

Aspen Aerogels, Inc. NYSE:ASPN

FQ1 2021 Earnings Call Transcripts

Thursday, April 29, 2021 9:00 PM GMT

S&P Global Market Intelligence Estimates

	-FQ1 2021-			-FQ2 2021-	-FY 2021-	-FY 2022-
	CONSENSUS	ACTUAL	SURPRISE	CONSENSUS	CONSENSUS	CONSENSUS
EPS Normalized	(0.20)	(0.22)	NM	(0.20)	(0.78)	(0.52)
Revenue (mm)	23.60	28.10	▲19.07	25.05	104.50	131.45

Currency: USD

Consensus as of Apr-26-2021 12:08 PM GMT



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Call Participants

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Presentation

Operator

Good day, and thank you for standing by. Welcome to the Aspen Aerogels Q1 2021 Earnings Call. [Operator Instructions] Please be advised that today's conference is being recorded. [Operator Instructions]

I would now like to hand the conference over to your speaker today, John Fairbanks. Thank you. Please go ahead.

John F. Fairbanks

VP, CFO, Principal Accounting Officer & Treasurer

Good afternoon. Thank you for joining us for the Aspen Aerogels conference call. I'm John Fairbanks, Aspen's Chief Financial Officer. There are a few housekeeping items that I would like to address before turning the call over to Don Young, Aspen's President and CEO.

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 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, a summary of key financial and operating statistics for the first quarter ended March 31, 2021. In addition, the Investors section of Aspen's website will contain an archived version of this webcast for approximately 1 year.

Please note that our discussion today will include forward-looking statements, including any statement regarding outlook, expectations, beliefs, projections, estimates, targets, prospects, business plans and any other statement is not a historical fact. These forward-looking statements are subject to risks and uncertainties. Aspen Aerogel's 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 today and are discussed in more detail in the reports Aspen files with the SEC, particularly in the company's most recent annual report on Form 10-K. The company's press release issued today and filings with the SEC can also be found in the Investors section of Aspen's website. The forward-looking statements made today represent the company's views as of today, April 29, 2021. Aspen Aerogels 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 U.S. generally accepted accounting principles or GAAP. These non-GAAP financial measures are not intended to be considered in isolation or to substitute the 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 today's press release.

I'll now turn the call over to Don.

Donald R. Young

President, CEO & Director

Thank you, John. Good afternoon. Thank you for joining us for our Q1 2021 earnings call. Today, I will describe the opportunities we have for substantial value creation over the next 5 years, and will provide a progress report on our strategic initiatives. John will recap our Q1 performance and finish with our updated outlook for 2021. We will conclude today's call with a Q&A session.

The key points from my comments today are, first, we are now developing and supplying prototype and production thermal barriers to 5 of the 10 largest automotive OEMs; second, Aspen Battery Materials has received requests from 5 battery and automotive companies for evaluation samples of our carbon

aerogel materials; and finally, our energy infrastructure business is showing early signs of a post pandemic rebound, including a new LNG win.

At the time of our last earnings call, we posted a new company presentation on our website. I want to share key points captured in that deck because to appreciate our full potential, it is important to understand our strategy, the scope of our opportunities and the progress we are making to create value.

Leveraging our aerogel technology platform is at the core of our strategy to be a global technology leader in sustainability with a focus on multibillion-dollar opportunities in high-growth, high-value markets and on creating a proprietary, diverse and valuable business. We have several opportunities currently in motion that fit this profile with the spectrum spanning from those in the R&D Phase to those in full commercial mode. I will discuss 3 of them today: PyroThin thermal barriers, which we believe represent an opportunity through this decade of \$30 billion; Aspen Battery Materials, which we believe represents an opportunity through this decade of over \$35 billion; and Pyrogel and Cryogel products for energy infrastructure, which we believe represent an opportunity during this decade of over \$30 billion.

Our PyroThin thermal barriers allow EV manufacturers to manage thermal runaway. Thermal runaway is the phenomenon where a cell and a lithium-ion battery pack has a sudden release of energy that can result in a fire, and it is a challenge for all EV battery platforms. PyroThin thermal barriers are designed to impede the propagation of thermal runaway, and to reduce the severity of the event. Aspen's technology offers a unique combination of performance attributes that enable EV manufacturers to achieve critical safety goals without sacrificing drive range.

In Q4 2020, we announced that a major U.S. automotive OEM awarded Aspen contracts to supply PyroThin thermal barriers for use in its EV battery platform. We have the potential from these contracts alone to generate revenue of \$75 million in 2023 and \$150 million per year from 2024 through 2030. These contracts alone represent an opportunity of approximately \$1 billion for Aspen over this decade. The ultimate value of the contract depends on our customers' success in participating in the global transformation to electric vehicles, and we believe this customer is well positioned to succeed.

Since that time, we have developed a robust business development pipeline for PyroThin thermal barriers. We are becoming a leading industry resource for the rapid development, testing and prototyping of thermal runaway solutions for mitigating the impact of thermal runaway.

It might be helpful for me to describe the various stages of our business development pipeline. The first stage is our initial engagement and is marked by the fact that we are connected with the subject matter expert at the target company to exchange technical ideas and requirements. We have dozens of companies in this category. I'm not going to focus on this first stage in my remarks today, but instead on the more substantive second and third stages of our pipeline.

In the second stage, we provide PyroThin samples to prospective customers for fundamental testing. We are involved with more than 15 companies in this phase, including automotive OEMs, battery OEMs and stationary energy storage companies. At this point, we engage more formally with the potential customers, apply our technical expertise and provide optimal solutions to address thermal runaway in that customer's battery system. This group of companies represents commercial opportunities principally beginning in the 2022 to 2024 time frame.

