

Aspen Aerogels, Inc. NYSE:ASPN

FQ1 2023 Earnings Call Transcripts

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S&P Global Market Intelligence Estimates

	-FQ1 2023-			-FQ2 2023-	-FY 2023-	-FY 2024-
	CONSENSUS	ACTUAL	SURPRISE	CONSENSUS	CONSENSUS	CONSENSUS
EPS Normalized	(0.39)	(0.24)	NM	(0.38)	(1.32)	(0.48)
Revenue (mm)	45.15	45.59	▲0.97	51.11	234.62	412.62

Currency: USD

Consensus as of Apr-28-2023 12:20 PM GMT

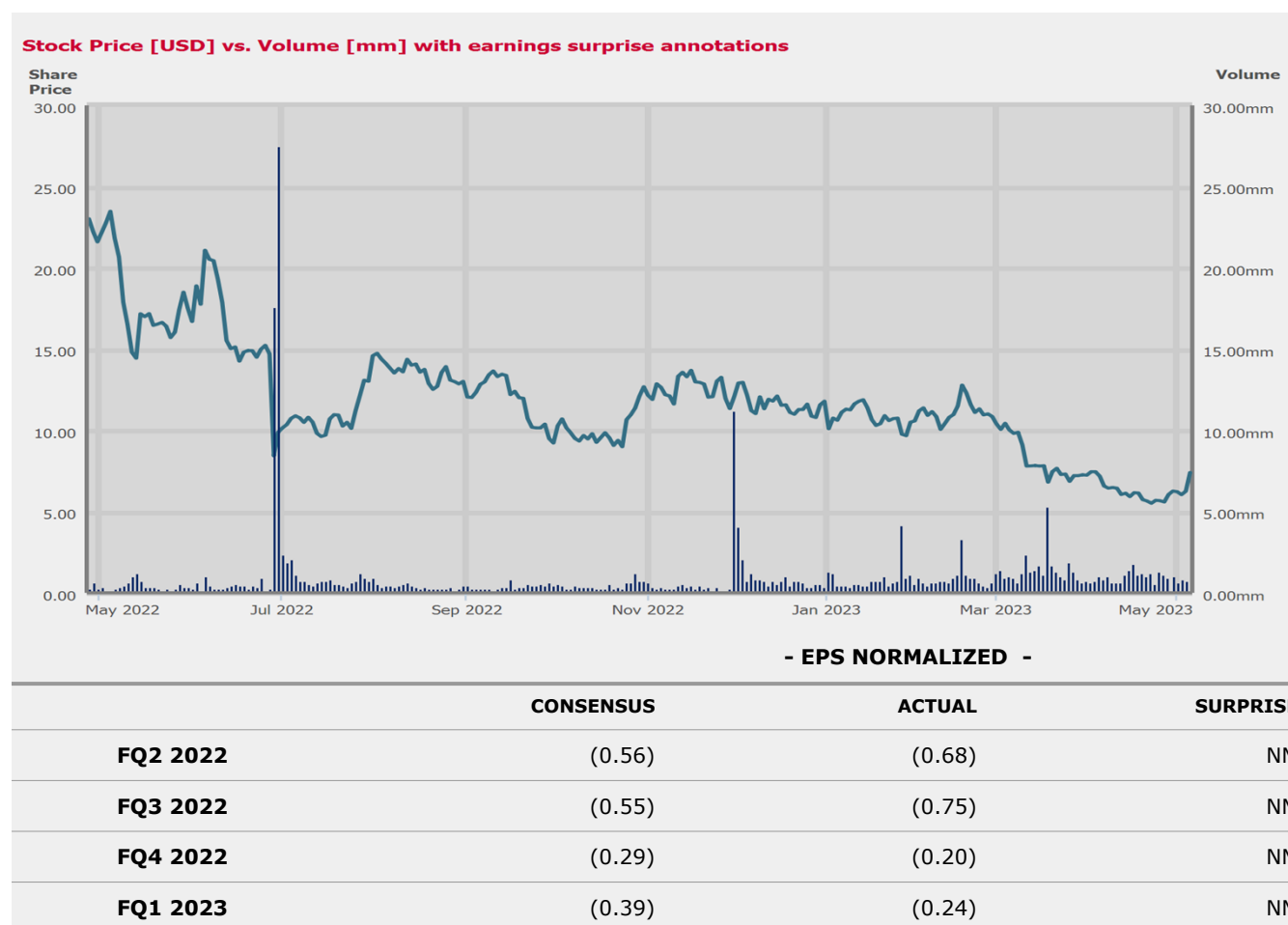


Table of Contents

Call Participants		3
Presentation		4
Question and Answer		12

Call Participants

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Presentation

Operator

Good morning. Thank you for attending the Aspen Aerogels, Inc. Q1 2023 Financial Results Conference Call. All lines will be muted during the presentation portion of the call with an opportunity for questions and answers at the end. I would now like to turn the conference over to your host, Neal Baranosky Aspen's Senior Director, Corporate of Strategy and Finance. Thank you. You may proceed, Mr. Baranosky.

Neal Baranosky

Thank you, Alexis. Good morning, and thank you for joining us for the Aspen Aerogels Fiscal Year 2020 First Quarter Financial Results Conference Call. With us today are Don Young, President and CEO; and Ricardo Rodriguez, Chief Financial Officer. There are a few housekeeping items I would like to address before turning the call over to Don. The press release announcing Aspen's financial results and business developments as well as a reconciliation of management's use of non-GAAP financial measures compared to the most applicable U.S. generally accepted accounting principles or GAAP measures is available on the Investors section of Aspen's website, www.aerogel.com. Included in the press release is a summary statement of operations, a summary balance sheet and a summary of key financial and operating statistics for the 2023 first quarter ended March 31, 2023. In addition, I'd like to highlight that we've updated to our website a slide deck that will accompany our conversation today. You can find the deck at the Investors section of our website. An archive of today's webcast will be on our website for approximately 1 year.

