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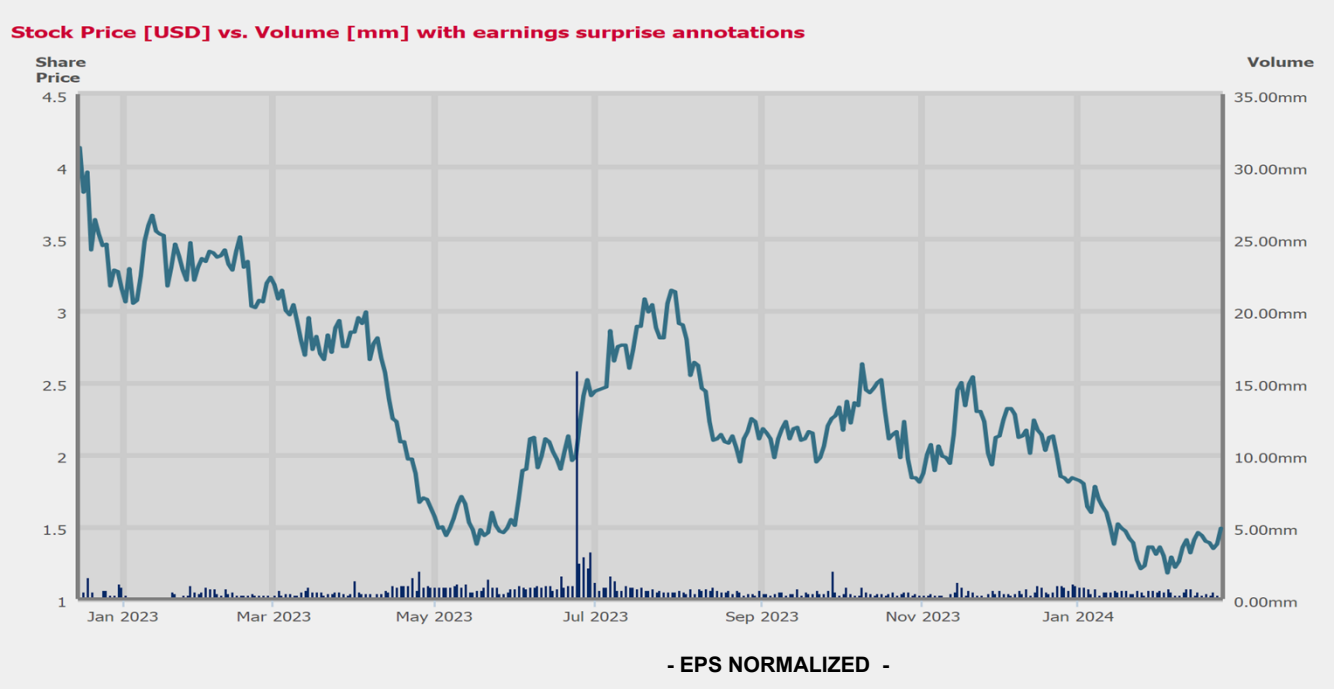
FQ4 2023 Earnings Call Transcripts

Monday, February 26, 2024 10:00 PM GMT

S&P Global Market Intelligence Estimates

	-FQ3 2023-			-FQ4 2023-	-FY 2023-	-FY 2024-
	CONSENSUS	ACTUAL	SURPRISE	CONSENSUS	CONSENSUS	CONSENSUS
EPS Normalized	(0.07)	(0.04)	NM	(0.12)	(0.25)	NA
Revenue (mm)	0.00	0.00	0.00	0.00	0.00	NA

Currency: USD
Consensus as of Jan-03-2024 1:50 PM GMT



- EPS NORMALIZED -

	CONSENSUS	ACTUAL	SURPRISE
FQ4 2022	NA	NA	NA
FQ2 2023	(0.07)	(0.04)	NM
FQ3 2023	(0.07)	(0.04)	NM

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Presentation

Operator

Good afternoon, ladies and gentlemen. Thank you for joining today's SES AI Corporation Fourth Quarter 2023 Lender Call. My name is Tia, and I will be your moderator for today's call. [Operator Instructions] It is my pleasure to pass the call over to Kyle Pilkington, Chief Legal Officer. Please proceed.

