining us today. My name is Shawn Severson, Co-Founder and President of Water Tower Research and Head of WTR Sustainable Investing and ClimateTech Research here at WTR.

Glad to have everybody back again as part of our Sustainable Investing Fireside Chat Series. And as a reminder, this event will be archived and available on demand. You can ask questions in the bottom left hand corner. There is a box called the chat box, which is easy to find. And you can ask questions there. We will get to hopefully a few of those.

I will run through a number of questions that we have. And then, hopefully leave some time for a couple of questions from participants, as well. And today, we're glad to have Next Hydrogen Solutions with us. And, Raveel, I think we'll get into a little bit about your background here as well. The ticker by the way is NXT.V in Canada and NXHSF in the U.S.

And with that, I'll turn it over to you, Raveel. Tell us a little bit about yourself. And from there, we'll get into questions.

**Raveel Afzaal:** Awesome. Thank you, Shawn. Thank you for having us in your forum. My academic background is a Bachelor's in Mathematics and

Bachelor's in Economics, both from University of Waterloo. I'm also a CFA charter holder.

For the past decade, I've been focused in the sustainability space, consulting, venture capital and equity research focused on the sustainability space. Most recently, I was the lead equity research analyst for Sustainability & Special Situations for Canada at Canaccord Genuity. I used to cover the hydrogen space, and that's where I met Next Hydrogen.

**Shawn Severson:** So, let's talk about the basic investment thesis and how you see it from the inside, and kind of talk about the direction and the drivers that are making this an interesting space, and for Next Hydrogen's ability to execute on that.

**Raveel Afzaal:** Yes, the first thing is the market opportunity. Based on industry reports and industry experts, it's estimated that water electrolysis equipment alone is going to represent about 100 gigawatts of installation by 2030, which roughly equates to a US\$80 billion market by 2030. And that is just the tip of the iceberg if you look at the projections going forward to 2050. So this market opportunity is humongous.

And when we think about electrolysis, that's only 15% of the overall market opportunity, so there is a lot of ancillary revenue stream potential as well. Number two is we have an excellent team that is well-positioned to capitalize on this large market opportunity.

If you look at our product delivery team, starting with Matt Fairlie, who was the Chief Technology Officer of Stuart Energy and Vice Chair of U.S. Hydrogen Business Council and Chair of the Canadian Hydrogen Business Council in the past; also he is on the Board of California's Hydrogen Business Council.

Jim Hinatsu, Mike Stemp, our two co-founders, they along with Matt Fairlie have been building electrolyzers since the 1990s, first at Stuart Energy and then at Hydrogenics until 2007, and then they decided to co-found Next Hydrogen. And the team supporting them are from Doosan, from Tesla, from GE. It's an excellent, excellent team.

So, the market opportunities are significant. The team is exceptionally good at capitalizing on this opportunity. And the third thing is, since 2008, we have been focused on bringing a very differentiated electrolyzer to the marketplace, which meets a well-defined market need. So what we are trying to do is take conventional old alkaline electrolyzers and bring in the flexibility that you expect using much more expensive PEM cells, so that it better integrates with renewable energy resources and reduces the levelized cost of hydrogen. I'll expand more on that going forward.

Moving on, we are very IP-rich. So right now, we are commercializing our 1, 2, 3 MW product line. But following that, you will see us not just offer high current density electrolyzers, but some of the largest alkaline electrolyzers in the marketplace as well.

And then, we have another phase zero study on the PEM electrolyzer program. We are very well-funded to meet our product development goals. And the final thing is scarcity premium. There is a very large market opportunity. There are less than 10 notable players in the marketplace. We are the only notable player in Canada at this time, and the most advanced player in Canada at this time.

And when you think about pure plays, we understand we are the only publicly listed pure play in the electrolysis space in North America. So just to summarize, we have a very large market opportunity, a strong team, a differentiated product offering, an IP-rich company, and then we also have a scarcity premium.

**Shawn Severson:** Is there any part of that has come in recent times through an inflection point, I guess, if we were to look at it that way? Obviously, we look at the broader hydrogen market and fuel cells booming, right, and very early stages of growth. But from the company and inside the company, are there things that have differentiated over the last 6 months or 12 months, that would give a new look for things at Next Hydrogen?

**Raveel Afzaal:** I think the biggest thing is we were severely undercapitalized for a long period of time. And over the last 12 months, we have raised about \$64 million. We have grown our team from about 6 people in 2020 to about 40 people now, with an engineering team, a manufacturing team, aftermarket service team, which we didn't have in the past.

