



A Technology Leader In Sustainability

Company Presentation
May 18, 2021

Disclaimer

This presentation contains statements that constitute “forward-looking statements” under the Private Securities Litigation Reform Act of 1995. The words “anticipate,” “believe,” “could,” “estimate,” “expect,” “guidance,” “intend,” “may,” “plan,” “potential,” “predict,” “project,” “should,” “target,” “will,” “would,” “outlook” and similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words. All statements other than statements of historical facts contained in this presentation, including statements regarding our short-term and long-term growth strategies and expectations about the growth of our business; 2023 revenue targets, 2023 gross margin target; future revenue opportunities through this decade; the opportunity in 2025; efforts to develop and commercialize our products; market opportunities in the electric vehicle market regarding thermal barriers as well as battery materials; market opportunities in the sustainable building materials and the energy infrastructure markets; our expectations regarding future operations, future financial position, future capacity, future revenue and projected costs; future energy demands including LNG; our expectations about global electric vehicle sales as well as the potential revenue from the sale of our products per electric vehicle; the revenue opportunity estimates from major US automotive OEM through 2030; our prospects and plans; objectives of management; and expected market growth are forward-looking statements. These statements involve known and unknown risks, uncertainties and other important factors that may cause our actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by the forward-looking statements. These forward-looking statements are only predictions and we may not actually achieve the plans, intentions or expectations disclosed in our forward-looking statements, so you should not rely on our forward-looking statements. Actual results or events could differ materially from the plans, intentions and expectations disclosed in the forward-looking statements we make. We have based these forward-looking statements largely on our current expectations and projections about future events and trends that we believe may affect our business, financial condition and operating results. The Company’s future financial and operating results, as well as any forward-looking statements, are subject to inherent risks and uncertainties, such as those described in its Annual Report on Form 10-K for the year ended December 31, 2020, as well as its subsequent quarterly and current reports filed with the U.S. Securities and Exchange Commission. Such risks and uncertainties include those related to: an inability to create new product, partnership and market opportunities; any sustained downturn in the energy industry or energy prices; any sustained downturn in the petrochemical, refinery, subsea, LNG, U.S., North American, Asian, European, South American, Middle Eastern, building materials, electric vehicle or other market due to the coronavirus pandemic, COVID-19 or any other factor; any failure to sustain project-based demand in the subsea, LNG, on-shore or other markets; the right of EV thermal barrier customers to cancel contracts with Aspen at any time and without penalty; any costs, expenses, or investments incurred by Aspen in excess of projections used to develop pricing under the contracts with EV thermal barrier customers; any failure of Aspen or PyroThin™ to meet contractual specifications and requirements under contracts with EV thermal barrier customers; Aspen’s inability to create new product, customer or market opportunities, including for PyroThin™ or for new products developed from Aspen’s aerogel technology; any disruption or inability to achieve expected capacity levels in any of our three production lines or the manufacturing facility in which they are located, including due to the coronavirus pandemic, COVID-19 or any other factor; any inability to expand manufacturing capacity in a second manufacturing facility; Aspen’s Pyrothin™ product or another product’s ability to solve the customer problem towards which it is targeted; the failure to receive all regulatory or other approvals required to operate, maintain or expand our facilities; any failure of demand for Aspen’s products; any failure to achieve expected price increases or average selling prices for Aspen’s products; any significant increase in the cost of raw materials, utilities or any other manufacturing consumable; the failure to mitigate the impact of any significant increase in the cost of raw materials, utilities or other manufacturing consumable; shortages of raw materials, utilities or any other manufacturing consumable due to the coronavirus pandemic, COVID-19 or any other factor; the failure to generate sufficient operating cash flow or to obtain significant additional capital to pursue Aspen’s strategy; the failure of Aspen’s products to become widely adopted; the competition Aspen faces in its business; any failure to enforce any of Aspen’s patents; any failure to protect or expand Aspen’s aerogel technology platform; any future finding of invalidity of any patent in any jurisdiction; any failure to generate sufficient operating cash flow or to obtain sufficient additional capital to continue to pursue Aspen’s new business, technology, patent enforcement, or patent defense strategy; any failure of Aspen’s products to meet applicable specifications and other performance, safety, technical and delivery requirements; the general economic conditions and cyclical demands in the markets that Aspen serves; the economic, operational and political risks associated with sales and expansion of operations in foreign countries; the loss of any direct customer, including distributors, contractors and OEMs; compliance with health and safety laws and regulations; and the maintenance and development of distribution channels.