In the third stage, we advance to providing target customers with full thermal barrier prototype and production parts for system, testing and integration. Our goal in this stage is to transition our potential customer from testing PyroThin samples to purchasing prototypes and on to awarding us multiyear supply contracts similar to the ones we announced in Q4 2020. We are now engaged with 5 of the 10 largest automotive OEMs in this third stage.

Altogether, these 5 companies sold over 35 million ICE vehicles and EVs in 2019 and have committed more than \$140 billion to electrification. Each of the companies has promised all-electric lineups within a decade. These companies either have launched EVs or will launch EVs by 2022 and represent a great opportunity for Aspen to ramp volume quickly in the coming few years.

With the accelerating pace of our thermal barrier work, we are increasing our investment in the business. We are recruiting people with deep automotive and EV experience covering technology, supply chain, quality, automation and business development. We are also planning a capital investment in our Advanced Thermal Barrier Center or ATBC. This investment is consistent with our goal to be the expert industry resource for thermal barrier solutions. This best-in-class facility will enable rapid prototyping, performance testing, collaborative customer engagement in both low volume and automated production parts. We believe these investments in our thermal barrier opportunity have the potential to generate significant returns.

The second opportunity I'd like to review today is Aspen Battery Materials, which we refer to as ABM, where we are deploying our carbon aerogel technology in the design of low-cost, high-performance, silicon-rich anodes in lithium-ion batteries. The replacement of graphite in the anodes with silicon is widely viewed as the best near-term approach to boost lithium-ion battery performance and to reduce costs. The approach enables drop in materials compatible with the manufacturing technology underlying today's battery gigafactories.

Our work centers are leveraging our 2 decades of experience in the design and manufacture of aerogel nanomaterials at scale in order to optimize the cost and performance of our carbon aerogels. We are confident that we can meet the targets set forth by our valuation partners. We are responding today to requests for evaluation samples from 5 battery and automotive companies. These companies are seeking high capacity silicon anodes that are readily available to use with their current battery designs and that may play a role in future battery designs, including solid state. We are encouraged with the development of our silicon carbon aerogel solution.

This increased level of market engagement in our carbon aerogels has given us the confidence to accelerate our plans to make additional investments in ABM. We are adding scientists and engineers to the team and have kicked off a significant facility expansion to accelerate the in-house development and testing of full multilayer lithium-ion battery cells. This expansion will also speed market development by providing much needed production capacity for larger quantities of evaluation materials to meet demand from the growing list of battery and automotive OEMs. The investment in the ABM facilities is being done in conjunction with an expansion of our overall laboratory assets that support our R&D and new business creation teams, all consistent with our strategy to leverage our aerogel technology platform into new high growth, high value markets.

I'll now provide a few comments on our energy infrastructure business. Revenue of \$28.1 million exceeded our expectations and was roughly on par with the pre-pandemic Q1 2020. One quarter alone does not signal an end to the pandemic, but there were green shoots that suggest a relatively good first half and something closer to "normal" as we work our way through the year. In particular, a few of our regions are beginning to show signs of a post-pandemic uptick in activity. In the U.S. market, we see our distributors beginning to restock and our end users beginning to address deferred maintenance work. We also see an increase in LNG project work, which includes the award of the Arctic LNG contract. We believe that we are well positioned to emerge from the COVID-19 period with a strong operating platform in energy infrastructure and significant strategic momentum for the company as a whole.

At this point, I'd also like to provide an update on the targets and milestones for 2023 that we first introduced earlier this year. We set a revenue target of \$225 million for 2023, approximately doubling revenue from our 2021 outlook. The breadth and intensity of our engagement with automotive OEMs around PyroThin thermal barriers and the positive signs in the energy infrastructure market caused us to be yet more confident in our ability to achieve this 2023 revenue target. We also believe that we have the opportunity to double revenue not only between 2021 and 2023, but again, between 2023 and 2025. Our belief is based both on the positive macro environment in support of e-mobility and on our potential for several additional multiyear battery platform wins for our unique and protected PyroThin thermal barrier technology.

In addition to the investments that we are making to keep pace with the progress of PyroThin thermal barriers and Aspen Battery Materials, we are also planning to expand capacity with a second aerogel manufacturing plant. We have the required capacity today in our East Providence plant to support our

2023 revenue target of \$225 million. But with the opportunity to double revenue again by 2025, we will need additional capacity by late 2023. We plan to build Plant 2 in a modular fashion and will determine the capacity of the first phase of Plant 2 based on the potential value of additional thermal barrier contract awards.

A definitive plan for Plant 2 comprised of site locations, set schedule and an appropriate balance sheet is important to the large EV OEMs who want us not only to have ample capacity, but also a diversity of manufacturing sites. We will share details of our plans for Plant 2 in the coming months.

Overall, the key points from my comments today are: first, we are developing and supplying prototype and production thermal barriers now to 5 of the 10 largest automotive OEMs. Aspen Battery Materials has received requests from 5 battery and automotive companies for evaluation samples of our carbon aerogel materials. Next, our energy infrastructure business is showing early signs of a post-pandemic rebound, including a new LNG win. And lastly, we have decided to accelerate investment in these businesses based on significant momentum and opportunity.

John, I'll turn it to you.