Please note that any discussion today will include forward-looking statements, including any statement regarding outlook, expectations, beliefs, projections, estimates, targets, prospects, business plans and any other statement that is not a historical fact. These forward-looking statements are subject to risks and uncertainties. Aspen actual results may differ materially from those expressed in these forward-looking statements. A list of factors that could affect the company's actual results can be found in Aspen's press release issued yesterday, Page 1 of the presentation and I'll discuss in more detail on the reports Aspen files with the SEC, particularly in the company's most recent annual report on Form 10-Q. The company's press release issued yesterday and filed with the SEC can also be found in the Investors section of Aspen's website. Forward-looking statements made today reference the company's views as of today, May 4, 2023. Aspen Erdos disclaims any obligation to update these forward-looking statements to reflect future events or circumstances.

During this call, we will refer to non-GAAP financial measures, including adjusted EBITDA. These financial measures are not prepared in accordance with GAAP. These non-GAAP financial measures are not intended to be considered in isolation or as a substitute for results prepared in accordance with GAAP. The definitions and reconciliations of these non-GAAP financial measures to the most directly comparable GAAP financial measures and a discussion of why we present these non-GAAP financial measures are included in yesterday's press release. And one final note, during the Q&A session, in the interest of time, we ask that you limit your questions to 2 questions at a time. If you have additional questions beyond the initial 2, please get back into the queue, and we will get to all questions. I'll now turn the call over to Don. Don?

Donald R. Young

President, CEO & Director

Thanks, Neal, and welcome to Aspen. Good morning, everyone. Thank you for joining us for our Q1 2023 earnings call. My initial comments will focus on our Q1 performance, our highlights from our EV OEM development work and our strategy for balancing demand, supply and financing. Ricardo will dig deeper into our financial results, our EV business and our strategy. We will conclude with a Q&A session. The performance in the first quarter sets us on a path to reach our 2023 outlook of revenue between \$200 million and \$250 million and positive EBITDA in Q4. We anticipate sequential revenue growth as we work through the year. This growth outlook is a function of a very strong energy industrial backlog and the expected ramping of our EV customers, especially General Motors. This anticipated EV Paratin ramp is the key factor impacting whether we are at the low or high end of our 2023 revenue outlook. During Q1, we

saw continued improvements in operating efficiencies, which resulted in an 11% gross margin, which with continued revenue growth, we believe keeps us on track for longer-term gross margins at or above 35%. We also maintained careful control of OpEx.

During our last call, we announced that we received both a letter of intent from the luxury brand of a major German OEM group and an order for approximately 1.5 million prototype parts from the commercial truck brand within the same German OEM group. Recently, we converted the prototype parts order into a multiyear award with the start of vehicle production in early 2024. We expect to announce the name of the commercial truck brand during the latter part of 2023, as we commenced delivery of production parts or if intent position us well to earn broad adoption by other brands of this important German OEM. In other EV news, we continue and, of course, a financial relationship through the \$100 million term loan, which we have yet to draw upon. In addition, we believe that we are on the cusp of winning more award broad and interesting array of EV customers.

As we look out over 2023, in addition to adding OEM awards, we expect PyroThin thermal barrier revenue to build over the year as automotive OEMs scale their operations and at the same time, we expect our energy industrial business with purchase orders received for 2023 of approximately \$180 million to remain strong through the year and to provide a steady base load of revenue. Even with our large backlog in energy, industrial and our growing list of EV customers, we have carefully considered our near-term strategy. There are several parts to this thought process. During this possible and even likely recession scenario, we are taking a conservative approach to the preservation of our capital. During this period of time, we plan to reduce our OpEx and CapEx to grow our revenue significantly and to focus on our profitability. The key pivot is to write time the final stages of the construction of Plant 2 in Statesboro, Georgia and in the meantime, to largely dedicate our Plant 1 aerogel manufacturing capacity in East Providence to pirate thin thermal barriers in order to serve our EV OEM customers.

We estimate that we have the ability to generate approximately \$400 million of PyroThin thermal barrier revenue from an EV dedicated plant 1. Our goal ramp of our EV OEMs beyond the approximately \$400 million of revenue capacity available for Plant 1. To put the approximately \$400 million revenue number in context \$100 million for the year 2023 and between \$250 million and \$300 million for 2024. To be clear, we plan to slow our capital investments during 2023 and 2024, but not our growth. And at the same time, we will remain poised to take full advantage of our opportunities. With respect to supplying our valuable energy industrial business, after 1 year of development and negotiations, we have reached a manufacturing agreement with a Chinese aerogel manufacturer to supply energy industrial product to us beginning no later than January 2024. The product will be produced to our quality specifications and shift by us under our labeling through our distribution and to our customers. We believe that the manufacturing agreement enable us to maintain and grow our energy industrial business and to largely dedicate Plant 1 to our EV pirating thermal barrier business.

In this scenario, from our current manufacturing assets and supply arrangements, we could have annual revenue capacity of \$500 million to \$600 million, gross margins at or above 35% and EBITDA meaningfully positive. The strategy enables us to reduce OpEx and CapEx to generate positive EBITDA and to preserve our existing capital and to serve successfully both our EV and energy industrial businesses. Again, we would write time the remaining construction of Plant 2 to coincide with the ramp of our EV OEMs beyond the approximately \$400 million of revenue capacity of Plant 1. We anticipate that it would take approximately 4 quarters after the restart of full construction to complete plant 2. We believe that we continue to have our full upside opportunity, but during a period of potential period of economic uncertainty and while our EV OEMs ramp, we optimize the use of our existing assets to create a cash-generating business and to avoid unnecessary dilution. Our strategy is to leverage our aerogel technology platform into large dynamic markets. Central to that strategy is our investments in the research, development, commercialization and the protection of our proprietary technologies.

Our patent portfolio has been consistently validated in courts across the United States, Europe and Asia. Chinese-made Aerogel products have previously been found to infringe our patents in multiple jurisdictions globally. As we announced in April, we filed patent enforcement actions in Korea against Berenberg, a Norwegian reseller and associated entities, including their Chinese aerogel manufacturer related to the unlawful import and sale of infringing aerogel products. The actions, alleged infringement of patents

covering our high-performance reinforced aerogel compositions and our process technology, including the Korean counterparts of patents previously enforced successfully by us against Chinese aerogel manufacturers in Germany and the United States. With these actions against Berenberg, we again send a clear message to the markets that we will continue to aggressively enforce our intellectual property rights against any manufacturer, distributor or end user of aerogel products that infringe our patents. These actions are coincident with our entering a supply agreement with a Chinese manufacturing company.