Kyle Pilkington
Chief Legal Officer

Thank you. Hello, everyone, and welcome to our conference call covering our fourth quarter 2023 results and financial guidance for 2024.

Joining me today are Qichao Hu, Founder and Chief Executive Officer; and Jing Nealis, Chief Financial Officer.

We issued our shareholder letter just after 4 p.m. today, which provides a business update as well as our financial results. You'll find a press release with a link to our shareholder letter in today's conference call webcast in the Investor Relations section of our website at ses.ai.

Before we get started, this is a reminder that the discussion today may contain forward-looking information or forward-looking statements within the meaning of applicable securities legislation. These statements are based on our predictions and expectations as of today. Such statements involve certain risks, assumptions and uncertainties, which may cause our actual or future results and performance to be materially different from those expressed or implied in these statements. The risks and uncertainties that could cause our results to differ materially from our current expectations include, but are not limited to, those detailed in our latest earnings release and in our SEC filings.

This afternoon, we will review our business as well as our results for the quarter. With that, I'll pass it over to Qichao.

Qichao Hu
Founder, Chairman & CEO

Thanks, Kyle. Good afternoon, everyone. We posted a thorough shareholder letter on our website, which provides all the details for the quarter, the year and our 2024 outlook.

Now I want to make our time more efficient with a more focused conversation. There are 3 key points that I believe you should take away from SES AI's results and outlook. First, we became the world's first to enter into automotive B-Sample joint development with a major automaker for lithium metal. This is a major milestone in the commercialization of lithium metal battery technology for automotive applications. In 2024, our focus will be delivering on our EV B-Sample joint development.

Second, in addition to EV, we have also identified urban air mobility, or UAM, as an exciting application for lithium metal. The high energy density and high power density of lithium metal really enables UAM. UAM is a natural stepping stone to EV for lithium metal. Third, to ensure practical safety, especially as we prepare for C-Sample and commercial deployment, we are doubling down on the use of AI to monitor battery health and predict incident. Our lithium metal large cell Avatar AI prediction accuracy increased from just 60% in 2022 to 92% in '23. And this year, our target is 95%. Ultimately, we want to achieve near 100% safety guarantee for EV and UAM.

Now I'll talk more about 2023 accomplishments. 2023 was a great year for us. We took a massive step towards commercialization of our lithium metal technology for automotive applications. We signed the world's first automotive B-Sample joint development agreement for lithium metal batteries with a major automaker. No one has gotten this far with lithium metal batteries for EV application. This is a giant leap in the commercialization of lithium metal technology for automotive applications. Our 3 JDA partners, GM, Hyundai and Honda, continue to be very supportive and push aggressively in EV. Hyundai recently just became the second largest EV maker in the U.S.

It's significant to note that 2 of the key milestones for entering into B-Sample development include practical safety and manufacturability. We'll share more details around these 2 accomplishments. The first one, practical safety. Achieving [hazard level 5] for large 50-mPOWER and 100-mPOWER lithium metal cells was a combination of improved safety and materials as well as improvements in cell design and engineering. In fact, we achieved greater safety-related breakthroughs in cell engineering than the

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material chemistry. This was intentional because by having minimal changes to material chemistry and by focusing on cell design and engineering, we didn't have to sacrifice cell performance in energy density.

We recruited the world's top cell engineering talent and created designs that are still based on lithium-ion so they can be manufactured at scale, but are unique for lithium metal and can address safety-related challenges. We won't go into details about these cell design and engineering improvements since they are our newest trade secrets. But these new designs, engineering and process improvements are being incorporated into our new B-Sample cells.