John F. Fairbanks

VP, CFO, Principal Accounting Officer & Treasurer

Thanks, Don. I'll start by running through our reported financial results for the first quarter of 2021 at a summary level. Total revenue declined 1% to \$28.1 million from \$28.4 million in the first quarter of 2020. Net loss increased to \$6.3 million or \$0.22 per share this year versus a net loss of \$3.2 million or \$0.13 per share in the first quarter last year. And adjusted EBITDA was a negative \$2.6 million compared to positive \$500,000 a year ago. We define adjusted EBITDA as net income or loss before interest, taxes, depreciation, amortization, stock-based compensation expense and other items that we do not believe are indicative of our core operating performance.

I'll now provide additional detail on the components of our results. First, I'll discuss revenue. Total revenue decreased by 1% to \$28.1 million. This decrease in first quarter revenue was driven by a decrease in demand in the refinery and petrochemical market, particularly in Asia, and a decrease in project work in the subsea market, offset in large part by strong demand in the global LNG market, led by shipments to the Arctic LNG and PTT LNG projects.

Total shipments for the quarter increased 6% to 8.6 million square feet of aerogel blankets, while our average selling price decreased by 6% to \$3.25 per square foot. The decrease in average selling price reflected a decrease in the mix of higher-priced subsea products and an increase in the mix of lower-priced 5-millimeter and LNG products this year versus the first quarter of 2020.

Next, I'll discuss gross profit. Gross profit was \$4 million or 14% during 2021 versus \$6 million or 21% during 2020. This decrease in gross profit was driven by the 6% decrease in average sales price, an increase in material costs, offset in part by a 6% increase in volume and a reduction in manufacturing expense. I want to highlight that our first quarter gross profit was reduced by \$1.2 million and our gross margin by 400 basis points as a result of a \$1.8 million reduction in our finished goods inventory during the quarter. We expect that those finished goods inventories will regain that contribution later in the year.

Next, I'll discuss operating expense. First quarter operating expense increased by \$1.1 million or 12% versus last year to \$10.1 million. The increase in operating expense was primarily the result of additional recruiting expense and compensation costs associated with new hires, including those supporting our e-mobility business development initiatives, offset in part by reduced travel expenses associated with ongoing COVID-19 related restrictions.

Next, I'll discuss our balance sheet and cash flow for the quarter. Cash used in operations of \$1.9 million reflected our adjusted EBITDA of negative \$2.6 million, offset in part by a \$700,000 decrease in working capital investment during the quarter. The decrease in working capital was principally the result of a decrease in inventories of \$2.3 million during the quarter. Capital expenditures during the quarter were \$1.5 million. We're focused on improving the efficiency and reliability of our East Providence manufacturing facility and to a lesser extent, establishing our thermal barrier fabrication operations.

Cash provided by financing activities of \$4.1 million is comprised of \$6.2 million generated by our sale of equity for our existing ATM facility, offset in part by a net of \$2.1 million of cash used for employee equity transactions.

As a result, we ended the quarter with \$17.2 million of cash, net current assets of \$27 million, no borrowings under our revolving credit facility and shareholders' equity of \$66.6 million. We also had access to an additional \$13.1 million available under our revolving credit facility at quarter end.

I'll now turn to our full year 2021 outlook. Although COVID-19 continues to depress activity in our energy infrastructure markets, particularly in Asia, we're seeing early signs of improved demand in North and South America. As a result, we are now projecting revenue growth for the last 3 quarters of 2021 in the mid-single digits to mid-teens. And we're increasing our 2021 revenue outlook by \$3 million to between \$103 million and \$111 million for the year.

We've also decided to increase our strategic investments during the remainder of 2021 in support of our e-mobility business development initiatives. This investment will include \$10 million of incremental expense to enhance the technical, commercial and operational teams and resources in support of our thermal barrier and battery materials opportunities. Of the total, we expect to incur \$6 million of incremental expense in cost of sales for additional manufacturing, fabrication, supply chain, quality and engineering personnel and the operating costs associated with our new fabrication facilities. We expect to incur the remaining \$4 million of incremental expense in operating expense for scientists, researchers, salespeople and administrative support personnel to expand and protect our patent portfolio, including our e-mobility products and technology and for operating costs associated with our expanded research and corporate facilities.

Our 2021 strategic investments will also include an incremental \$18 million of capital expenditures to construct our Advanced Thermal Barrier Center, to expand our battery materials production, fabrication and testing facilities and to complete the initial engineering designs for our second silica aerogel manufacturing plant. Including this strategic capital investment, we project our capital expenditures a range between \$20 million and \$25 million for the full year.

We believe these strategic investments will position Aspen to take advantage of the significant growth opportunities available to us today in the electric vehicle market, to leverage our aerogel technology platform to develop new high-growth businesses and resume the strong operating performance that characterize 2019 when the impact of COVID-19 subsides.

Including the impact of these strategic investments, our revised 2021 full year outlook is as follows: We expect total revenue of between \$103 million and \$111 million; net loss of between \$28.3 million and \$31.9 million; adjusted EBITDA between negative \$15.2 million and negative \$18.8 million. EPS of between a loss of \$1.01 and a loss of \$1.14 per share. This EPS outlook assumes a weighted average of 28 million shares outstanding for the year. In addition, this 2021 outlook assumes depreciation of \$8.9 million, stock-based compensation expense of \$4 million and interest expense of \$200,000. Full year outlook also projects the gross margin in the mid-teens, an average selling price of between \$3.35 and \$3.40 per square foot.