In essence, we have created an extension of our aerogel supply capabilities controlled by us to meet the demand of our energy industrial customers, again, under our label and to our quality specifications while also taking any necessary actions to prevent infringing products from entering the market. Aspen continues to be the innovation leader in aerogel technology, and we have the IP portfolio to back it up. Before I turn the call over to Ricardo, I want to mention a couple of activities we have ongoing in public policy. Aspen is actively in dialogue with lawmakers on Capitol Hill as well as the Department of Energy and the Department of Transportation, including the National Highway Traffic Safety Administration around strengthening United States regulations surrounding safety in battery electric vehicles. International harmonization around safety regulation has taken place in China, India, Korea and Japan, but not formally yet in the United States.

We believe stronger safety regulations and most importantly, safer electric vehicles, enhance consumer confidence in electric vehicles, protect lives, protect property and help our first responders. We expect that as battery electric vehicles become more prevalent, communities, insurers and the federal government will advocate for enhanced safety measures and requirements. We intend to be an important part of that conversation. The U.S. Department of Energy's loan program office was created to grant loans for large-scale energy infrastructure projects with the goal of supporting the development of more fuel-efficient products, including the expansion of domestic manufacturing of electric vehicles. Our team, including our external advisers have been in consultation with the loan program office related to a proposed application for a significant loan as part of its advanced technology vehicle manufacturing program, which offers loans to support U.S. manufacturing of fuel-efficient advanced technology vehicles and qualifying components. The PO process is uncertain and can be drawn out in time, and there's no guarantee that our proposed application would be looked upon favorably.

In fact, our first application for a U.S. Department of Energy grant for advanced battery materials as part of the bipartisan Infrastructure Act was not funded in 2022. Since that time, we have put considerable effort into the LPO process, and we believe we are a very good candidate for a direct loan as part of the advanced technology vehicle manufacturing based on the importance of batteries performance and safety. Again, timing can be drawn out. But in our case, it may match well with the right timing strategy for our plant, too. Ricardo, over to you.

Ricardo C. Rodriguez
Senior VP, CFO & Treasurer

Thank you, Don. I'll start by providing an update on plant 2, it's construction progress, the latest on timing and our previously projected expense land towards it. As you can see on the left side of Slide 4, the site work and foundations have been completed. While the building construction, along with the electrical distribution are on schedule. Our team is on track to power the site at the end of June of this year. The team was on track for commissioning the plant at the end of the first half of 2024. We believe that our near-term EV thermal barrier demand is on track to ramp up in 2023 and that this ramp will fluctuate within the range of our revenue expectations, thanks to the development of contract manufacturing supply from China in 2024 and the investments in our Aerogel plant in Rhode Island, we now have the flexibility to be able to write time and align the startup of Plant 2 for when it is ultimately needed to ensure alignment between supply and demand. This retiming allows us to reduce our total 2023 CapEx guidance to less than \$150 million, including the \$40 million that have already been spent towards Plant 2 in Q1.

In discussions with our current and prospective EV thermal barrier customers, we are reassuring them that our aerogel plant in Rhode Island, combined with our assembly operations in Mexico can more than meet their demand in 2023, 2024 and the portion of 2025 depending on their volumes. As Don mentioned

in his remarks, our Aerogel plant in Rhode Island can support multiple customers and deliver over \$400 million of annual revenue capacity, and we estimate that the contract manufacturing capacity can add another \$150 million of revenues from energy industrial customers, resulting in total revenue capacity of at least \$550 million per year, all available in 2024. Turning over to Slide 5. As we move the startup of Plant 2 to a different time line, our capital needs over the next 18 months are more than met as we manage the business towards generating positive cash flow, which we believe will, in turn, enable a lower cost of capital for Aspen.

We continue having several discussions with different parties to raise capital that minimizes dilution to ensure that when we decide to reaccelerate our investment in Plant 2, we'd be funding it with a mix of operating cash flow and funds before the end of May, we will also be applying for a loan from the DOE's ATVM program, which is exactly focused on situations like ours, that can satisfy a broad and long-term set of sustainability and American competitiveness objectives. A potential positive decision towards the end of this year and the reacceleration of our investments in Plant 2 could coincide. Our cash balance at the end of the quarter of \$208 million, combined with \$100 million of prospective equipment backed financing, would provide us with \$308 million of total liquidity to manage the company towards generating positive cash flows without investing in plant 2. As a reminder, we currently have an open loan commitment of \$100 million from General Motors that is limited to being used or plan to. We intend to work with General Motors to extend the availability of these funds for when we decide to resume investing in Plant 2.

We estimate that we need to spend \$150 million to drive the company towards generating positive cash flows and the expected liquidity of \$308 million without considering the GM loan to provide us enough flexibility to do that. Before moving on to the next slide, I'd like to outline our ATM or at-the-market stock sale volume and price over the last 12 months. As one can see, we have restrained ourselves from using ATM sales to fund our plans since August of last year and raised net proceeds of \$72.7 million at an average net share price of \$13.88 per share. At the recent range of Aspen's share price, we've refrained from selling shares and do not intend to sell equity below the share price of our most recent equity offering of \$9.50 per share in December of 2022. To recap, with the right timing of plant 2, we have more than enough capital to fund our near-term growth and get to generating positive cash flows. Our revised execution plan is a retiming of our investments, not a delay in our growth and is aimed at accelerating our path to profitability. Although we are managing our capital strategy for at least 8 quarters ahead, we remain focused on short-term execution.

I'll now step back to cover the main highlights of the last quarter on Slide 6. Starting with revenues. We delivered \$45.6 million of revenue in Q1, which translates into 19% growth year-over-year. Energy industrial demand remained strong. As Don mentioned during his opening remarks, purchase orders for the remainder of the year are up over approximately 125% when compared to the same time last year. Our Q1 energy industrial revenues of \$33.9 million were 2% lower than the prior quarters and 10% higher year-over-year. The quarter-over-quarter growth, however, doesn't totally do justice to our ability to produce Aerogel in Q1 as we front-loaded the manufacturing of aerogel for subsea projects that will translate into revenue in Q3 of this year. EV thermal barrier revenues of \$11.7 million put us slightly below the revenue run rate that we had in Q3 of 2020 of \$12 million, which reflect a delay in GM's ramp-up of Ultium battery platform vehicle production. While revenues in this segment were up 53% year-over-year, they are down 54% quarter-over-quarter as we fulfilled a supplemental order from General Motors of approximately \$30 million during Q4 of last year and the early part of Q1 of this year. We are in close consultation with GM as they ramp up during the remainder of the year and expect their volumes to increase.