The presentation contains target financial information with respect to the Company. Such target financial information constitutes forward looking information, and is for illustrative purposes only and should not be relied upon as necessarily being indicative of future results. The assumptions and estimates underlying such financial targets are inherently uncertain and are subject to a wide variety of significant business, economic, competitive and other risks and uncertainties, as described above. Actual results may differ materially from the results contemplated in the financial targets contained in this presentation, and the inclusion of such information in this presentation should not be regarded as a representation by any person that the results reflected in such targets will be achieved.

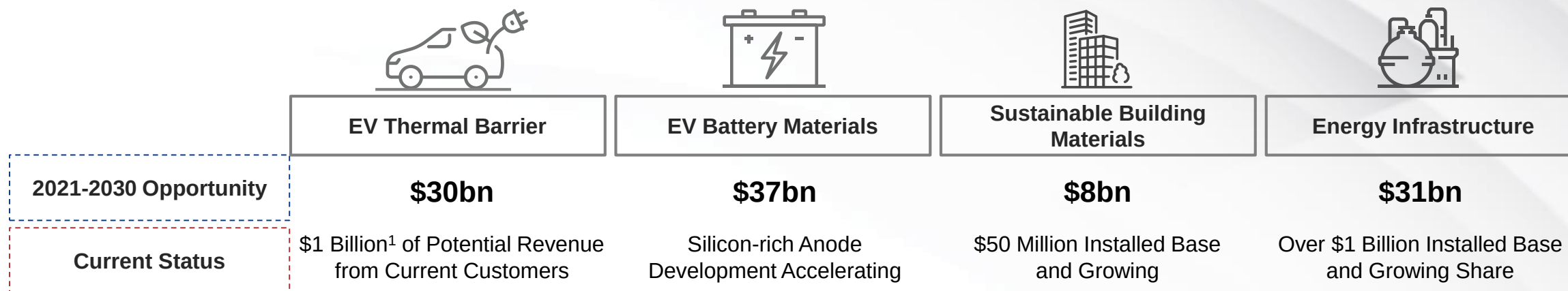
The information in this presentation is current as of May 18, 2021 and speaks only as of such date. We expressly disclaim any obligation to release any updates or revisions to any information presented herein, including any forward-looking statements, to reflect any change in our expectations or projections or any changes in events, conditions or circumstances on which any such information or statements are based for any reason, except as required by law, even as new information becomes available. All information and forward-looking statements in this presentation are qualified in their entirety by this cautionary statement.

The industry and market data contained in this presentation is based either on our management’s own estimates or on independent industry publications, reports by market research firms or other publicized independent sources. Although the Company believes these sources are reliable, it has not independently verified the information and cannot guarantee its accuracy and completeness, as industry and market data are subject to change and cannot always be verified with complete certainty due to limits on the availability and reliability of raw data, the voluntary nature of the data gathering process and other limitations and uncertainties inherent in any statistical survey or market shares. Accordingly, you should be aware that the industry and market data contained in this presentation, and estimates and beliefs based on such data, may not be reliable. Unless otherwise indicated, all information contained in this presentation concerning our industry in general or any segment thereof, including information regarding our general expectations and market opportunity, is based on management’s estimates using internal data, data from industry related publications, consumer research and marketing studies and other externally obtained data. Certain financial or other targets are based on management estimates, currently available information and assumptions that may change. Accordingly, there can be no assurance that we will achieve our financial targets or other expectations. The expectations are inherently subject to significant economic, competitive and other uncertainties and contingencies, many of which are beyond the control of management. Actual results may vary materially based on a number of factors. For example, The Company’s estimates on Slide 12 of this presentation are based on assumptions about the following factors: (i) adoption rates of various Si-rich anode materials to replace all or part of graphite, (ii) their aggregate pricing, and (iii) the amount of Si in anode. Due to the rapid pace of technical development in lithium batteries, the Company’s assumptions may evolve in the future due to various external factors resulting in different estimates than those arrived here. There are a wide range of estimates being published, including ones that would result in lower per vehicle figures. While the Company’s management believes its estimates regarding possible pricing and market size are based on reasonable assumptions and methodology, there can be no assurance that the future pricing and market size will align with the Company’s estimates.

Such data may be outdated and involves a number of assumptions and limitations and contains projections and estimates of the future performance of the industries in which we operate that are subject to a high degree of uncertainty. We caution you not to give undue weight to such projections, assumptions and estimates.