We implemented our ERP system. We moved into our new facility, which is a 20-megawatt facility on one shift. We can do up to three shifts. So it's been quite a lot of progress during the last 12 months.

**Shawn Severson:** Yeah, So then, some money in the bank enables the growth, right, and then to get things in position for sure. So the next question is a bigger picture question. Let's talk about hydrogen in general, and in particular, green hydrogen. I think a lot of investors are familiar with the backdrop, but I think it's worth talking through it again, and looking at what's driving it—regulatory, company corporate responsibility. Is what you're seeing, and how the production of hydrogen fits into this, critical for this?

**Raveel Afzaal:** Yes. So, hydrogen as you know has had many cycles in the past. And it's struggled to take off. Why is that? Because renewable electricity represents 80% of the cost of green hydrogen. And that used to be \$0.14, \$0.15, then came down to \$0.08/KWh. And now in some jurisdictions, you're seeing it at \$0.04. And in some cases, curtailed electricity, because of the supply/demand mismatch, allows you to get renewable electricity for even cheaper.

So that was a key prerequisite that we needed for green hydrogen to take off. And now, we are seeing renewable electricity pricing come down to a place where we can see the green hydrogen adoption rate increase, and the cost of green hydrogen come down substantially. Number two is, some industrial processes are difficult to

electrify and hence decarbonize. So think ammonia, cement, steel, these types of industries. They need a gas. You cannot electrify these industries economically.

So how do you deal with the carbon emissions of these industries? That's where hydrogen can play a role. Same thing in heavy mobility. I think it's a misnomer to think that we compete with lithium-ion batteries - we are complementary to them. Think of us as battery extenders.

In the future, you will see hydrogen cylinders up top of a truck. That will feed into a fuel cell. The fuel cell will convert that hydrogen into electricity that will keep charging a much smaller lithium-ion battery in real time. Why is that important? Because with lithium-ion batteries, the way to think about that is in terms of mega joules per kilogram.

For the amount of weight that they have, they can carry a relatively low amount of energy in them. So if you want to go long distances, the lithium-ion battery, by physics, must get bigger and heavier and heavier. And that's a problem in heavy mobility, because you need to carry the load on the trucks, you need that flexibility.

And the second thing is for 24/7 type of operations, you need faster fueling. And that's why in the heavy mobility market, you're seeing some of the largest OEMs announcing programs to launch hydrogen fuel-cell powered trucks. And then, there's the materials handling market - for example forklifts. That market has already come alive. You brought up Plug Power, and Plug Power is doing an excellent job in that marketplace. So I think those are the types of factors that I would probably bring together.

**Shawn Severson:** So just going back to a little bit of a technical issue, let's talk about how electrolysis produces green hydrogen. And you touched on some. Obviously the power consumption is significant, right? So maybe just give a quick tutorial, if you can, on what electrolyzer does. And you touched on some of the renewable energy uses, but clarify what makes it green versus how it's being produced in other areas. But then, also, let's talk about the technology of electrolysis.

**Raveel Afzaal:** Yes. So, hydrogen already is about a \$130 billion market in terms of sales. About 99% of that

is grey hydrogen. Grey hydrogen is essentially produced using steam methane reformation, where you take steam and natural gas, you produce hydrogen, and emit about 12 kilograms of carbon emissions per kilogram of hydrogen that you produce. That's called grey hydrogen.

Then you have blue hydrogen, which is exactly the same process, but you have carbon capture on the back end, so roughly right now you get about 6 kilograms of carbon emissions left behind for every kilogram of hydrogen that you produce. And then, you have water electrolysis. What we do is the only way to produce green hydrogen. And the process here is simply electricity and water. You take electricity to break the water molecule into hydrogen and oxygen. And if you use renewable electricity, the hydrogen that is produced is called green hydrogen with no carbon emissions.

**Shawn Severson:** The green hydrogen market is becoming a very specific market, right? And just maybe talk a little bit about the drivers of why somebody chooses green versus others as well as how you see the size of the market as well, in terms of a total available market?