With regard to manufacturability, we operated 3 A-Sample lines last year. It's important to highlight that we built more large automotive lithium metal cells per month in just one line in 2023 than during all of 2022. This was made possible, thanks to significant improvements in wide-width thin lithium metal anode production and anode electro punching and stacking. We made the right decision to move lithium anode production in-house. We were able to resolve issues associated with tear, wrinkle and powders much more efficiently.

By consistently producing a large quantity of large automotive lithium metal cells, we generated a large amount of data that we fed our health monitoring and incident prediction Avatar AI model. Prior to 2023, our Avatar AI prediction accuracy was 60%. By the end of 2023, we are pleased to announce that we achieved 92%. This is an important progress. The combination of greater number of cells and greater number of quality control checkpoints per cell was instrumental to the training of our Avatar AI model, making it more accurate. Our training data increased 10x from 2022 to 2023. We are confident that with more data training and advancement in AI model, we will achieve 95% incident prediction this year and eventually reach near 100% safety guarantee.

In 2023, we also laid the foundation for using AI for future road map electrolyte development. The goal is to build a road map for future generations of lithium metal.

Now switching to our 2024 plans. We expect to make further progress in automotive commercialization of lithium metal in 2024, and we will focus full steam on our EV B-Sample JDA. We plan to further boost our cell engineering and process development efforts. We'll continue to improve, sell practical safety and manufacturability. We plan to build and operate B-Sample lines with our JDA partners, potentially one at our own facility and another at our JDA partner's facility.

These B-Sample lines will incorporate our latest cell design and engineering as well as manufacturing process improvements. These B-Sample lines will also have our latest production quality control plan. We will increase from about 600 checkpoints to about 1,500 checkpoints later this year, including more imaging-based checkpoints such as X-ray, ultrasound, CT and vision. All these will be fully integrated with our Avatar AI model. This means the amount of training data for AI model will significantly increase in both quantity and quality. We expect our Avatar AI prediction accuracy to reach 95% for large automotive cells by end of this year.

Avatar AI can reach near 100% incident prediction accuracy with sufficient data training. This is very different from today's lithium-ion quality data, which are still largely based on traditional statistical analysis. And the manufacturing data are decoupled from real-world vehicle data, and very basic models are used to predict incidents. That's why we still have lithium-ion battery incidents that cost billions of dollars in recall. Our Avatar AI applies a far more advanced AI model that is pretrained on both lithium metal and lithium-ion data. And we have access to a comprehensive set of material chemistry data, manufacturing quality data and real-world vehicle data. We can achieve near 100% safety guarantee. This near 100% safety guarantee is extremely important for automotive applications, and it's only possible with advanced Avatar AI.

On the use of AI for roadmap electrolyte development, our amazing team of human scientists and AI scientists will work together to systematically study electrolyte chemical structures from public and internal database. We are very excited to report that we will commission our new electrolyte foundry in Massachusetts to focus exclusively on high throughput synthesis and testing of both human and AI-generated electrolyte solvent and cell chemical structures.

This is super exciting area. Some pharmaceutical companies have already demonstrated promising signals using similar approach. However, we are the very first to go this deep in the battery industry, and the signals are very inviting. We know we can accelerate the streaming of novel electrolyte candidates. Now let's see if we can use AI to develop a new electrolyte that's better than the best-ever human-developed one. While we focus on automotive commercialization of current generation of lithium metal, this will help us build a robust roadmap of future generations of lithium metal.

In addition to the EV market, we identified Urban Air Mobility, UAM, as a promising and exciting market that is about to take off, especially when powered by high energy density lithium metal batteries. It's significant to note that B-Sample for EV is equivalent to commercial production for UAM. For UAM, the energy density and power density of current lithium-ion batteries are too low. And that results in short flight time and limited payload an d number of passengers, making the current UAM business not economical. Lithium metal with about 60% higher energy density will change all that and make UAM a profitable business.

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The leading UAM companies have been waiting for a lithium metal company that can produce high-quality, large automotive-grade cells. And 2024 will be a key year for the battery design-in and quantification, and 2025 will see demo flights in major cities such as Seoul, New York City and Abu Dhabi.