Multi Billion Dollar Commercial Opportunities

Deploying a Rich Technology Platform into ESG driven markets



2023 – Targets & Milestones

- \$225 million in Revenue and 30% Gross Margin fueling future growth
- Our target assumes existing manufacturing assets:
 - PyroThin™ Thermal Barrier revenue principally from existing customers
 - Energy Infrastructure revenue at 2019 (pre-COVID) levels
- First adoption of silicon rich Carbon Aerogel anode material in a lithium-ion EV battery
- Accelerating momentum in Sustainable Building Materials

The Opportunity Through 2025

Double Revenue
Every 24 Months

Multiple
EV Applications

Unique and Protected
Technology

Multi-Year
Platform Wins

Technology Leader
In Sustainability



EV Battery Thermal Barriers

Safety | Reliability | Brand Reputation | EV Adoption

aspen aerogels

PyroThin

Aspen EV Thermal Barriers

PyroThin™ Product Overview

PyroThin™ is an ultra-thin, low thermal conductivity aerogel thermal barrier material optimized for resistance during high temperature events



Ultra-Thin Thermal Protection
Mitigates propagation of Thermal Runaway by resisting heat transfer



Non-Combustible
Provides passive fire protection during a Thermal Runaway event



Tunable Compression
Accommodates critical lifecycle cell face pressures



Lightweight & Versatile
Engineered for both mobile and fixed energy storage applications

Exceptional protection against thermal runaway with minimum thickness

As an electric vehicle (EV) battery pack manufacturer, you know increasing driving range (the space available in a battery pack) becomes more and more limited. At the same time, mitigating the potential for thermal runaway propagation in lithium-ion battery systems has become a key safety goal of regulatory bodies, vehicle manufacturers, and all other participants in the EV market.

PyroThin™ ATB technology is an exceptionally low thermal conductivity aerogel thermal barrier material, optimized for extreme thermal resistance during high temperature events. This allows PyroThin ATB to be an effective, passive means to mitigate thermal runaway propagation at thicknesses as low as 2mm. The ultra-aerogel is engineered into a high-tensile glass fiber reinforcement to produce a durable and flexible thermal barrier.

The exceptionally low thermal conductivity, and thin form factor, make PyroThin ATB thermal barrier ideal for placement between cells to help deliver precious minutes of protection against thermal runaway propagation.

PyroThin ATB thermal barrier may also be used to line the interior of a battery module or used under the pack cover as a thermal and fire barrier to help protect passengers from the hazards of thermal runaway.

PyroThin ATB is available in two grades, PyroThin ATB1000, optimized to provide maximum thermal resistance, and PyroThin ATB2000, engineered to deliver enhanced low temperature performance.

APPLICATION EXAMPLES

ADVANTAGES

- Passive solution
- Exceptionally low conductivity and thin solution
- Thermally insulates cells to mitigate thermal runaway propagation
- Lightweight and thin format that adds minimal weight to the battery pack
- Accommodates charge/discharge cell thickness changes
- Resists physical degradation at high temperatures
- Does not sustain flame (UL 94 V-0)

PHYSICAL PROPERTIES

PROPERTY	PyroThin ATB
THICKNESS	2 mm, 3 mm
WEIGHT	2 kg
COMPRESSION	Yes

THE AEROGEL ADVANTAGE

Aerogel is a lightweight and durable material with the lowest thermal conductivity of any solid. There is a wide variety of aerogel products, each with unique properties. The aerogel used in PyroThin ATB is a high-purity silica aerogel, which is the most thermally insulating material available. It is also highly durable and resistant to physical degradation.

TYPICAL PROPERTIES

TEST METHOD	PROPERTY	PyroThin ATB1000	PyroThin ATB2000
ASTM D503	Density	0.28 g/cm³	0.24 g/cm³
ASTM D577	Thermal Conductivity	0.012 W/m·K (25°C) 0.011 W/m·K (50°C) 0.010 W/m·K (75°C) 0.009 W/m·K (100°C) 0.008 W/m·K (125°C) 0.007 W/m·K (150°C)	0.011 W/m·K (25°C) 0.010 W/m·K (50°C) 0.009 W/m·K (75°C) 0.008 W/m·K (100°C) 0.007 W/m·K (125°C) 0.006 W/m·K (150°C)
ASTM D503	Compressive Strength	0.15 MPa (21.75 psi) 0.10 MPa (14.50 psi) 0.05 MPa (7.25 psi)	0.10 MPa (14.50 psi) 0.05 MPa (7.25 psi) 0.02 MPa (2.90 psi)
UL 94	Flame Retardancy	V-0	V-0

PARTNER WITH US

PyroThin ATB is a high-performance thermal barrier material that is ideal for use in electric vehicle (EV) battery packs. It is a lightweight and durable material that provides exceptional thermal resistance, helping to prevent thermal runaway propagation. PyroThin ATB is also highly resistant to physical degradation, making it a reliable choice for long-term use in EV battery packs.