Turning to cash. We're confident in our cash on hand, available credit and proceeds from potential equity sales under our existing ATM facility will be sufficient to fund operating requirements and strategic capital expenditures for the remainder of the year. Longer term, we're working on a number of potential financing alternatives to fund the construction of our second silica aerogel manufacturing facility, other capital expenditures required to support our e-mobility business opportunities and post 2021 operating requirements. We'll announce the additional details of the second plant, other capital projects, as our planning efforts progress during the year.

I'll now turn the call over to Mike for Q&A.

Question and Answer

Operator

[Operator Instructions] Your first question comes from Eric Stine from Craig-Hallum.

Eric Andrew Stine

Craig-Hallum Capital Group LLC, Research Division

Don't really know where to start here, but maybe just on the thermal barrier side, so talking about the 20 that you've got deep engagement with and the 5 that are more advanced. Just curious how that has kind of accelerated since you announced your first partner? What -- obviously, there's urgency from those 5, but kind of what are you seeing in terms of urgency in this area from the group? And I guess, I would assume you still have confidence in securing at least 1 to 2 more this year?

Donald R. Young

President, CEO & Director

Well, I think we are feeling that urgency and we believe, as we've said in the past that now is the time to win these contracts. These are multiyear design-in wins. And I think just from an external point of view or a macro point of view, the momentum around e-mobility, electrification, proliferation of EVs is going at least as swiftly as people expected and maybe even more so. So we believe that we will win additional contracts during 2021, Eric. Just the progress that we've made from stage 1, as I described it, to 2 and now we're down into the third stage, we believe that we'll continue to move companies through that. There is -- I think the issue of thermal runaway is also becoming increasingly prevalent, as you've seen, recalls occur for many companies and other sort of, let me say, regulatory, maybe, warnings around some of these things in all 3 regions, in Asia, Europe and here in the United States.

Eric Andrew Stine

Craig-Hallum Capital Group LLC, Research Division

Right. One thing I know that as of later, over the last couple of months, you got increased confidence in your ability to eventually be able to flow through your current customer is. I'm curious if that is still -- if that is still an area that you're confident in. And is there an event that triggers that? Or how should we think about potential timing there?

Donald R. Young

President, CEO & Director

Yes, we've said that we expected to do it during the second quarter of this year. And we think that is still the case. It is interesting and not just with this one, but with others who are in stage 3. There is an element of strategy for them and in the way they might be addressing thermal runaway. And so I don't think all the companies are going to -- I think many companies are going to view this as a proprietary aspect of their battery platform and perhaps not want to do a big announcement.

Having said that, we expect that we will be able to make announcements along the way because it's in their interest, I think. Look, we're investing in a second plant, as I said, a significant investment. We have to have the confidence. Our people have to understand what is the basis for that confidence and to have major players in the EV space align with us, if you will, around thermal runaway. It's just an important endorsement, and I think sort of blesses that kind of major capital decision.

Eric Andrew Stine

Craig-Hallum Capital Group LLC, Research Division

Right, and fair to say that, I mean, that's a capital decision you wouldn't make if you didn't have a high, high level of confidence in additional business on both paths, thermal runaway and the carbon aerogel path.

Donald R. Young

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President, CEO & Director

Yes, that is true. I think having that -- one of the nice parts about our ability to -- the way in which we build these manufacturing plants is in that sort of modular form. Even the one that we built earlier in East Providence, we built the original line, we expanded the original line first, and then we built another module in line 2 and then yet another one in line 3. So we're well versed in being able to sort of let out the line a little bit here, if you will, and the way we go about this.

One of the interesting aspects of our work today and thinking about Plant 2 is sizing that first module correctly. And it's going to be based on contracts in hand. There's no question about that. But that's a great way to build these things where demand is really the driver as opposed to, let's say, build it and they will come. This is going to be really demand driven.

Eric Andrew Stine

Craig-Hallum Capital Group LLC, Research Division

Absolutely. It's very good to hear. Maybe last one for me, just on the carbon aerogel path. I mean, clearly, last call, you talked about that, that had accelerated. You've moved up the time frame a little bit, and it seems like it continues to do so. When you mentioned the 5 companies, does that 5 include SK and Evonik? Or are those 5 in addition to those 2?

Donald R. Young

President, CEO & Director

It includes one of them. And I don't mean to be elusive about that. SK is very much on the customer side. And Evonik, as you know, is a supplier of materials to -- they're a partner to us in that sense. And so the 5 that we mentioned, one of which is SK are, let's say, sort of market facing.

Operator

Your next question comes from Chris Souther from B. Riley.

Christopher Curran Souther

B. Riley Securities, Inc., Research Division

Maybe to start on the \$18 million incremental spend for the Advanced Thermal Battery Center. Is completion of this investment acting as any kind of barrier to additional win, do you think? Or is this really just about demonstrating manufacturing expertise for these larger customers and kind of speeding up your production kind of time frames here? I just want to get a sense of how your guys are -- when you're kind of building this out to potentially demonstrate with customers kind of the rationale and what the capabilities you're going to have coming out of that.

Donald R. Young

President, CEO & Director

John, do you want to take that?

John F. Fairbanks

VP, CFO, Principal Accounting Officer & Treasurer

Sure. So it really does both. So the Advanced Thermal Barrier Center will be a customer center where we'll do rapid prototyping in response to customer demand. And we're doing that today, and we're doing it on a bit of a shoe string, so the ATBC will help us there. But it also is -- it will actually house our automated fabrication operations as well. And we'll be producing millions of thermal barriers for the contract -- per year for the contract that we've already won. And we anticipate that we -- with additional wins, that, that number will only increase. So we need to automate that thermal barrier fabrication operation in order to ultimately be successful delivering these components to our customers. So it will help us gain more customers and then it will help us produce product to those customers, contracts, ultimately. Do both.