Next, I'll provide a summary of our main expenses. Material expenses of \$18.7 million for the quarter made up 41 percentage points of sales, which was within single-digit percentage points of where we want to be long term. conversion costs, which we describe as all production costs required to convert raw materials into finished products were \$21.8 million and made up 48 percentage points of sales in Q1. These include all elements of direct labor, manufacturing overhead, factory supplies, rent, insurance, utilities, process logistics, quality and inspection. These compare with cost of 50 percentage points of sales in Q1 of 2022. It is worth highlighting that these costs reflect the lower absorption of fixed costs caused by making aerogel for subsea projects that was not recognized as revenue in Q1. In Q1, our gross profit margins were up 11%, an increase of nearly \$7 million in gross profit when compared to Q1

a year ago. Our gross profit of \$5.1 million was composed of \$8.9 million from our Energy & Industrial segment and a negative \$3.8 million from our EV thermal barrier segment. These represent gross profit margins of positive 26% and negative 32%, respectively, for the quarter. For EV thermal barriers, we need a quarterly revenue run rate of \$20 million to have positive gross profit, but it is encouraging to see that our gross loss was less than half of what it was in Q3 of last year on a very similar revenue run rate of approximately \$12 million per quarter.

Operating expenses, which are enabling our growth were of \$24 million. These remained flat quarter-over-quarter versus an increase of \$2 million in Q4 over Q3 of last year and an increase of \$4.6 million in Q2 over Q1 in 2022. We've leveled off our OpEx increases and have focused any increases on delivering 2 things: one, tangible productivity benefits through our new process development and the implementation of systems that streamline our methods and drive productivity, such as our IT infrastructure and tool chain; and two, new OEM production awards through our EV thermal barrier technical sales efforts, delivering prototype parts and converting these pursuits into awards. At this point, any new investment that drives OpEx to deliver these 2 things needs to be offset by savings somewhere else in the business during the same time frame or in anticipation of any potential OpEx increases. Putting these elements together, our adjusted EBITDA was negative \$13.9 million in Q1 compared to negative \$14.6 million in Q1 of the prior year, resulting in a year-over-year reduction in our EBITDA loss of 5%.

As a reminder, we define adjusted EBITDA as net income or loss before interest, taxes, depreciation, amortization, stock-based compensation expenses and other items that we do not believe are indicative of our core operating performance. In Q1, these other items included \$2.3 million of stock-based compensation and \$2.1 million of net interest income. Optimizing our supply side to make the most accretive products in Q1 has yielded benefits and profitability that have put us \$4 million ahead of where we expected to be in EBITDA at this point of the year. Our net loss in Q1 decreased to \$16.8 million or \$0.24 per share versus a net loss of \$19.5 million or \$0.59 per share in the same quarter of 2022. Our quarter-over-quarter net loss increased by \$7.2 million from \$9.6 million. It is worth clarifying that for all these earnings per share calculation, our number of fully diluted shares outstanding was \$30.4 million at the end of 2021, a weighted average 39.4 million shares in 2022, and our number of shares outstanding at the end of the quarter was of 70 million shares.

Next, I'll turn to cash flow and our balance sheet. Cash used in operations of \$24.7 million reflected our adjusted EBITDA of negative \$13.9 million, offset by an increase in cash needs of \$10.7 million that reflects a quarterly decrease in accounts payable of \$5.5 million, an increase in accounts receivable of \$10 million and a decrease of inventory of \$5 million. These put our operating cash needs for the quarter at \$74 million. Capital expenditures during the quarter of \$49.4 million included the partial construction of the main buildings in the States or Georgia for Plant 2, assembly equipment for automated thermal bar operations in Mexico and the finishes of our advanced thermal barrier development center in the Boston area. As progress on the construction of our secondary gel manufacturing plan continued, we have incurred \$204.2 million in capital expenses through the end of Q1 towards it. We ended the quarter with \$207.5 million of cash and shareholders' equity of \$432.5 million.

Now I'll turn to Slide 7. Slide 7 has a lot of content, but we think it's worth covering it today as it provides a view on every macro input that we factor into our thinking as we develop our EV thermal barrier business and strategy to its full potential. There are 8 different elements driving our content per vehicle opportunity and in turn its revenues. I won't bore you with every detail, and we've included some background materials in the appendix of this presentation to allow you to get into all the details at your own leisure. The top parameters that drive our PyroThin business are global light and heavy-duty vehicle sales. The penetration of battery electric and plug-in hybrid powertrains and the cell chemistry, form factor and size or capacity of the batteries powering these vehicles. PyroThin excels as a cell to cell barrier for OEMs that are investing in delaying or stopping thermal runaway and propagation in pouch or prismatic cells. Now that Aspen is 2 years into the journey of building this market, we are seeing a growing market in the heavy electric vehicle commercial truck space and in the LFP chemistry cell market across the board. As OEMs push the range limits of plug-in hybrids and increase the size of plug-in hybrid vehicle batteries. This also represents additional opportunity.

Turning to Slide 8. We take a deep dive into our global EV battery form factor outlook since we've gotten several questions around this from investors. And there seems to be a lot of value placed and speculation around changes in direction or diversification here from some OEMs. We've been spending a lot of time with our customers and outside experts developing an informed view of our outlook, and we'd like to walk you through it. A sales form factor influences the cell's ability to dissipate and transmit heat to its neighboring cells. There are 3 dominant type of form factors today: pouch, prismatic and cylindrical. Aerogel cell-to-cell thermal barriers are best suited for form factors, which require high thermal propagation protection as well as very specific mechanical needs regarding compression between each cell. Consequently, we see the highest CPV with pouch designs due to the increased probability of thermal propagation and stringent cell compression requirements to accommodate battery swelling. Prismatic designs also represent a significant opportunity for our PyroThin product as they require thermal barriers that can compress to fit into very tight spaces.