For more information, please contact us at info@aspenaerogels.com or visit our website at www.aspenaerogels.com.

aspen aerogels

10000 Aspen Aerogels Drive, Suite 100, San Diego, CA 92121 | Phone: 858-491-3111 | Fax: 858-491-3112 | Email: info@aspenaerogels.com

Aspen EV Thermal Barriers

PyroThin™ enables EV OEMs to achieve critical safety and performance goals



Cell-to-Cell Thermal Runaway

Aspen's PyroThin™ thermal barriers mitigate cell-to-cell energy propagation in the event of thermal runaway

Module-to-Module Thermal Runaway

Aspen's PyroThin™ thermal barriers mitigate energy propagation at module-to-module and module-to-pack levels

Aspen offers a versatile solution addressing thermal runaway across EV battery platforms

Safety – A Critical Element to e-Mobility Adoption

At stake? Brand reputation, corporate liability, and consumer trust

Thermal Runaway is a Challenging Problem Faced by the EV industry



- EV fires create significant risk of loss of life and property
- EV fires are infrequent but dangerous – headline grabbers
- Recalls and regulation are impacting virtually all brands in all major regions
- Aspen's solution offers a unique and protected technology

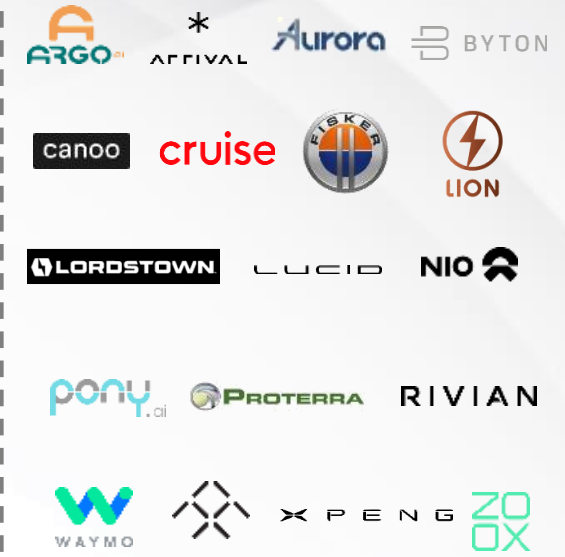
Aspen's PyroThin™ is the Technology Leader