This is a perfect timing for us. We will convert one of our A-Sample lines in South Korea to produce exclusively UAM cells. This will incorporate our latest production quality control plan and be fully integrated with Avatar AI. This line, just off of Seoul, will have all the quality and engineering improvements of our B-Sample lines but dedicated to UAM lithium metal cells, modules and Avatar AI development and production.

So our 2024 goals will include 3. First is focus on EV B-Sample . We will work with our B-Sample joint development partners to build and operate new B-Sample lines. We will improve manufacturing quality control plan from 600 to 1,500 checkpoints. Second is ship UAM cells. Our UAM sales will be our first commercial products. We will build a dedicated UAM lithium metal line and ship the first batch of cells to our UAM customers. Third is improved Avatar AI incident prediction accuracy. Our ultimate goal is near 100% safety guarantee for EV and UAM applications. In 2024, our goal is 95%. We will finish pretraining our Avatar AI with EV A-Sample data and train with new EV B-Sample and UAM cell data. These are challenging but exciting goals. Progress in EV B-Sample development and shipping the first batch of UAM cells will represent major progress in the commercialization of lithium metal batteries for EV and UAM applications.

Achieving 95% incident prediction accuracy for Avatar AI will represent a major milestone towards the ultimate goal of near 100% safety guarantee, which will be critical for real-world safety.

In future roadmap material development, we're building an AI super scientist. In cell design and engineering, we're building an AI super engineer. In manufacturing quality and real-world health monitoring and incident prediction, we're building Avatar AI. And this information can be used in our supply chain and sustainability management so we reduce cost and CO2 footprint and build a new supply chain for our EV and UAM customers.

At SES AI, our mission is to power a new era of electric transportation on land and in air with lithium metal batteries. As we build more automotive large capacity lithium metal cells, generate more data, expand to B-Sample and prepare for C-Sample and commercial production, AI becomes an increasingly integral part of both material development and battery health monitoring and incident prediction. Lithium metal not only leads to longer range and more passengers, but near 100% safety guarantee and accelerated roadmap technology development. We realize that we are building more than just a battery company, but the beginning of a superintelligent AI for electric transportation.

With that, I'll pass to our Chief Financial Officer, Jing Nealis, for a financial update.

Jing Liu Nealis
Chief Financial Officer

Thank you, Qichao. Good afternoon, everyone. Today, I will cover our fourth quarter and full year 2023 financial results and discuss our operating and capital budgets for 2024. In the fourth quarter, our operating expenses were $17.9 million, down slightly from the same period last year. Stock-based compensation expense was $4.4 million in the quarter. We reported research and development expenses of $7.4 million. Our gross R&D spending in the fourth quarter was $16.2 million, which includes $8.8 million that was billed to our OEM customers and is treated as contra R&D expense.

Our G&A expenses were $10.6 million. For the full year 2023, cash used in operations was $56.4 million, and capital expenditures were $15.8 million. We ended 2023 with $332 million in liquidity. Our strong balance sheet will support the company as we maintain on track to achieve our commercialization milestone. For the full year 2024, we expect cash usage from operations to be in the range of $90 million to $100 million and capital expenditures in the range of $20 million to $30 million. We expect total cash usage for the year in the range of $110 million to $130 million.

Priorities for 2024 spendings are to attract top talent to support the strategic goals Qichao laid out earlier; build production capacities to deliver lithium metal cells to our EV and UAM partners, and invest in the use of AI for electrolyte material discovery as we stay at the forefront of battery material science innovation.

We are very thankful for all the support we have received from our customers, partners and shareholders.
With that, I will hand the call back to the operator to open up for questions.

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Question and Answer

Operator

[Operator Instructions] The first question comes from the line of Winnie Dong with Deutsche Bank.

Yan Dong
Deutsche Bank AG, Research Division

First is a clarification. It seems like you're now targeting 2 B-Sample lines. I just want to clarify if this is for one JDA partner? Or if it's like 2? I think you've sort of hinted at that in the Battery Day. And then if you can also remind us what we could anticipate in the B-Sample process and the time line on when it could potentially conclude.