**Raveel Afzaal:** That's exactly right. That's where when people ask, what do you think about the blue hydrogen market, it's good for green hydrogen companies, because they can open up the market opportunity, new applications for us, which we can eventually win, because there's good line of sight on green hydrogen being at parity, if not cheaper, than blue hydrogen going into 2030. So all the markets that would be applicable to them will be applicable to us. And more so because of what we talked about with renewable electricity pricing, where that's going. Number 2, 70% of the world GDP now has policies in place to grow the hydrogen economy. Even the U.S. infrastructure plan that President Biden is proposing. In Germany and in China, and all these other countries, when you start adding all of this up, it's about 100 gigawatts just going into 2030.

So what are the market applications? Starts off in materials handling. You have distribution centers, you want these forklifts to run 24/7, you don't want to use lead acid batteries, you want a new solution, that's where fuel cells are really taking off right now. Why? Because they can better withstand harsh environments and asset utilization goes up substantially. Whereas with lead acid batteries, you need to have one lead acid battery in the

forklift, one in spare, one being charged. This results in downtime that you don't get with hydrogen powered forklifts. So that's the first market that's already started moving.

The second market is heavy mobility, same reasons. You want a light truck, you want the truck to go long distance, and faster fueling for it, because nothing adversely impacts margins the way low asset utilization does.

Next up is industrial use. So think ammonia, cement, steel, those types of industries that already, in many cases, use hydrogen and are looking to decarbonize their operations by switching to green hydrogen, and the refining industry will be part of that as well. And then finally, where this goes is natural gas pipelines.

If you think about the electricity grid, they have renewable content of 5%, in some cases 20%, in them. But when you look at the natural gas pipelines, there's hardly any renewable content in those pipelines right now. So that's a big push right now. Is the electrification theme going to continue eating the market share of the natural gas market? And in order to ensure that natural gas assets don't become stranded over time, it's imperative for them to get more renewable content. And eventually, what you'll start seeing is green hydrogen being blended into these natural gas pipelines - 5%, 10%, over time to help ensure that natural gas pipeline companies can maintain their market share.

**Shawn Severson:** So, I think, it's pretty clear established, obviously, market opportunities, significant growth in a great industry. But let's talk about what's differentiated about next hydrogen and the competitive landscape. And obviously, you have a little better mousetrap, but maybe talk about how and why that is, and compare and contrast to your competitors as well.

**Raveel Afzaal:** Yes, so electrolysis is not something new. It's been around since the 1930s, 1950s. Historically, what we used to have were alkaline electrolyzers. And they would take a steady amount of electricity, have low operating points because of the way the cell design architecture is, and produce a steady amount of hydrogen that is then used in a downstream process. It works great in that application but the issue with alkaline electrolyzers is that they don't like to ramp

up, ramp down, very quickly. They don't work well with an intermittent energy source.

So as a result, the bright minds and capital started focusing on new cell materials, and hence you started seeing PEM electrolyzers. PEM electrolyzers provide you with flexibility, high current density, and quick dynamic response that you don't get with alkaline systems. But the issue is that they last about 60,000 hours. Alkaline cells can last about 90,000 hours. And then PEM uses platinum group metals which makes them significantly more expensive than alkaline cells. So, because we had been building electrolyzers since the 1990s, we asked, is there a way to use the same cheap, durable, commercially-proven alkaline cell materials and bring the type of advantages that PEM brings in terms of high current density and better dynamic response? And so that's been the focus for the company.

So, we are trying to occupy this rare white space of giving you the cost and durability of alkaline, while bringing you close to some of the performance characteristics of PEM electrolyzers. In terms of current density, a typical alkaline electrolyzer will be in the 0.5 milliamps per centimeter square range.

Our design enables about 1 amp per centimeter square. Why is that important? Because the more electricity you can pass through the same cell materials, the more hydrogen you can produce using the same amount of cell materials. So you have a cost advantage, you're using less materials to produce the hydrogen. So current density is very important in that regard. Our current density, is 2 times greater than traditional alkaline electrolyzers. Number 2 is the dynamic response. Our design enables ramp up, ramp down, at about 5% per second. A typical alkaline system can be up to 5% per minute, and best PEM is about 10% per second. So we're getting close to that same dynamic response you expect using PEM, but using cheaper and more durable alkaline cells.

And the final thing is inherent scalability. And how we do it is by completely revolutionizing the cell design architecture - how fluids and gases move through an electrolyzer. It's the first real design change that I know of since the 1950s. And enabled by that design change, we can make the system very, very large. And if you can make these systems large, you benefit from economies of scale. So, high current density resulting in less material

use, dynamic response, allowing you to better capture renewable energy resources, and inherent scalability leading to economies of scale - that's a very powerful combination to reduce the cost of electrolysis equipment.