We have not focused on cylindrical form factors and to develop a specific product due to the complex geometric requirements, thus limiting the opportunity for self cell varies in clinical form factors, but opportunities in the module and pack level could materialize down the road. The current global mix of battery form factors varies by region, which is really driven by the market share and battery architecture of specific OEMs within each market. The market is expected to evolve as OEMs continue to experiment and diversify their form factor mix. In North America, we expect to shift away from cylindrical cells as OEMs gain market share from the current market leader. In Europe, the market is projected to experience growing demand for prismatic and cylindrical cells, but pouch cells will remain prevalent. And each form factor is projected to have roughly even share by the end of the decade due to the cost of form factor decisions on battery assembly investments.

Finally, in China, prismatic form factors will remain dominant as local manufacturers seem to have an advantage over major Korean battery manufacturers who focus on power cells. Overall, prismatic and post designs will continue to represent a significant share of the market with over 70% of the global volume. Providing a significant opportunity for our EV thermal barrier business. Moving over to Slide 9. We'll now take a closer look at our EV battery chemistry outlook. Cell chemistry dictates how easily a cell will enter thermal runaway and how much heat it will produce. Thermal propagation runaways prevalent within all cell chemistries, but has the highest probability of occurrence with nickel-based chemistries, which account for 70% -- over 70% of global volume and thus have a higher pyrothinCPV. OEMs choose a particular chemistry depending on the vehicles energy requirements, cost targets and their procurement strategies. In North America, LFP chemistries will see significant growth in entry-level vehicles due to their cost advantages and as OEMs seek to diversify on chemistry. In Europe, base level vehicles are expected to shift from low medium nickel chemistries to LFP as well.

In China, there is a strong LFP market due to local production, but the country is expected to shift more nickel-rich as vehicle range will be increased and as foreign OEMs enter that market. Globally, each cell chemistry will see a roughly even share of demand as OEMs optimize for different metrics based on vehicle design and class. Semi-solid state batteries are not projected to gain meaningful share in this decade, and it's hard to find experts who see solid state coming out of the research phase within the next 10 years. After speaking with several industry experts and customers, we validated the feedback that our sales team is seeing every day of pirating playing a critical role in meeting the requirements of OEMs to mitigate or stop thermal runaway in propagation across all the currently available chemistries. Turning over to Slide 10. EDChemistry and FormFactor forecasts are relatively reliable due to the significant development time lines and costs associated with making changes regarding battery packs. OEMs have been investing directly in both pack assembly and cell manufacturing capabilities for the past 5 years, significantly ramping up these investments over the last 2 years. These OEMs have incurred a large fixed cost base and are now focused on delivering volumes to meet their profitability goals and recoup these investments.

Large changes such as new cell manufacturing plants can take 3 to 4 years with cost in the billions of dollars. We saw this with the newly announced GM and Samsung plant, which will not be completed until 2026 and comes at an initial cost of \$3 billion. It is important to note that once completed, this plant would only represent 20% of GM's overall battery production capacity. At Aspen, we are heavily engaged throughout every stage of the battery pack R&D process with every major OEM. This line of sight gives us confidence in our ability to sustain strong growth throughout the decade and get the sign ento specific

applications of the vehicle nameplate platform or battery platform level. Now I'll turn over to Slide 11. Over the past 3 years, as EV volumes have increased and more automakers started offering EVs, the risks of thermal runaway and propagation have become more apparent and prevalent. The cost of not managing the inherent issues of how unstable a battery can be are significant to an OEM that does not offer a comprehensive solution to thermal runaway and propagation. We've all read in the news of plants that have been shut down for weeks, the car carrier ship that *Conor* fired due to an EV battery going into thermal runaway or the damaged infrastructure costing OEMs billions of dollars and reputational damage that is hard to recover from. Over the past year, in particular, we've seen more OEMs starting to take a proactive approach to addressing thermal runaway by staffing teams to address not just the potential financial loss and reputational risk, but also because legislation is in the process of making this a requirement over the next few years.

On Slide 12, we provided an overview of the regulatory landscape regarding thermal runaway and thermal propagation, government agencies around the world continue to become increasingly aware of the dangerous of thermal runaway and propagation, driving meaningful regulation initiatives. All major markets have participated in the enactment of the United Nations global transportation requirement, which requires a 5-minute delay before a danger to the passenger compartment for hazards such as those caused by thermal runaway. China remains one of the most advanced environments with a 2021 thermal propagation test mandate requiring flame transfer delay of 5 minutes after a warning. Europe and the U.S. have followed the lead of the United Nations by participating in the UN GTR Phase I enactment. This is likely only the beginning of regulatory mandates regarding thermal propagation and runaway. The UN GTR will continue to be a key driver of further regulation as Phase 2 of the GTR requirements continue to evolve and will likely be released over the next few years. In addition, both Europe and the U.S. are looking into developing further standards.

Increasing customer awareness of these safety issues will focus the lens on regulators, especially as EV penetration increases and thermal propagation and runaway events and videos continue making the headlines. In the long term, the possibility of regulations aimed at completely eliminating runaway or propagation may be explored. While many EV battery system components such as battery management systems can help deliver trigger warnings, there has not been an effective active management solution to date. The only current solution to truly mitigate the danger is a passive cell-to-cell thermal barrier. We believe that PyroThin is a solution that allows OEMs to not only provide a 5-minute delay, but that can play a key part in stopping thermal propagation altogether, turning what is currently a potentially catastrophic event into a serviceable one at a portion of the cost. Moving over to Slide 13. Thanks to the increased focus from OEMs are addressing thermal runaway and our team's progress in working with them, 2023 will be an important year for us as we develop our commercial pipeline. We are expecting decisions from various OEMs on programs totaling over \$3 billion of lifetime revenue.

Our pipeline includes piloting quotes across a variety of cell form factors and chemistries. As Don outlined in his remarks, our new commercial truck award demonstrates the strong demand for cell-to-cell barriers such as PyroThin for large electric commercial vehicles. In this case, this is an award for cell-to-cell barriers for a pack with prismatic cells. While we are still unable to disclose the identity of the German OEM from which we obtained an LOI in Q4 of 2022. We're continuing to work with this OEM group to document this initial business award as part of a broader set of strategic discussions to expand within their product range. With that, I'm happy to hand the call back to Don.