Qichao Hu
Founder, Chairman & CEO

Yes, Winnie. So last year, we announced one B-Sample. And then -- so one -- and then we're preparing one B-Sample line for that B-Samples JDA. And then we are working with at least one other OEM carmaker to potentially sign a second B-Sample JDA. So this is why we're preparing a second line. And then later this year, we might end up having 2 B-Sample lines and operate 2 B-Sample lines. And then in terms of timing, we expect the B-Sample development will take about 18 months. So this year, 2024 and until mid-next year.

Yan Dong
Deutsche Bank AG, Research Division

Got it. And then I think some of us may not be entirely familiar with the UAM application and then the developmental process. And you mentioned on the call that B-Sample is actually equivalent to commercial production on that front. So I was wondering if you can maybe elaborate a little bit more on that and potentially disclose how many related partners are you actually working with currently?

Qichao Hu
Founder, Chairman & CEO

Yes. Yes, that's a good question. So with EV, you have this sort of cliff basically after B-Sample and the C-Sample. And then you have to get to at least 10 gigawatt hours, basically, say, from less than 1 gigawatt hour all the way to 10 gigawatt hour. And then if you don't have more than 10 gigawatt hours, then it's really hard for you to get any meaningful commercial contract. But then for UAM, it's different because UAM is actually still in the process of ramping up. And then several companies in the UAM, their volume currently are small. We're talking about single-digit number of aircraft per year.

So that's actually a very good opportunity for us because then our B-Sample line, even a fully optimized A-Sample line, we can produce at least 1,000 cells per month. And 1,000 cell is about 2 aircraft worth of batteries. So per month, and obviously, considering yields, all that stuff, we can make 1 to 2 aircraft worth of batteries. That's not very meaningful for EV, but for UAM, it's actually very meaningful.

And then we're able to supply to them not only for testing, but in later for FAA qualification, certification as well as commercial because EV is already a big market which we continue to focus on. And that is still the core focus for the UAM because it's a small market, and it's just ramping up, we can actually ramp up our battery capacity along with UAM ramp up.

Yan Dong
Deutsche Bank AG, Research Division

Okay. That's very helpful. And then maybe on the CapEx spending of $20 million to $30 million for this year. I was wondering if you can delineate how much of that goes into automotive versus UAM. I think also for 2023, you've ended the year with quite a bit lower CapEx than targeted. So I guess, what do you think get spent? And then if you can also comment on the capital efficiency and what's driving the much lower spending, that would be helpful.

Qichao Hu
Founder, Chairman & CEO

Yes. Go ahead. Okay. Yes. Go ahead, Jing.

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Jing Liu Nealis
Chief Financial Officer

Qichao, thanks. So to answer your first question, of this year's guidance, most of the cash is on the EV B-Sample line. We are going to spend some money to change one of our current A-Sample lines to be dedicated UAM lines. But that portion of the CapEx is a relatively small portion of the overall CapEx spending.

And to your second question on last year's lower spending than our guidance. Most of the lower spending is due to just cost control and both on the G&A, some R&D to try to be very prudent with our cash. So a lot of the OpEx part of the saving is permanent. And then on the CapEx side, we were pushing out some of the PO process for the B-Sample line that Qichao talked about. So that was a timing issue that was pushed out from last year to this year. So we're placing the PO customers still going through the other valuation process and will place appeal with the B-Sample line this year. So it's partially timing but largely permanent reduction on the cost. Please feel free to add.

Qichao Hu
Founder, Chairman & CEO

Yes, Winnie, so the focus is definitely on automotive-s. And most of the CapEx this year will be on the building and operation of 2 B-Sample lines later this year. And then for UAM, basically what is taking an old A-Sample line and then converting that to UAM. But the focus, all the development, all the new stuff will definitely take place on the automotive B-Sample lines.