**Shawn Severson:** And, I guess, let's talk about some of your relationships and how that's played out as well. I mean, talking about, to date, AECL, Canadian Tire, Hyundai and Kia. I guess investors are always looking for some proof, right? Some evidence that somebody that's a lot smarter than us is working with you, and why they're working with you, which is some sort of validation here. So maybe you can walk us through those relationships, how they came to be, why the choices. But let's go to the drivers of what brought them to you.

**Raveel Afzaal:** Yes. So the good thing about these demonstrations that we have done so far is that our customers have publicly spoken in our favor, following our demonstrations, which is very exciting, and you don't see that very often. Our first demonstration was with Atomic Energy Canada Limited, now they're called Canadian Nuclear Labs, a blue-chip organization, here in Canada. They needed an electrolyzer for CANDU reactor applications.

The electrolyzer that they needed was a high current density electrolyzer, which is why they selected us. It was a very successful project with them, and referred to in their public filings. They publicly spoke about how successful that demonstration was with them. Unfortunately, the CANDU reactor market itself is a very small market, but at least it allowed us to show our high current density functionality.

Number 2 was Canadian Tire. They were switching their forklifts over from lead acid batteries to fuel cell forklifts, and they bought our system in 2014. It was a 0.4 megawatt system for testing and evaluation of these forklifts. The system ran based on their requirements between 2014 and 2019. We had an independent third-party come and validate the system at the middle as well. Canadian Tire publicly spoke about the success of this project and the proof's in the pudding. We got orders for 2 systems, both 1.8 megawatts, on the back of this demonstration, and that's what we are scaling up to now that we are well-capitalized. That was the big issue for us, we were not well-capitalized. Now we're well-

capitalized, so we are scaling our systems up to these 1.8 megawatts size. This is a pretty big system which can produce about 650 kilograms of hydrogen per day - enough to power about 200 forklifts. So a very big system for the on-site distribution market, and we're delivering that next year.

And then the final thing with Hyundai and Kia, they due diligenced us for over a year. And on the back of that they put out a very complementary quote about our unique design in the press release that came out, and referred to a state-of-the-art water electrolysis company. These new partnerships have gone a long way in validating how unique our value proposition is.

**Shawn Severson:** And I think that validation is critical to point out, right, because growth companies that reach inflection points usually take some partner like that, or private programs, to create the data and create infield operations, right? So, I guess, as you look at where you sit today, you kind of have that portfolio-proof, let's call it—the data to really extend this and be able to grow sales without having to run through these trial processes again, is that correct?

**Raveel Afzaal:** So we have good data on smaller systems. What I want next is data on multi-megawatt systems. So that's the focus for us going into 2022. And then our objective is to enter large volume commercial sales in 2023. So in order for me to enter large volume commercial sales in 2023, what do I need? I need people. So my team's almost fully built out now, as I mentioned, we had 40 people and we're going to 60. But the key leaders in the different product delivery team functions are all here.

Number 2 is you need an assembly facility that's running on an ERP system, because otherwise, it's difficult to scale. That's established. Next up for 2022, we are planning about 5 demonstrations. And we want to run them in very different applications to make sure that we get 5,000 hours or more runtime on multiple applications in real life environment. And at the same time, we are working on supply chain optimization.

And so with all these pieces coming together, we aim to enter large volume commercial sales in 2023. And, of course, we are in discussions about potential other strategic partners as well. So we hope that we can

achieve some of that next year too, because what we want are partners, and the types of partners we are looking for are those who can scale us up, bring a large end-market to us, be our go-to-market partners. So a very exciting 2022 coming up for us.

**Shawn Severson:** Well, that's great, Raveel. My next question is something very near and dear to my heart as an analyst. What are the catalysts sitting outside the company? We're looking for ways to track progress, right, the evidence that you continue to go in the direction you say you're going. And so as we look out over the next 18 months, maybe a little longer, are you talking about different timeframes? What things would happen that show that you're executing to this plan towards 2023 commercialization? I know you mentioned some, but will these things be specifically mentioned in a press release, or how will this work?

**Raveel Afzaal:** Yeah, so I think demonstrations being press released is going to be big for us. Number 2, strategic partnerships will be very important. But fundamentally speaking that's only the tip of the iceberg. What's happening behind the scenes is equally important, though difficult to see, which is making sure that our manufacturing operations, our assembly operations, are very robust. And that's the key focus for us at this time. So, demonstration strategic partnerships will be very big. But there's going to be a lot happening behind the scenes as well in order to deliver on our 2023 initiatives.