Christopher Curran Souther

B. Riley Securities, Inc., Research Division

Okay. It makes a lot of sense. And then just on the progress on the second facility planning here, obviously, it can be kind of customer dependent based on when you get these awards, potentially come in throughout this year and next year. But if we're talking about 2022 to 2024 ramps with a bunch of these customers potentially, how do we -- and the modular approach, when do you guys do kind of pencil down and kind of speak to the street as far as what the plans are going to be? It seems like it could kind of continue to evolve the size that you're going after. I'm just kind of curious, is this something that by year-end that we'll get kind of more details and then could expand in 2022, if there's additional customer wins? How should we kind of think about it?

Donald R. Young

President, CEO & Director

Chris, I think we are going to build Plant 2. And for us, we are studying how big to build that first line, if you will, or that first phase of this project. And it's important. I said it in my notes a little that it's important not only because we need the capacity, but also because these large OEMs are expecting us to have not only ample capacity, but they would also like for us to have a diversity of manufacturing sites. And I think this is a significant commitment on our part to this new business that we've entered into.

So in terms of timing, I think that we will make announcements before the end of the year as to how this will play out in terms of site location and most probably size as well. Because we really need to get after it here. We need this capacity as we get late into 2023 and certainly by the time we start 2024. And it's about a 24-month process. And so we have a dedicated team today working on this. As John described, putting some of the initial design together, all the lessons we've learned from building line 1, line 2, line 3 in our East Providence facility. So a tremendous amount of work is being done on this today. So I think you can expect announcements sooner rather than later, certainly before the end of this year.

Christopher Curran Souther

B. Riley Securities, Inc., Research Division

And then it's kind of 24 months from start of production. For kind of incremental lines, what would be the time frame you think you'd need if you're going to expand it beyond the initial scope?

Donald R. Young

President, CEO & Director

Well, if you mean how -- does it take us less time to build the second phase, definitely that is a yes. But still, it probably truncates it from 24 months to 15 or 18 months, something like that. And when we have a structure and we have the infrastructure. So it's a number -- it truncates it a bit. But we need to get this first phase on the mark from a size point of view as best we can right from the get go.

Christopher Curran Souther

B. Riley Securities, Inc., Research Division

Understood. No, that makes a lot of sense. And then just last one here. On the \$10 million in incremental expense this year on the EV side, you mentioned \$6 million and \$4 million split between COGS and OpEx. Can you talk about what the impact was in the first quarter? Maybe I missed that. And then maybe what the cadence would be for the rest of the year for the rest of that spend maybe would be helpful?

John F. Fairbanks

VP, CFO, Principal Accounting Officer & Treasurer

Yes, so that incremental spend is all Q2 through the end of the year. And so it's going to come from this point forward. So it didn't include any expenses that we incurred in the first quarter.

Christopher Curran Souther

B. Riley Securities, Inc., Research Division

Okay. Got it. What were kind of the impact to COGS from the increased EV side?

John F. Fairbanks

VP, CFO, Principal Accounting Officer & Treasurer

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It was in the range of maybe 1 point of margin at this juncture. It was not that significant. But it will scale up quickly as we move from prototype production, which is what we're doing today, to full-scale commercial production. And so -- but that was in our initial projections. We're just -- really just accelerating some of these expenses that we had originally planned maybe for 2022 into 2021 in response to this, just this increase in interest in our thermal barriers and our confidence that this thermal barrier business is going to grow rapidly in 2022 through 2025 time period.

Operator

Your next question comes from Jed Dorsheimer from Canaccord.

Jonathan Edward Dorsheimer

Canaccord Genuity Corp., Research Division

I have several, if you don't mind. I guess, first, maybe just energy infrastructure. I mean, first off, congrats on better top line and sort of the bold move of the capacity expansion at these levels. So if we just dig into the energy infrastructure, clearly, pricing is starting to increase on the traditional hydrocarbon-based fuels. Is there anything else other than sort of rig counts and refineries or utilization that's kind of driving a level of confidence on this side of the business in terms of that ramp? And then I've got follow-ups on the other 2 areas.

Donald R. Young

President, CEO & Director

I think our indicators are sort of threefold. One is we're seeing restocking. And you might remember in Q2 of last year, I talked about the destocking that we saw going on through our very well-established distribution channel here in the United States and around the world. Those distributors are pretty close to the ground, so to speak, and they have a good sense for what is happening facility by facility. So we view that as a positive sign.

Second, we have been clear that we believe that because of the low-density work sites that had been required during this COVID period, which continues in many parts of the world, most parts of the world probably, there was no question that there was deferred maintenance. And we're beginning to see some of that deferred work be initiated and attempted to here. And so we view that as a positive sign. And then third, we are seeing the project pipeline begin to come alive again.

The worst thing that a contractor or an asset owner could do is start a project and have its team on-site, off-site, on-site, off-site. It's a terrible way to run, expensive way to run a project. So more projects than not just were either not started or put on hold. And we're beginning to see some of those come back to life here. And we are positioned neatly in the specifications for several of these projects. So that gives us confidence. And of course, we announced earlier the new LNG project, so-called Arctic LNG, that win.

So those are 3 things, Jed, that I think we're seeing in the numbers, we're seeing in the activity levels. And it's -- again, it's not true across, around the world entirely, but it's certainly true in pockets. And we think as the pandemic gets a little further behind us, it will become the case in most all regions.