Donald R. Young
President, CEO & Director

Thank you, Ricardo. We have covered a significant amount of ground today in reviewing Q1 and our strategy. Before we move to Q&A, I'd like to emphasize 4 points. First, during Q1, we demonstrated continued improvements in operating efficiencies, which resulted in an 11% gross margin, and we believe keeps us on track for longer-term gross margins at or above 35%. We also maintained careful control of OpEx during the quarter. Second, the commercial truck brand within an important German OEM group chose us for a multiyear award to provide to them pirate in thermal barriers. We believe that we are on the cusp of winning more awards with other EV OEMs and are confident we will complete 2023 with a strong roster of EV customers that have designed Piran thermal barriers into their respective

battery platforms. Third, we have decided to write time the final stages of the construction of Plant 2 in Statesboro, Georgia and in the meantime, to largely dedicate our Plant 1 aerogel manufacturing capacity in these providence to pirate thin thermal barriers.

At the same time, we have reached a manufacturing agreement with a Chinese aerogel manufacturer to supply product to us for our energy industrial business. With this strategy, we believe that we continue to have our full upside opportunity, but during a potential period of economic uncertainty and while our EV OEMs ramp, we optimize the use of our existing assets to create a cash-generating business and to avoid unnecessary dilution. And fourth, in this scenario from our current manufacturing assets and supply arrangements, we could have annual revenue capacity of \$5 million to \$600 million, gross margins at or above 35% and EBITDA meaningfully positive. The strategy enables us to reduce OpEx and CapEx to generate positive EBITDA to preserve our existing capital and to serve successfully both our EV and energy industrial businesses. Alexis, let's turn to Q&A.

Question and Answer

Operator

Absolutely. We will now begin the question-and-answer session. [Operator Instructions] The first question comes from the line of Eric Stine with Craig Hallum.

Eric Andrew Stine

Craig-Hallum Capital Group LLC, Research Division

So maybe just starting with, I guess, Slide 13 and the \$3 billion plus that you're targeting here over the next 3 quarters. Just curious if you could maybe break that down, I would assume that the German OEM under LOI today is part of that. But I mean, is that a number that you expect to be made up by a handful of the opportunities you list on this slide, it's a couple or it's more widespread than that?

Ricardo C. Rodriguez

Senior VP, CFO & Treasurer

So I think a handful is the right way to describe it without getting into too much detail of what the size of each award is. The interesting thesis, this element of not just getting awards from the OEMs themselves, but these battery joint ventures are actually a very good opportunity to get into multiple OEMs with one award and to have that opportunity grow as their vehicle rollout plans become clearer. So I mean, even though we're talking about the \$3 billion figure of awards being added this year, the potential for next year and the following year could be even larger given that these \$3 billion would just be kind of the really our initial award into each of these OEM groups.

Donald R. Young

President, CEO & Director

Eric, as I said, I we're confident that we're going to have, as I said, a good roster of EV customers by the end of 2023. So I like your handful kind of imagery that feels right to us as we work our way through the year.

Ricardo C. Rodriguez

Senior VP, CFO & Treasurer

There's some pretty big fingers in this hand...

Eric Andrew Stine

Craig-Hallum Capital Group LLC, Research Division

All right. No, that's a great description. Good color there. I guess tough to keep it to 2 questions, but I will -- I mean maybe just on the contract manufacturer, -- could you just talk about -- I mean, it sounds like -- so it is an existing Aerogel manufacturer. Does that kind of ease the ability to bring that online? I mean, is there CapEx required on the equipment side, maybe not because they're already in the business. Maybe just talk about some of the considerations there bringing that online, but also protecting your IP, which obviously is very, very important to Aspen, but you're using an existing Aerogel manufacturer?

Donald R. Young

President, CEO & Director

Yes. Thank you. Eric, we -- as I indicated, we've been working on this for the better part of the year. And so we are very mindful that this product will be to our specifications to our quality standards. It will be worked through our distribution with our labeling, et cetera. We are -- we've done extensive work with the data book, so to speak, and to be sure that we are able to deliver Aspen material to our energy industrial customers. The IP part of this has been at the forefront of this discussion. And you have seen us for many years, be aggressive in representing and defending our intellectual property around the world. And of course, again, recently during the month of April. So we will -- again, we're very -- those 2 things might have been a coincidence, but I think they're highly related in many regards. That is to say

the enforcement action that we took in the contract manufacturing agreement that we reached. We're really excited about it and for what it can do to our -- for our company during this period of time. As I said in my notes, between our existing assets and Plant One being dedicated to EV thermal barriers and this supplemental supply to have the revenue capacity of \$500 million or \$600 million with significant gross margins and significant positive cash flow implications. It's just a terrific thing for us, we believe, and we'll continue to execute on that strategy.

Ricardo C. Rodriguez
Senior VP, CFO & Treasurer

Yes. And maybe I can -- just got it... A bit of commentary here on the CapEx question, Eric. So I mean, the team actually was there a couple of weeks ago and completed a pretty good assessment of the equipment and their capabilities. And we don't expect this to drive any capital expenses on our end. It's really just a little bit of incremental OpEx that we were already planning for.

Operator

The next question comes from the line of Alex Potter with Piper Sandler.

Alexander Eugene Potter
Piper Sandler & Co., Research Division

Ben Johnson on the line for Alex. First question, now you sit contract manufacturing, we've been modeling CapEx in 2024 and beyond.

Ricardo C. Rodriguez
Senior VP, CFO & Treasurer

Yes. I mean for us, I see 2 CapEx scenarios, right, for '24 and beyond. One is, which is really the one that we're focused on here until we resume plan to -- but that -- I mean, our -- it's pretty front-loaded, and we think that the CapEx that we'll deploy in, both in Mexico and in Rhode Island this year, we'll set it up so that, I mean, we should not be investing more than \$15 million of CapEx in '24, '25 million and 26% if we don't restart plan to. But given the demand that we're still seeing out in the 25, 2026 time frame, we'll have to pretty much retime our expectations for investing in Plant 2 for that point in time after we decide to restart investing in the plant. Maybe I'll just add one thing really quickly. I mean, for us, really, the main driver towards this change in strategy and this right timing of plant 2 is that if you lay out these lower CapEx numbers, I mean, there's a really good chance to create meaningful value here as we start delivering on our revenue later this year and going into next year because we actually start paying back all of the investments over the past 2 years, just as the business continues, makes its way towards generating positive cash flows here in the near term.