The next thing after those 2 things will be reduction in cost for our systems, some of the supply chain initiatives, and the low-cost country strategy that's underway.

**Shawn Severson:** So let's go back to, obviously, the big part of this inflection point has been the financial condition of the company and having capital. Can you summarize that and talk about how you might use that money and where or how you're going to spend it, and what the future looks like, and the current financial situation as well?

**Raveel Afzaal:** We have about \$45 million of cash and no debt on the balance sheet. If we continue running as hard as we want to run, that lasts about 2 years without any government grants. Without any government grants is an important point to mention. And if we want to reduce the pace, which we don't anticipate, we can bring

our costs down to about \$8 million per year. So 2 to 4 years is the runway we have with this cash. The bulk of this cash right now is going towards product development. As I mentioned, we have a 1 to 3 megawatt product line, which we are bringing to the marketplace, and then you have much larger product lines that we are working on. So that's about \$20 million worth of R&D expense for us.

And the rest is about getting our assembly facility up and running. It's relatively low cost if you can believe it, because it's not a manufacturing facility, it's an assembly facility. The cost on that is about \$3 million, primarily for the cranes that we need. So for \$3 million, we're getting a 20-megawatt facility on one shift, so it shows how we can scale that up.

And the final big expense for us is going to be on these demonstrations, making sure we do it right. You only get one chance to build a strong brand. And this is our time to build a very strong brand with our partners.

**Shawn Severson:** Raveel, thanks. Well, that finishes my questions, and I want to leave a little bit of time here to take some questions from the audience. The first one we have is, you've mentioned cost-reduction. We got a couple questions on this. What does that cost-reduction look like? And it's a great question, because we all know that as costs go down, there is price elasticity and demand and all the other things that go along with it. So maybe some specifics on that would be very helpful.

**Raveel Afzaal:** We have not disclosed publicly what our cost target is for 2023. But, of course, it's cost competitive with where market pricing is right now, which is about \$1 million per megawatt for the systems. We want to make positive margins going into 2023. I can speak more about how we are going to achieve that, in terms of bringing our costs down.

So number one is the BOP, or the Balance of Plant. It's about 50% of the cost of a 1 or 2 megawatt system. And there are substantial opportunities based on commercially available materials to bring down the cost over there.

Next is scale-up of the systems. Right now, we have three modules in the system. Our objective is to bring it to two modules. And that's going to result in significant cost

savings as well. And the third thing is, you are seeing such innovation in cell materials and cell components that now we will capitalize to drop into our electrolyzers. It's not a big technical feat for us to get that done.

And we are testing some of those new cell materials and cell components. So going into 2023, all of these things—the BOP optimization initiative, balance of plant optimization initiative and just for reference that's the hydrogen skid, the oxygen skid, the water purification system, rectifier, those types of things). So there is a lot of opportunity, low-hanging fruit, to optimize our balance-of-plant cost.

Then, we talked about reduction in the number of parts we have in our electrolyzer module. And the third thing is cell electrical efficiency. So that's our roadmap.

**Shawn Severson:** Thanks, Raveel. Next question is, who do you view as your main competitors?

**Raveel Afzaal:** I would say probably Nel. Nel is our biggest competitor right now. They are a very well-established player in the marketplace, with good reference sites, especially on the alkaline side. Other players in this space are McPhy Energy, ITM Power, ThyssenKrupp, which is doing a good job in this space as well, and Siemens.

We have another new company that recently got publicly listed. It's called Green Hydrogen Systems. So all in all, when you think about notable players, I mean, there are, of course, smaller players who are trying to get into this place – but notable players, there are less than 10 in a very large market opportunity.

**Shawn Severson:** That actually ties in well with other questions we're getting about your patent portfolio. And maybe I can ask it in a different way. And say, where and how are you differentiated? Obviously, you do have an IP portfolio that's pretty substantial. But how do you protect that? Are there any leapfrog technologies that are out there or real changes in the technology that you're aware of that we have to watch for?

**Raveel Afzaal:** We have 38 patents on our core design. It's a very unique design. It's not in the marketplace right now. And even if someone wants to copy that and bring that into the marketplace, it will take many years to

perfect. And there is a lot of know-how which is not in the patent portfolio.