Incumbents and New Entrants Will Drive Significant Demand

Current Incumbents



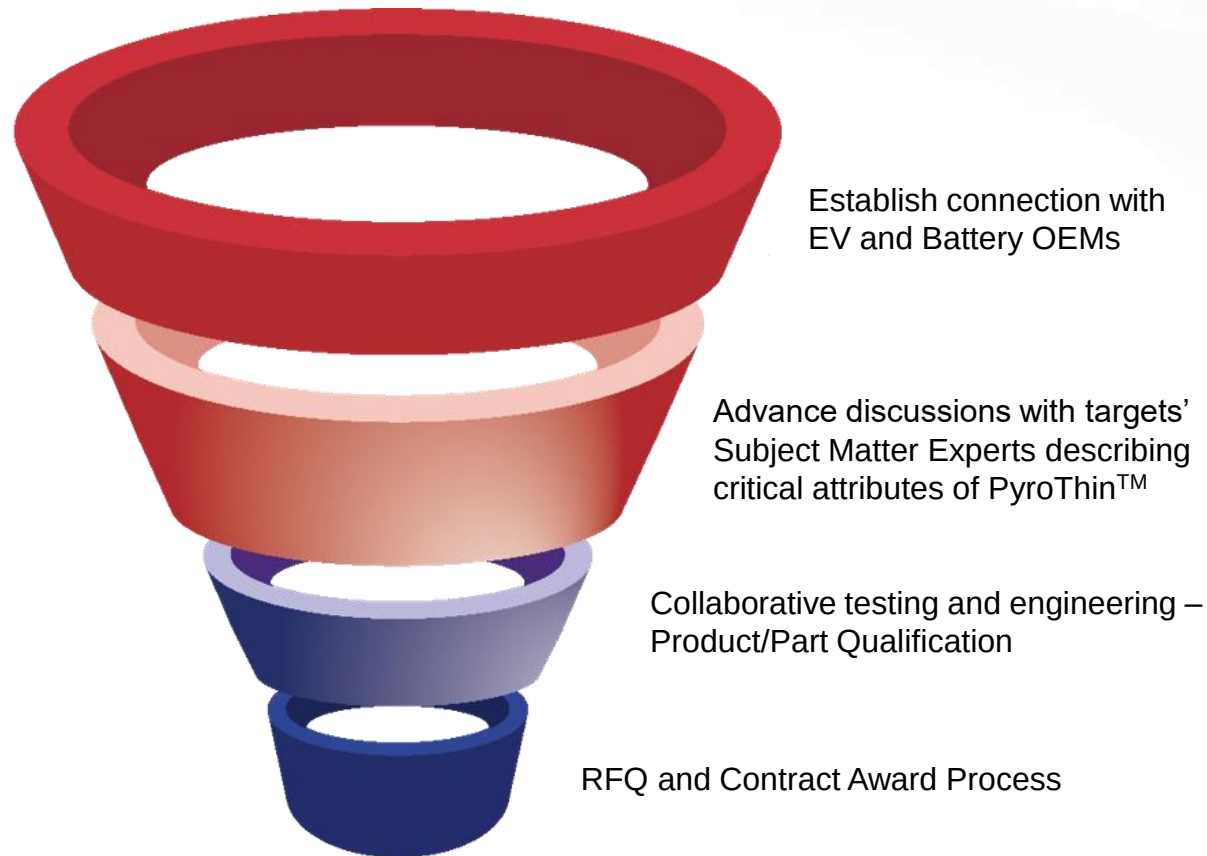
New Entrants



- The EV market will continue to grow as new entrants join a large incumbent base
- Aspen's safety critical components are vital to maintaining a strong brand and consumer trust

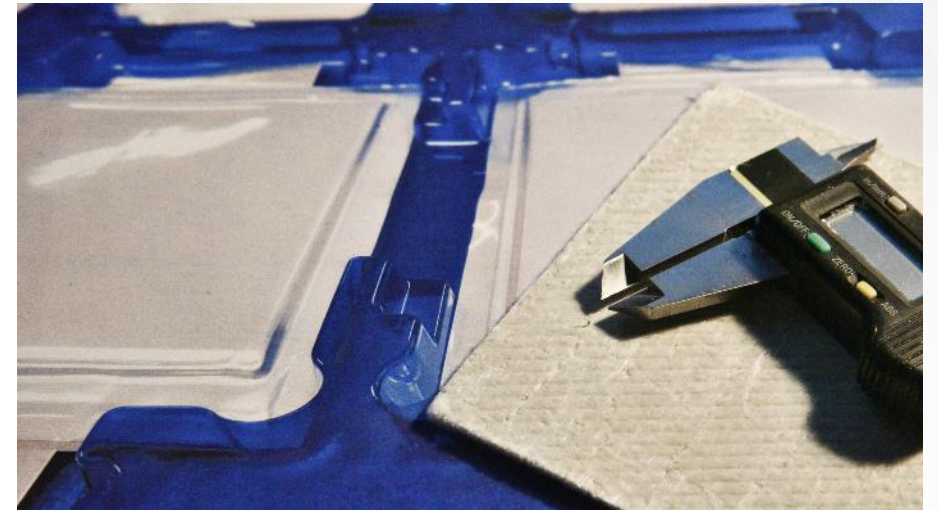
PyroThin™ Commercial Success

Commercial Leads and Demand From OEM Incumbents and New Entrants



First Major Multi-year Contract Win in Hand

- Multi-year contract awarded after rigorous RFQ process – major US automotive OEM
- Potential revenue over this decade exceeding \$1 billion¹
- Stage set for additional commercial success



\$30 Billion Opportunity in This Decade

e-Mobility and Electrification megatrends drive demand for Aspen's thermal barrier solutions

Total Addressable Market (TAM)

	2023	2024	2025	2026	2027	2028	2029	2030
Global EV Sales ¹ (#mm)	5,436	6,944	8,497	11,009	14,134	17,371	21,399	25,803
Aspen Revenue/Vehicle ² (\$)	\$275	\$275	\$275	\$275	\$275	\$275	\$275	\$275
Market Opportunity (\$mm)	\$1,495	\$1,910	\$2,337	\$3,027	\$3,887	\$4,777	\$5,885	\$7,096

¹ Source: Bloomberg NEF Electric Vehicle Outlook 2020

² Based on long term average (through 2030) projected value per vehicle based on a balanced fleet of vehicles with different range and power requirements



- Uniquely suited to solve an extremely challenging problem
- Addresses thermal runaway in broad range of EV battery platforms
- Battery platform design wins represent multi-year revenue streams
- Protected by extensive IP portfolio and manufactured with existing assets