Kyle Pilkington
Chief Legal Officer

Operator, are there any further questions on the -- in the queue?

Operator

Yes, we will take the next question come from the line of Shawn Severson with Water Tower Research. There are no additional questions at this time. I will pass it back to Kyle Pilkington for any additional remarks.

Kyle Pilkington
Chief Legal Officer

Thanks. We did receive a few pre-submitted questions by virtue of a questionnaire we made available to investors ahead of the call. And at this stage, we'll take a selected number of the questions which were submitted by investors for our CEO, Qichao Hu.

The first question is, when will the first commercial battery production be available on the market?

Qichao Hu
Founder, Chairman & CEO

Yes, I think for UAM and as we mentioned earlier, UAM is a nice beachhead, a stepping stone to EV. So for UAM, we are targeting first half of 2025 next year. And for EV, we're targeting likely the second half of next year.

Kyle Pilkington
Chief Legal Officer

Great. The next question we got from investors ahead of the call is what are the key challenges to scale lithium metal anode in production when it comes to notching and stacking?

Qichao Hu
Founder, Chairman & CEO

Yes, we actually covered this in previous earnings calls. So the material itself lithium and especially lithium on copper, it's quite thin and then quite weak. And if you use conventional processes like laser or metal diode punching, you actually don't get very good results. And then you end up with lots of issues like powders or tearing and also making large with very same lithium foil is also very difficult. And then you end up with wrinkles and then we actually work with several partners and try different techniques from extrusion lamination to just coating. And eventually, we actually settled on one process. And then in the early days, we used to have the vendors make it for us. But then we realized it was hard to control the quality. So then we took this in-house and then we're able to improve the quality and the product a lot faster.

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Kyle Pilkington
Chief Legal Officer

Great. And the final question we'll take from the pre-submitted questions from investors is, how will you use artificial intelligence to advanced battery technology?

Qichao Hu
Founder, Chairman & CEO

So for us, it's really 2 parts. One is to ensure safety. And then any time you have a new battery technology, especially one that has very high energy density, and especially your B-Sample and the C-Sample and then very soon, commercial, the consideration around safety becomes quite different. And then we're not talking about just paper safety, but we're talking about, can you put this battery inside a car or inside an aircraft and the actual usage, is it safe. And then also what happens when the worst happens.

So the use of AI, basically by collecting the manufacturing quality data because also quality is safety. A lot of the issues that are happening in quality will directly result in incidents. And also collecting actual live vehicle data, then we can actually predict the incident and then have a very accurate monitoring of the battery health. And then we can actually predict the incidents before it happens. So this becomes really important. And then it's really important to give OEMs the confidence that, yes, it's a new battery technology, yes, it has higher energy density than other battery technologies, but it's actually safe because we can make it safe with the use of this Avatar AI. And then the other part is using this for future material development. And then that's when we try to improve the performance, cycle life, energy density, safety and for future road map material development. And this AI really allows us to screen a lot more candidates much faster.

Kyle Pilkington
Chief Legal Officer

Excellent. Thanks. I'll turn it back to the operator. Operator, are there any additional questions in queue at this stage?

Operator

Yes. The first question comes from the line of Shawn Severson with Water Tower Research.

Shawn Michael Severson
Water Tower Research LLC

Can you hear me now?

Kyle Pilkington
Chief Legal Officer

I can hear you.

Operator

Yes.

Shawn Michael Severson
Water Tower Research LLC

Qichao, I wanted to talk about the B-Sample push in 2024 and how does that reflect itself in terms of milestones or events over the next 12 to 18 months that are going to be able to provide kind of progress reports and updates. So just trying to understand the news flow of data that comes out of this as you go through this -- the B-Sample push.

Qichao Hu
Founder, Chairman & CEO

Yes. The B-Sample itself and entering B-Sample itself is a big milestone. It represents a new chemistry. Lithium metal is no longer in R&D or just early-stage engineering development, but it's actually in B-Sample. And then we are considering a lot from the perspective of the final vehicles. So some of the milestones would improve. For example, we are setting up the line, and we will begin operating the B-Sample lines, and then we expect second half of this year, we will have the B-Sample lines running.