Jonathan Edward Dorsheimer

Canaccord Genuity Corp., Research Division

Got it. And then just as a reminder on the value prop, if you will. I know on the oil side, I believe it -- thermal benefits on the heat as well as the rust under pipe are kind of the major drivers. On the LNG, is that working the same but cryogenically in terms of the cooler temps? Or is that still a thermal heat value prop there?

Donald R. Young

President, CEO & Director

So thermal management is still an important part of our value proposition in that space. Fire protection is also an important element. And one that is a little -- is really pronounced, I would say, on the LNG side, is the ability to install our materials more rapidly with a less skilled workforce in modular yards as opposed

to necessarily on site, so the durability of our material to be transported on pipe or on vessel from a yard to, let's just say, the remote site. Our materials are very durable in that way. So our value proposition on the LNG side is broad and strong. And I think the fact that we piece together a 50% revenue CAGR since 2015 since we really, really, let me say, invested in that space tells the story pretty well.

Jonathan Edward Dorsheimer

Canaccord Genuity Corp., Research Division

Got it. And then just maybe a pivot to the EV and the battery materials side. So on the thermal runaway opportunity, what are you replacing in terms of the core shell? Because there are thermal mitigation and propagation solutions in terms of -- or mitigation reduction solutions now. So I'm just curious what -- are you prepared at this point to sort of talk about the improvements that you're seeing on versus what a OEM or a battery manufacturer might be replacing and using your material instead?

Donald R. Young

President, CEO & Director

Yes, look, I think a few things. I mean a lot of battery platforms that we are working through that 1, 2, 3 stage process that I described are new. And they are looking for optimal materials to address this issue. So in some sense, we're really not knocking an incumbent out of the box. We are part of the original design of these battery platforms. And that's a strong place for us to be in. And it's why it's so important for us to invest in the Advanced Thermal Barrier Center to really be that industry resource for helping them address this challenge that all of the battery platforms have.

And so it's unlike the energy infrastructure business in the sense that we largely needed to knock out incumbents that had been in place for a long time. And that was a slow arduous process, and we've done the hard work, and we're making significant inroads in that space. It's a little different here with these new battery platforms, Jed, where they don't have long histories with existing materials.

And if I could just say, the attributes of our material, we refer to them is, it's a really unique combination of that thermal management, that -- the noncombustibility, the mechanical durability with that very thin profile, taking up very little space within these packs so that they can get more settles in place so -- which is to say more drive range.

And so we really have, I think, an important product here, and we're doing our best to work these companies through our development funnel here as they themselves, let me say, sort of settle on their battery platforms.

Jonathan Edward Dorsheimer

Canaccord Genuity Corp., Research Division

And then last question, I guess, just on the battery materials, on the anode side of things. Obviously, moving to silicon on the anodes has a tremendous amount of benefits. But the issue has always been the coefficient of thermal expansion associated with the thermal increase. So I'm just curious, where are you in terms of the data with the testing with the 5 -- with the customer base that you're in? Is there any metrics that you might be able to share at this point in terms of that solution?

Donald R. Young

President, CEO & Director

Providing the data is a goal for us -- publicly is a goal for us here in 2021. And we think that it's a relatively bold move. Not many are doing that, not many companies that are doing this are putting their data out. We're eager to do it. And you're right, that is the challenge, is the expansion of the silicon to what 3x significant and how do you protect that expansion through cycle life. And a lot of the work that we're doing with our evaluation partners is around exactly that, cycle life. How durable are these materials? And we think our carbon aerogels are a perfect scaffolding for that given their mechanical durability, our ability to manipulate the pore size, create uniformity of the pore size, doing a variety of things that protect that silicon as well as possible. And so that's really our focus and an enormous amount

of our scientific team is dedicated to that issue, but I [have the] idea of presenting our data publicly here during 2021.

Operator

Your next question comes from Doug Becker from Northland Capital.

Douglas Lee Becker

Northland Capital Markets, Research Division

Don, you made the point you're not knocking out incumbents specifically, but curious if there's been any notable changes around the competitive landscape with competing solutions for thermal barriers or the carbon aerogels.

Donald R. Young

President, CEO & Director

Well, we're assuming, and I think it's fair to assume, that these automotive OEMs that we have in 5 of the 10 largest automotive OEMs in the world are looking at all materials. And the one that we were awarded the contract for, we know that they started with a number of materials in the first stage of that 3 part RFQ. And so we're progressing pretty efficiently through that funnel right now as many of these companies as possible. Again, dozens in stage 1, 15 or 20 in stage 2, now 5 significant companies in stage 3.

We don't know all of the materials that we're being compared against, but we know some of them. And it -- this is an extremely hard problem that you just don't sort of come up with a -- just don't come up with a solution easily. And what was important for us, and the reason that we've been so strong in this to date, is that product PyroThin is a direct descendant of the passive fire protection products that we used in energy infrastructure. Well, passive fire protection is so critical. Yes, we've optimized it significantly for the lithium-ion batteries. But we were very experienced with the issue coming into it. And again, it's put us in a very strong position.

You also mentioned on the Aspen Battery Materials and the silicon-rich anode material that we've talked about. Yes, there are a number of companies that are focused on this. I mean, it's well, well understood, agreed upon, I think, that adding silicon to sort of the current style of lithium-ion batteries is that -- are the next logical steps along the technology road map. And the great benefit of it, of course, too, is that it fits within the process technology, the manufacturing technology of these bigger factories, some of which are operational today and some of which have been announced and will be operational in the coming year or 2.