PyroThin™ will be a major value driver for Aspen Aerogels



Aspen Battery Materials Leveraging Unique Carbon Aerogel Technology

Scalable, low-cost nanomaterials that unlock the next boost in battery performance

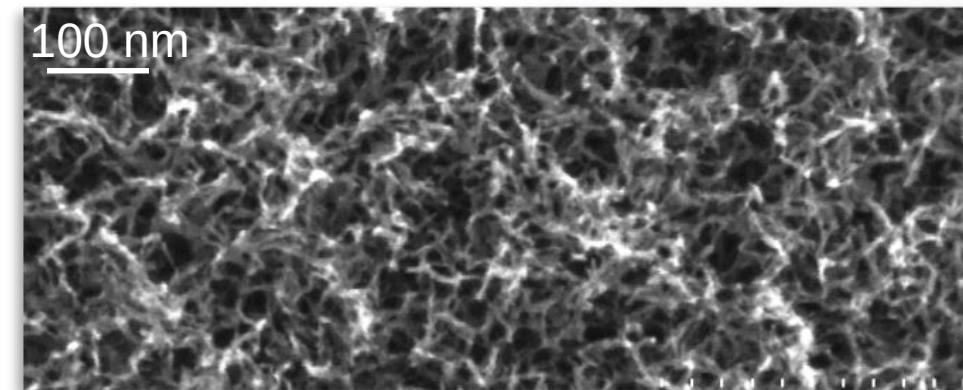
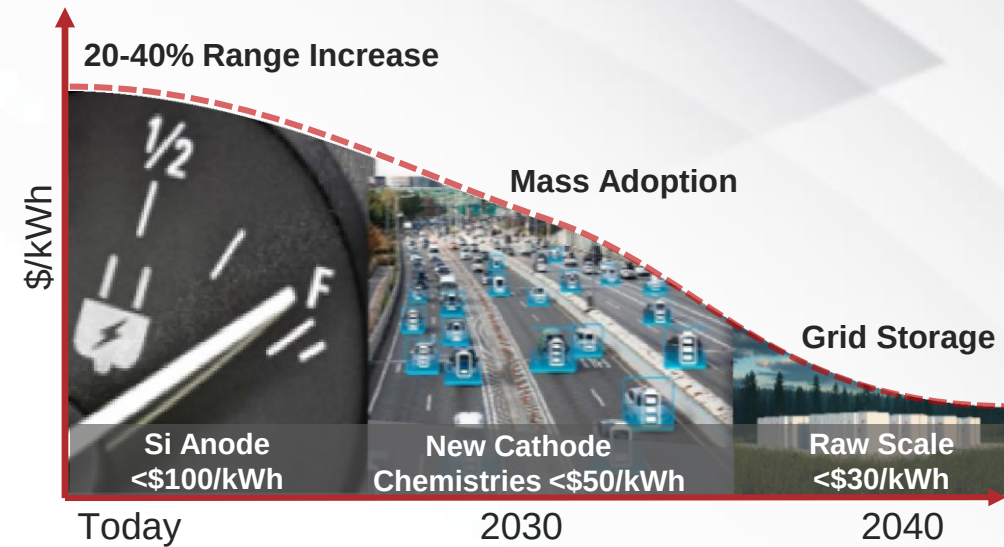
Advanced battery materials will enable mass adoption

- Macro environment set for accelerated EV adoption
- Lithium-ion batteries will power BEVs for foreseeable future
- Technology advancements required to lower cost, boost volumetric energy density (performance) and drive electrification



Aspen's Carbon Aerogel Technology Platform

- Low cost approach that can incorporate a variety of high performance anode and cathode materials
- Two decades of commercial aerogel experience and large scale manufacturing, nanomaterials R&D and associated IP work
- Anode, cathode and solid state opportunities on Aspen's technology roadmap



Carbon aerogel provides physical strength, conductivity, and porosity enabling a variety of battery material systems

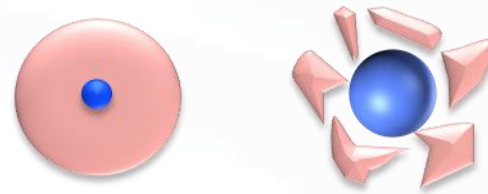
Replacing Graphite in Anodes with Silicon Has Tantalized the EV Industry For Years

Widely viewed as the best near term boost available for Li-ion technology

The Benefit of Silicon

- Stores 9x more Li than graphite
- Abundant and available at low cost
- 20% - 40% increase in drive range possible