And then in the first half of 2025, we will have data from the cells coming off the B-Sample lines. And then these cells will likely be different from the original designs. In terms of product designs, for example, some will have high nickel cathodes for the premium

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vehicles. Some will have LFP cathodes for the economy cars, and then also benchmark costs of LFP lithium metal with high nickel lithium-ion to showing that these LFP lithium metal B-Sample cells can actually be the low cost but also actually very high energy density.

And then yes, so also in the first half of 2025, then the quality, the number of quality control points, the incident prediction and then integrating the B-Sample line with Avatar, just showing that the number of cells that we built and the number of quality checkpoints per cell and then the product of the 2 helped us increase number of amount of data that we'll have access to how that will help train Avatar and make Avatar more accurate. [indiscernible] in Avatar -- just tie it together.

Shawn Michael Severson
Water Tower Research LLC

That was kind of my next question was about Avatar and safety as well. How differentiated is this 100% safety goal? When you look at some of the other technologies and batteries out there and your conversations with OEMs, I mean is this something that is very unique, you think, to SES and this goal to be a realistic goal to achieve versus what's out there today for options for OEMs?

Qichao Hu
Founder, Chairman & CEO

Yes. So the goal, obviously, is a goal shared by almost all OEMs, near 100% safety guarantee. And then this is really important because when you have a car or an aircraft out there, you need to make sure it's safe. So what's unique about SES is that all this data are actually for lithium metal. And then Avatar AI, any AI that's used is actually quite dependent on the quality of the data. And then no one else has the amount of lithium metal data that we do.

And the reason -- actually -- we actually don't care about the OEM JDAs. What we -- the reason that we built these B-Sample lines is to collect more data as we generate more data. So for us, the B-Sample lines are like a mine of data. So no one else has these B-Sample lines and no one else has the quality and the quantity of lithium metal cell data that we do. So that we can use all this data to train this Avatar.

So our data are specific to lithium metal, and our Avatar is specific to lithium metal. And so it's unique in the sense that no one else has access to the kind of lithium metal data that we do. So our Avatar is most accurate for lithium metal.

Now in terms of is this approach unique, it's also unique because even if you look at lithium ion today, most OEMs still have access to car data, but they won't have access to battery data, or most car -- or most battery companies will have access to manufacturing data, but not car data. But then so what you're trying to do is actually integrate the battery manufacturing data with the car data. And then this approach is also quite unique.

Some larger companies are in the process of doing this, but then because they have a large inertia and then it's quite sensitive for them to change so that they have not implemented this approach yet. But -- so for us, it's unique because we have the highest quality and highest quantity of lithium metal data and also this approach of combining cell manufacturing and also vehicle data.

Shawn Michael Severson
Water Tower Research LLC

And my last question is regarding the UAM market and opportunity. Obviously, you seem pretty excited about the opportunities having some commercialization there. Can you help us understand how you think about the market, the development, the commercialization there? I mean, obviously, you're talking about very few units, but going out over the next year or so. But why does this make you excited when you look to this to be an important part of SES' future?

Qichao Hu
Founder, Chairman & CEO

Yes. So I mean the focus is on EV and all the development that we're doing are not really targeted for UAM. Therefore, EV is just that these batteries actually happen to have very good usage in UAM. And what's exciting about this is really 2 things. One is from the customer perspective. So UAM currently, this market doesn't really exist or it's very early stage because without a high energy density, high power density battery, it's not practical. You can only carry 2 people or you can fly 10 minutes, less than 20 minutes. The whole market is not economical. But with lithium metal, so you can carry more people, you can carry more payload, and then you can fly for longer, then the business actually becomes more economical.