And so that's a requirement of these kinds of materials in -- I think in almost everyone's opinion. And so it's an area where we think that the work that we've done in developing and then manufacturing on scale these nanomaterials for the better part of 20 years, gives us an advantage at that level, especially when you're talking about cost and performance. Cost and performance, those 2 things go together. It's one thing to have pure performance at a very high cost. It's not going to get it done. It's cost and performance. Again, we feel that we're in a good position. And we've added since the last time we've talked about this, 3 additional companies to -- who are requesting samples who have looked through our data and materials and what have you.

And so the list is expanding. And we've got a lot of work to do. We're investing in the business, we're bringing scientists and engineers in. Our confidence has grown. And I think that the next logical things are for us to share data and compare that data with other solutions but also to announce additional partnerships in addition to our Korean partner and our German partner.

Douglas Lee Becker

Northland Capital Markets, Research Division

That all sounds very consistent with what you've said in the past with, yes, competitors are out there, but no major changes in that plan is what it sounds like. Okay. And then maybe a quick update on the opportunity for stationary energy storage and distributed generation. Didn't seem to get a lot of airtime

today. Has that opportunity just kind of taken a back seat given the other opportunities you have right in front of you?

Donald R. Young
President, CEO & Director

Not really, actually. I mean certainly, our team is focused on it. Obviously, the EV space is so much so prevalent right now out there in the world. The stationary energy, so think of this, for those who are listening, of energy storage systems associated typically with residential or small business. So behind-the-meter odd times solar to battery type systems. Again, using the same lithium-ion technology battery cells typically perched up next to one's home. And so some of the formal runaway issues are prevalent there as well. And so we have continued to make progress with 2 entities, one in Germany, one here in the United States -- I should say one in Europe and one here in the United States. And we've made -- we continue to make good progress with them. But really -- I think it's a really interesting and important area for us.

Douglas Lee Becker
Northland Capital Markets, Research Division

And I think last quarter, you mentioned you were involved in some RFQs that I assume those are still continuing to move forward. But is there any way to frame the opportunities specifically from this aspect of the business?

Donald R. Young
President, CEO & Director

I think the fact that we have 5 major OEMs in the third stage of our development, think of that as pretty advanced. And whether it's exactly an RFQ or not or advanced prototyping and providing production parts, it's pretty advanced at this point. And so it's -- I would say at that point they have limited their choices down to very, very few possible solutions at that point in time. So again, we haven't won until we win, but we feel strongly that we're in an excellent position to be able to announce some additional contracts this calendar year.

Douglas Lee Becker
Northland Capital Markets, Research Division

And just to clarify, I was actually specifically talking about the stationary energy storage or...

Donald R. Young
President, CEO & Director

Oh, excuse me. I would add that we'll have one of those announced here in 2021.

Operator

Your next question comes from Amit Dayal from H.C. Wainwright.

Amit Dayal
H.C. Wainwright & Co, LLC, Research Division

Sorry, I was in mute. So with respect to this EV opportunity, right, there's been some recent headlines about supply chain challenges in the auto space. Is that impacting any of your time lines or is that not much of a concern at this point?

Donald R. Young
President, CEO & Director

Well, it is not directly impacting us in the sense that if you're referring to semiconductor shortages, et cetera. So not directly. But perhaps in some indirect sense, yes, it necessarily slows things down.

I can say just sort of more broadly, if you will, is that all of us are -- whether you're the biggest OEM or a supplier like Aspen, there's no question that the supply chain is being challenged right now. And it's just a matter of sort of uncorking in the process after -- again, I don't need to say the pandemic is over, but

as we get outrun on this other side of it, at least. And these big supply chains aren't really meant to start and stop and start and stop. They're not fully shaped that way. And so it came to a significant slowdown, if not stop, for lots of these parts. And it's going to take a little while to kind of reset. And so it wouldn't surprise me if there are some disruptions along the way, I think we've already read about some of them. But in terms of our work, we're not anticipating any issues from our side.

Amit Dayal

H.C. Wainwright & Co, LLC, Research Division

Understood. And then you had indicated you're expecting single-digit millions for sales into that opportunity for '21 and '22. Is there any change to that outlook? Or are you still sort of in that realm?

Donald R. Young

President, CEO & Director

We think that's a good expectation for you to have. But I did say in my notes that we are as confident as that or more confident about our 2023 target of \$225 million, again, based on the fact that we've got these significant automotive OEMs in the third stage of our development funnel and we're seeing activities in our energy infrastructure business that are promising, that's starting to feel a little bit normal again.

And again, we've got a ways to go, but it's moving in the right direction. And we haven't said that for 4 quarters, as you know. It was really just sideways at a low level. And we're just seeing it. And you saw a little bit maybe in our revenue in Q1. I think it was better than expectation. And again, one quarter doesn't make an end to the pandemic, but we feel we're in a good direction there.

So that target of 2023, again, we feel confident in that. We're building up 2021, 2022. These investments that we're making, our ability to move towards automated higher volume parts production on the thermal barrier side, these are all critical elements to be successful here.

John F. Fairbanks

VP, CFO, Principal Accounting Officer & Treasurer

One other comment. Single-digit millions in 2021 and 2022 was from the U.S.-based automotive OEM alone. So if we have additional contract wins, it could give us upside on those numbers, in particular, in 2022. But as long as the U.S. automotive company is successful, we should achieve those numbers and additional contract wins would give us upside.

Amit Dayal

H.C. Wainwright & Co, LLC, Research Division

That's helpful. Just one last one for me. The decrease in average selling prices, maybe because of the product mix in 1Q, is this sort of a temporary situation and you guys are managing through this going forward?