Alexander Eugene Potter
Piper Sandler & Co., Research Division

Got it. And how much are you guys willingness to disclose regarding the financial terms of your relationship with the contract manufacturing?

Donald R. Young
President, CEO & Director

Well, let me say it this way. That through the negotiations, we're focused on having a profitable energy industrial business, and the terms of that enable us to do that. And of course, that was an important part. It wasn't just serving that market in this temporary period. It is serving that market profitably for us and being consistent with our gross margin goals, et cetera. So we're not going to get into the arrangement in deep detail, but it's attractive to us. And again, as part of that \$500 million to \$600 million revenue capacity the combination of Plant 1 in that supplemental supply agreement, again, we have the ability to have these 35% gross margins that we've talked about in the past.

Operator

The next question comes from the line of Colin Rusch with Oppenheimer.

Colin William Rusch

Oppenheimer & Co. Inc., Research Division

Sorry for the trouble. Could you talk a little bit about the competitive landscape that you're seeing at this point with other solutions around the management. Obviously, if we're going to have a global standard that we're working toward -- there are going to be multiple entrants. And just curious what you're seeing in terms of early days of competition.

Ricardo C. Rodriguez

Senior VP, CFO & Treasurer

Yes. I mean this is an area where we've actually been spending a lot of time and actually went through a pretty comprehensive process with the help of some experts and our team here internally to frame out all of our market views. And as we outlined a year ago, right, this is a systems problem, right? And so there's a bunch of active measures and passive measures that one can implement to try to tackle it without having the option of swapping one for the other, right? So you -- there's no silver bullet at addressing thermal runaway in propagation. There's only multiple lead bullets. And on the passive side, we think that depending on an OEM's objectives, we can be a pretty good lead bullet. What we're seeing on the as we go and quote business, I mean, we're still seeing the same dynamics of last year and the year before, more accelerated. And from a competitive point of view, I mean, we're seeing that it's fairly easy to pull up our website, start calling a product, thermal barriers and grab stock photos and try to get market traction. But the technical dialogue that is required to actually get an award is completely is at a completely different level. These OEMs are not just assessing the capabilities of the material, but they're also assessing the capabilities of our process to deliver consistency at thicknesses that, frankly, 2 years ago, our team did not expect to have to make. And so we do feel very good about how we're positioned right now. And we don't see that changing dramatically because we just continue extending our lead.

Colin William Rusch

Oppenheimer & Co. Inc., Research Division

That's helpful. And then just in terms of some of the financing options that you're going through, obviously, it's a pre dynamic environment in the commercial engine space. I'm just curious what you're seeing in terms of not necessarily rates, but around terms and limitations on loan-to-value of things like that in terms of some of these discussions and how that's evolving, obviously, in a pretty dynamic environment.

Ricardo C. Rodriguez

Senior VP, CFO & Treasurer

Yes. So I mean we've been pretty focused on options that minimize dilution, right? So if you look at our menu of financing options, selling equity at the bottom of the list, especially at the prices that we're currently trading at and just where we know the company is at relative to when we were at \$60 a share. And so the markets that we still see open are, for example, on the equipment backed loan financing or capital lease market. I mean you could -- you can get something in the -- you can something with the rates in the mid-teens, but obviously, you're pledging specific assets, and there's a bit of an administrative burden in getting that. But we do have a pretty clear line of sight to the \$100 million that we've outlined there. And if it weren't for the GM loan, we could even take on more of that type of financing as we fund our growth. Now that our CapEx plans are lower.

I mean there's only so much that you can put on those facilities given that they have to be backed by a specific piece of equipment. And then the other area that we're seeing is just I mean, we get pitched a lot of convertible products but are not really focused on that and instead are seeing the private market still pretty much alive, looking at opportunities where there's some equity upside and they are reasonable around the near-term coupon. But at the same time, I mean, the timing of those is important. And when we combine those with the DOE, the loan program office, I mean, obviously, the DOE one is extremely attractive. And now under this new plan, we can actually move that ahead. And as the timing will potentially line up from when we get a decision and when we ultimately will need to make a call on

resuming our investment in plant 2. So I'd say that those are really the 3 options that we see still alive and where the funding probabilities are good.

Donald R. Young
President, CEO & Director

Colin, I think the one thing I would add to that is in this scenario, we're a different-looking company as well. We're a cash-generating business. That's our plan as we think through and execute on the Plant 1 dedicated to EV and the supplemental supply agreement, we have the ability to generate cash. And we all know that's -- those are the best investment dollars you can have, and we're very focused on that.

Operator

The next question comes from the line of Jeff Osborne with TD Cowen.

Jeffrey David Osborne
TD Cowen, Research Division

Just 2 quick ones. Riccardo is I was confused on the equipment back financing that you mentioned, the \$100 million. Is that in place? Or what's your degree of comfort that it will be in place? And if you could be more specific as to what specific equipment you're back leasing there.

Ricardo C. Rodriguez
Senior VP, CFO & Treasurer

Yes. So I mean, we feel pretty good about that. We mentioned during the previous quarter's call that we actually had, I mean, 3 different term sheets already. We've sent back a nonbinding commitment with 2 of them and are now basically going through the formalities of the underwriting process. And so we feel pretty good about getting those \$100 million. And the type of equipment that can be put under those facilities is a lot of the equipment that we're using to upgrade the plant in Rhode Island is going to be put on their dose. And same thing with our -- both our manual and our automated equipment that's going into our facility in Mexico, plus, I mean, everything from some of our IT infrastructure investments that we'll be making. And there's a fairly large allowance for soft costs in that as well of approximately 30%. And so we're going to try to put a fair amount of our CapEx on that as we line that up here this quarter.

Jeffrey David Osborne
TD Cowen, Research Division

That's helpful. I just want to make sure it wasn't affiliated with the Georgia facility, given the pause there. And then how to think about the content per vehicle on the truck side, you've given helpful anecdotes or detail on the passenger car side historically, but haven't talked about the truck opportunity.