The Problem with Silicon



Si expansion causes fracture and disconnection of the anode material

Aspen's Silicon Carbon Aerogel



Carbon Aerogel is designed to allow Si expansion while remaining connected

Lowest \$/kWh Determines the Rate of Si-rich Anode Adoption

	Aspen Si-CA	Tesla Si	Nanostructured Si	Chemical Vapor Deposition	Other (e.g. Si Nanowires)
Projected Added Cost (\$/kWh)	\$1-4	\$1.2 ¹	\$5-10	\$10-50	>\$100
Technology	Allows Si to expand, maintain connectivity, uses lower cost Si sources		Limits Si expansion, often requires expensive equipment, slow and potentially low-yield		
Initial Market focus	EV		Consumer Electronics		Niche (Military)

¹ Aspirational target and reported cost presented at Tesla Battery Day, September 2020

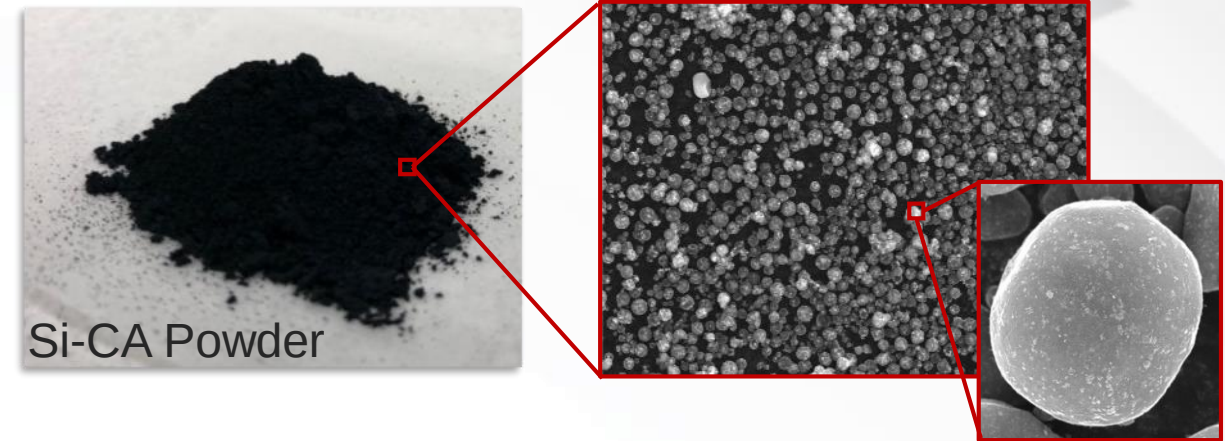
Aspen Battery Materials Poised to Drive Significant Value

Targeting initial commercial launch of our Si-rich carbon aerogel materials in 2023

Commercial Approach: Partnering with Industry Leaders

- Engage early with leading battery and automotive OEMs
- Collect exact material specifications for targeted development
- Accelerate adoption
- Both production and licensing business models

Ramping Prototyping for Battery and Automotive OEMs



Total Addressable Market (TAM)

	2023	2024	2025	2026	2027	2028	2029	2030
Global EV sales ¹ (thousands)	5,436	6,944	8,497	11,009	14,134	17,371	21,399	25,803
Si-rich anode market share	0.5%	1.5%	5.0%	10.0%	15.0%	25.0%	30.0%	35.0%
Global EV sales w/Si-anode ² (thousands)	27	104	425	1,101	2,120	4,343	6,420	9,031
\$/EV of Si-anode material ³	\$ 1,125	\$ 1,225	\$ 1,268	\$ 1,260	\$ 1,059	\$ 1,925	\$ 1,575	\$ 1,575
Market Opportunity⁴ (\$millions)	31	128	538	1,387	2,245	8,360	10,111	14,224



Sustainable Building Materials

Energy & Space Efficient | Fire Safe

Sustainable Building Materials

Large overall market representing an \$8 billion opportunity during this decade. Aspen is differentiated in targeted segments where fire safety, energy efficiency and space are critical¹

Megatrends and High Profile Catalysts



Sustainability

- Buildings are responsible for 30% to 40% of energy consumption in most countries
- Regulations drive need for increased energy savings in existing and new buildings



Building Safety

- Recent high profile fires are driving restrictions on combustible insulation
- Insurers are increasingly requiring noncombustible materials

Aspen's Technology Value Proposition

- Energy Efficiency – highest thermal performance, suited to space sensitive projects, thermal bridging treatments
- Fire Safety – mandatory use of non-combustible materials displacing high performance foam insulation
- Health and well-being – hydrophobic and mold-resistant
- A light environmental footprint – thin profile, reduced waste