John F. Fairbanks

VP, CFO, Principal Accounting Officer & Treasurer

Yes, it really is a function. We sold a lot of 5-millimeter product, and we sell our 5-millimeter product for about half the average selling price as our 10-millimeter product. So that mix drove it down. So it's temporary. It is project related. And we'd expect that to continue into the second quarter, but to sort of resume our higher levels of average selling prices in the second half of the year. And just to clarify, our bill of material costs per square foot for the thinner product, for the 5-millimeter product is lower as well. So we really maintained our margin, we have lower revenues, and then we also have lower material costs, which give us the same contribution. So there's been no economic degradation on it, and will rebound in the second half of the year.

Operator

Your next question comes from Jeffrey Campbell from Alliance Global Partners.

Jeffrey Leon Campbell

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Alliance Global Partners, Research Division

The first thing I wanted to ask about, so I just wondered if there was much segregation between those battery folks that are deep into PyroThin adoption or sampling and testing, and those that are showing the strong and increasing interest in the common anode product. Because it seems like these are both the necessary products in the same battery, assuming that they perform to expectations.

Donald R. Young

President, CEO & Director

Yes, it's a good question. And I would say that when I think about it, there is overlap. But I would say -- I mean, on the one hand, I would say it's sort of coincidental. But on the other hand, I would say, you know what, it's not very surprising. There are different groups within these firms who are working on these things. But there are only so many players, let's face it, at the end of the day. So -- and we believe there will only be so many successful players at the end of the day. Some of the incumbent companies will be successful, some of the newcomers will be successful. And so it's not too surprising. But I wouldn't say that they're necessarily related to one another. A lot of times, I would even wager, well, I know that one group within one of these big companies barely even knows that the other group is working with us on the other one. So again, I call it a little bit coincidental, but not surprising.

Jeffrey Leon Campbell

Alliance Global Partners, Research Division

Regarding the OEMs and the battery manufacturers that are in the second or third of the PyroThin phases that you outlined, can you provide some color just on geography, like U.S., EU, Asia, to get a sort of sense of that?

Donald R. Young

President, CEO & Director

They represent all 3 regions -- sorry, all 3 major regions. So this isn't going to be terribly helpful, but there are participants from Asia, participants from Europe and participants from the U.S. in Phases 2 and 3.

John F. Fairbanks

VP, CFO, Principal Accounting Officer & Treasurer

And within Asia, it's China and other countries within Asia as well. So it's a great -- really a great geographic diversity.

Jeffrey Leon Campbell

Alliance Global Partners, Research Division

Yes, and John, the -- you mentioned China. It's interesting and significant because we've talked in the past about how there's some entity there that infringes on your patents, but it sounds like maybe this -- if you've got -- if you're doing work in China, it means there's more to it than just being able to make some aerogel unless all the other research is just done and the other people that you're working with. Is that the right way to think about it?

Donald R. Young

President, CEO & Director

I think it's that and that these companies aspire to be international companies and are -- and we've done -- we've been very aggressive and successful in, let me say, defending our intellectual property around the world. And so I would just say that they're -- I would just say that they are -- sorry, I would just say that they are focused on -- if they want to be an international company, they do not want to be violating intellectual property. And we've seen that in their behavior as well.

Jeffrey Leon Campbell

Alliance Global Partners, Research Division

That's a great point. They want to be able to sell outside of the moat. My last question, and you sort of alluded to this, but -- earlier, but I'm just adding a little bit of color to it. You mentioned that some large OEMs are cognizant about diversity of supply locations. I was just wondering, as you're planning your future roof line expansion, maybe not just Phase 2, but maybe even in a further phase if it comes to that, are there any potential large foreign customers that are indicating that Pyrogel or PyroThin facility source closer to their manufacturing capability? Is there any importance to that?

Donald R. Young

President, CEO & Director

Jeffrey, our materials ship very effectively and cost effectively. We've exported historically approximately 2/3 of our product to all corners of the globe. And so I think having a diversity of supply, I think having ample supply are the 2 most important things. Having a nearby supply, I think, has been voiced more as a nice to have and not at all a requirement.

I think as we come to a full capacity of a Plant 2, we will have to think very hard about where we locate Plant 3. And it's very likely driven by where we are particularly successful in the thermal barrier side of the slate. So I could make a -- if I were to project forward 4, 5 years, I could make a good argument for Europe, and I could make a good argument for Asia. So we'll see how it plays out.

John F. Fairbanks

VP, CFO, Principal Accounting Officer & Treasurer

In the interim as well, we could site fabrication operations in Europe and in Asia, but make the aerogel, the base aerogel based PyroThin product here in the U.S. just to make sure we have that proximity and quick turnaround on prototype designs and delivery of fabricated parts as well.

Donald R. Young

President, CEO & Director

And that's a really good point, John. Just -- I think you'll see more of that. That is a much lighter afoot to do that sort of thing than to build a full-fledged aerogel manufacturing plant. So I think that's a very logical part, maybe interim to that.

Operator

The Q&A session is now ended. I will turn the call back over to Don Young for closing remarks.

Donald R. Young

President, CEO & Director

Thank you, Mike. Appreciate it. Thanks for your help. Thank you, everyone. We appreciate your interest in Aspen Aerogels, and we look forward to reporting our Q2 results in late July. Be well, and have a good evening. Thanks very much. Take care.

Operator

This concludes today's conference call. Thank you for participating. You may now disconnect.

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