Ricardo C. Rodriguez
Senior VP, CFO & Treasurer

Yes. I mean, so it's a fairly big opportunity because these packs are very large, right? So we're talking about 180, 200-plus kilowatt-hour batteries. And so I mean, this is potentially a \$1,200 to \$1,500 content per vehicle opportunity for us, even though they're prismatic.

Jeffrey David Osborne
TD Cowen, Research Division

Got it. Is that melectric or PHEV? All of that PHEV?

Ricardo C. Rodriguez
Senior VP, CFO & Treasurer

These are all electric.

Operator

The next question comes from the line of George Gianarikas with Canaccord Genuity.

George Gianarikas

Canaccord Genuity Corp., Research Division

I'd like to ask to Toyota... Asked about Toyota and any color you can share on what you think their future plans are with electric vehicles, it needs to be a lot of press back and forth and what -- any way you can help us understand the opportunity there going forward?

Donald R. Young

President, CEO & Director

Yes. Yes, I was in Japan, last week as we -- and with the senior team at Toyota. And we've seen, and we've all read about and they talked extensively about it. The -- sort of a change in administration, so to speak, and very much a focus on being more aggressive with their EV program. And we all know they have the dominant position with the Toyota Prius and they had strategically sort of jumped right out to the idea around fuel cells and what have you. And the -- I think they have come to realize that they've got an important sort of franchise with that previous platform, if you will, or success of that vehicle. And so they have announced and discussed 10 EVs, different nameplates to be launched by 2026, I believe, is what they have said. And we're obviously close to the company and doing everything we can to be in that newly designed battery platform. So there's work to be done, but we have a strong relationship with the company.

George Gianarikas

Canaccord Genuity Corp., Research Division

And maybe on the -- just to focus on the DOE opportunity. Any timing you can share with us any expectation on your part as to when any decision will be made there?

Ricardo C. Rodriguez

Senior VP, CFO & Treasurer

I mean we expected before the end of this year.

Donald R. Young

President, CEO & Director

Yes, George, it's -- we have been in consultation with the loan program office. And we have put together a strong internal team with very capable external resources. So we've really leaned into this and we're playing to win here, and we're putting the resources in place to do that. And as both Ricardo and I said it, the timing of it could align very neatly with this right timing strategy that we have for our plant 2. But we expect to work through the process over the course of 2023.

Operator

The next question comes from the line of Chris Souther with B. Riley.

Christopher Curran Souther

B. Riley Securities, Inc., Research Division

Just following up on the DOE loan. Can you give us the size of that application to the loan you're applying for there? And then I know you weren't successful with the DOE grant last year, but you've talked about kind of a mix grant that. I just wanted to see if that was something that was potentially on the table for this year as well.

Ricardo C. Rodriguez

Senior VP, CFO & Treasurer

Yes. I mean we've actually been advised and through our dialogue with the loan office and the DOE that size doesn't matter, which is kind of odd as we put together the application together. But we've actually framed out a size, but we're just not in a position to disclose it at this point in time.

Donald R. Young

President, CEO & Director

Yes. And with respect to the -- our focus has been now with the loan program office and that process, we are aware that a next round of invitations could be issued around the grant program, as we described last time and as you well know, many of the awards in, I believe it was the October time frame last year were given to interesting companies, principally working inside the cell, and there was some thought that the next round of grants could be for manufacturing capability and related components, what have you, outside the cell. So we're keeping an eye on that program, but we've really put our resources behind the LP.

Christopher Curran Souther

B. Riley Securities, Inc., Research Division

Got it. Okay. And maybe just on the margin front and kind of the path to profitability. It seems like the gross margins in the first quarter essentially hit the way you can kind of back into with the guidance, assuming OpEx stays pretty flat, which seems to be the case. On the prior call, you've given expectations of the vast majority of gross margin being first half or second half loaded. And now we're talking about positive EBITDA for the fourth quarter. Can you just kind of give us a little bit of a walk on the gross margin and OpEx front for second and third quarter and then fourth quarter to get that kind of positive EBITDA here, I think, would be helpful for folks.

Ricardo C. Rodriguez

Senior VP, CFO & Treasurer

Yes. I mean for us, really, the way we look at it is OpEx at this point, any increases that you see would be after having looked for savings somewhere else in the business, right? And so it's fair to expect that we're going to keep OpEx within this \$100 million annual run rate at worst. And so then it's really all dependent on the revenues, right? And so as I mentioned in my remarks, I mean, we truly think that for the PyroThin business to be positive from a gross profit standpoint, our quarterly revenue run rate needs to be above \$20 million. And as we get closer to that here, hopefully, in the second quarter and the remainder of the year, well above that, if GM can accelerate the ramp-up, then you're going to see the margins go back and start looking like what they look like in Q4 of last year. And then just really increase from there as we are able to absorb more of our fixed expenses. And on the energy industrial side, we actually think that the gross profit margin there is really limited by our ability to supply that business with product to sell. And so I think expecting it to continue around where we ended in this quarter is a fair expectation or maybe even lower as we take away some supply for it and give it to profit. So it's really hard to answer the question because the demand on the second half is truly what drives our profit engine for this year. And so far, we haven't seen any signals that would make us expect anything lower than what we were expecting 3 months ago. But I mean we're ready to go here.

Christopher Curran Souther

B. Riley Securities, Inc., Research Division

Got it. Maybe just following up, like squaring that with kind of the EBITDA guidance here, it would seem to suggest just gross margins were a lot better than we saw. There's reasons why they should kind of improve throughout the year with additional scale. Is that adjusted EBITDA guidance pretty conservative at this point. It's kind of a way to think about that?

Ricardo C. Rodriguez

Senior VP, CFO & Treasurer

I would agree. I mean I think it's just more a reflection of our thoughts on the environment and not necessarily our own specific situation.

Operator

Thank you There are currently no further questions in queue. So I'll now pass the line back to the management team for any additional or closing remarks.

Donald R. Young

President, CEO & Director

Thank you, Alexis. We appreciate your interest in Aspen Aerogels, and we look forward to reporting to you our second quarter 2023 results in July. Be well. Have a good day. Thanks very much.

Operator

That concludes the conference call. Thank you for your participation. You may now disconnect your lines.

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