So it's difficult to replicate us. And of course, we have patents in all the key jurisdictions. And we understand how to support our IP portfolio and litigate if necessary. We have that expertise in-house.

The second thing is, of course, there are new technologies coming in. A lot of exciting developments are coming up. A lot of these companies represent potential partnership opportunities, because the way to think about us is that we create the body of the car - the cell design architecture, how we're managing fluids and gases - think about that as the body of the car. The body of the car is agnostic to what engine you're putting in, in simple terms.

So if you start seeing some of the new cell materials, cell components come in, that'll be complementary to us. It'll actually be beneficial to us, because we are making the body of the car. The engine can be improved on and some companies are doing some really good work in that. And we are speaking with them. So we are very mindful of what's in the rearview mirror, and the partnership opportunities to be had, especially given how flexible our cell design architecture is. So we are making some progress on that.

**Shawn Severson:** Great. Thank you, Raveel. And we're 30 minutes past, so I'm going to make this the last question we're taking. And it's a good one, same technology roadmap. We touched on it in a couple of different ways during today's fireside chat, but let's look at the bigger picture. For the technology roadmap what do you see, where are you going to spend that money in R&D, for example, and what does it mean, and the timing of the spend?

**Raveel Afzaal:** The most amount of money that we are spending right now is for product development. And by the way, I mean, if you are an electrolysis company, by 2025 you should be targeting \$500 per kilowatt by 2025. If you are not in that ballpark, it's a problem. So we are well-positioned to hit that if not exceed that.

How are we going to do it? Number one is reducing the number of parts of our electrolyzer. We have a good plan around that, and also the scale-up of the electrolyzer.



Those are two areas which will both help. Reducing parts, is obvious. Scale-up, why that's important is because that helps you rationalize the balance of plant too. So for example, when you think about a 6 megawatt solution versus a 2 megawatt solution, the balance of plant cost does not scale linearly as you go to 3 times the output. So think about reducing parts while you scale up the system.

Then, along with the rationalization of the balance of plant, you also have optimization of the balance of plant, so reducing the cost of balance of plant. And then the final thing is in terms of improving the efficiency of our systems. There is a lot of good work that's being done on polarization curves that we think we're going to leverage, and the market will see that going into 2023.

**Shawn Severson:** Great. Thanks. It's been very helpful. And I'll turn it over to you for any closing remarks that you have. But I think this is very informative. And what a super unique market and growing market where investors are looking for new opportunities. So I'll turn it over to you for any closing remarks. And then I'll finish up.

**Raveel Afzaal:** Yeah, I'm very appreciative of this opportunity. We are chasing a goal, which is bigger than ourselves. So if there are any strategics or any potential customers listening to this call, I would say we are all

about collaboration, because the pie is too big for us to try to want to have it all to ourselves. We want to collaborate.

And the objective has to be bigger than us, what we're trying to do. It's a bigger objective, which is about decarbonizing our planet. And that's very important this decade. And we want to focus on that. We think the market opportunity is huge. We have the right people in place. We have a differentiated product offering. We are very IP-rich, and now we're also cash-rich. So we are well-positioned to execute on this market opportunity.

Thank you for listening and thank you for the support.

**Shawn Severson:** Great. And thanks to everybody participating today. As a reminder, you can access all of our research—it's open-access, non-permissioned research—at [www.watertowerresearch.com](http://www.watertowerresearch.com). And you can access this event on there as well, of course. But I'd encourage you to take a look at some of the research content on that site.

Again, thank you for everybody joining us today and we look forward to having everybody back. Thanks, Raveel.

**Raveel Afzaal:** Thank you, Shawn.

## ABOUT THE ANALYST



**Shawn Severson**

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Shawn Severson is President & Co-Founder of Water Tower Research and is a member of the Board of Managers. Prior to co-founding Water Tower Research and previously founding predecessor firm alphaDIRECT Advisors, Shawn spent over 20 years as a senior equity research analyst covering the Technology and ClimateTech sectors, including senior positions at JMP Securities, ThinkEquity, Robert W. Baird (London), and Raymond James.

Shawn started his career as an Equity Research Associate at Kemper Securities. Shawn was frequently ranked as a top research analyst, including one of the Wall Street Journal's "Best on the Street" stock pickers and a StarMine Analyst Awards Top 3 stock picker. Shawn holds a BA in Finance and Economics from Augustana College.

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