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So from the customer's perspective, UAM, lithium metal really enables UAM. And then that's why it's very exciting. And then from our perspective, because once we get design-in, once we go through all the qualifications, all the testing, the FAA certification, this battery, this battery pack actually becomes FAA certified. And then you are there, you set the standards for many years to come. So from both the customers' perspective and also our perspective, it's a very good fit. And the volume is small so we can actually produce using our B-Sample lines and also A-Sample lines. That's why it's a good fit in terms of the near term.

Operator

The next question comes from the line of Jed Dorsheimer with William Blair.

Mark Haywood Shooter
William Blair & Company L.L.C., Research Division

You have Mark Shooter on for Jed Dorsheimer here. Qichao, a question for you on the progress of the prismatic cells. That was one of the main takeaways from Battery World. I'm wondering has there been any more progress there? Any other color on that? Any other -- anything from the other JDA partners on the prismatic cell?

Qichao Hu
Founder, Chairman & CEO

Yes. So the prismatic cell, we have made some progress, and we plan to update that in the second half of this year. And prismatic cell is actually for one of the B-Sample JDA partners. So the use -- the combination of LFP, lithium metal in the prismatic format. We'll have more updates later this year.

Mark Haywood Shooter
William Blair & Company L.L.C., Research Division

Okay. Great. Next, switching gears a bit to UAM. You talked about a 60% increase in energy density versus the incumbent. So if I take around 700 watt hours per liter for traditional cells, which is a rough benchmark, are you looking to target over 1,100 watt hours per liter for these cells? Is that a target you need for that B-Sample lines converting to UAM?

Qichao Hu
Founder, Chairman & CEO

Yes, yes. Right. So the current lithium ion, we're talking about 720, 750 watts per liter, and then 260, 280 watts per kg. So for the UAM cells, we're targeting at least 440 and higher watts per kg, and 1,100 to 1,200 watts per liter. So these will have very high energy density at the cell level.

Mark Haywood Shooter
William Blair & Company L.L.C., Research Division

Okay. And are there -- the latest 100 mPOWER data was around 860 watt hours, I believe. So are there -- what are the puts and takes there? Is that just general materials improvement? Or can you make trade-offs versus cycle life to achieve that?

Qichao Hu
Founder, Chairman & CEO

Right. Right. So the UAM will not use the exact same cell design as the 100 mPOWER, the A-Sample cell. So the A-Sample and the B-Sample EV cells, those are designed for long cycle life. And then EV cycling conditions, typically silver tree charge and discharge, 3-hour charge and discharge. But then for UAM, then the cell designs will be different because we're going to target a much higher energy density. And then the charge and discharge profiles will be different. We're going to use relatively slower charge or battery swapping. This is one business model that we are actually discussing with several UAM customers and also the UAM discharge profile. So take off [climbs, crews, design and mining] and also the depth of charge and discharge are different. So because of the difference in the UAM mission profile and the EV mission profile, we will design the cells differently. So the materials will still be the same. But for example, cathode loading, thickness of lithium, the cell design will be different.

Operator

[Operator Instructions] There are no additional questions left at this time. I will hand it back to Kyle Pilkington for any closing remarks.

Kyle Pilkington

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Chief Legal Officer

Thanks. I'll turn it over to Qichao for any closing remarks before we end the call.

Qichao Hu
Founder, Chairman & CEO

Yes. Thanks, Kyle. Yes. So basically, I just want to reiterate the 3 main focus for us. One is absolute focus on EV B-Sample JDA. We sign the world's first, and we expect to sign more later this year. So the EV B-Sample and the B-Sample lines will be critical to improve our manufacturability and also generate more data. Second is we identify UAM as a stepping stone to EV, and then we're going to deliver the first batch of UAM cells this year. And then third is we'll try to achieve near 100% safety prediction. And this year, our goal is 95%. And then we really want to improve the quality and quantity of our lithium metal cell data, both testing data as well as the manufacturing quality data. So these are the 3 focus, and then I'm really excited about this year and as we continue to make progress towards commercialization of lithium metal for EV and UAM and also integrate the use of AI as a core part of SES. So thanks.

Operator
That concludes today's conference call. Thank you. You may now disconnect your lines.

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