Strong BASF partnership | Growth in 2020 despite COVID-19 challenges | \$50 million installed base



Energy Infrastructure

Superior Constructability & Asset Performance

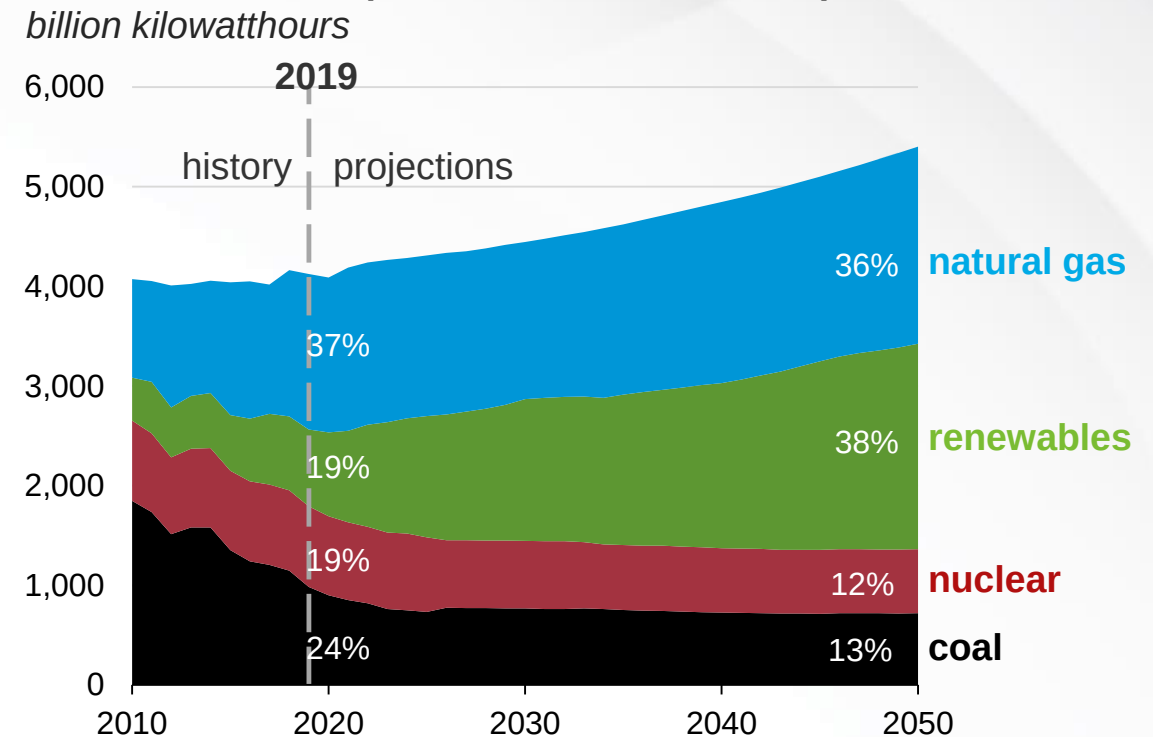
Transition Energy – LNG

Global LNG demand is estimated to grow by 50% this decade and electricity generation from natural gas is growing¹

Natural Gas Plays an Important Role in Electrification

- Cleaner burning fuel
- Coal to Natural Gas power generation
 - Reduces carbon emissions by 50%
 - Raises living standards in developing countries
- Transition fuel to electrification
 - Supports renewables
 - Addressing grid intermittency issues
 - Supports EV adoption
- Growing segment for Aspen
 - Revenue CAGR since 2015 of 50%
 - Revenue growth in COVID challenged 2020
 - Cryogel growth driven by superior thermal management, fire safety, schedule compression, and cost savings

Electricity generation from selected fuels (AEO2020 Reference case)



Source: US Energy Information Administration
Annual Energy Outlook 2020

Traditional Energy – Subsea, Refinery, Petrochemical

Hydrocarbon companies under pressure to meet greenhouse gas and broader ESG goals

Superior Performance is Driving Market Share Gains

- Pyrogel, Cryogel & Spaceloft Subsea contribute to improved project execution, asset efficiency and resilience, and worker safety
- \$3+ billion global energy infrastructure market; Aspen has \$1+ billion installed base; proven technology
- From 2008 – 2019 revenue CAGR of 20+%; 34% revenue growth in 2019
- Generates significant gross profit to fund key strategic initiatives



Aspen's Aerogel Technology Platform

Two decades of investment in R&D, intellectual property and commercial development

Innovation and New Business Creation are Core to Our Success

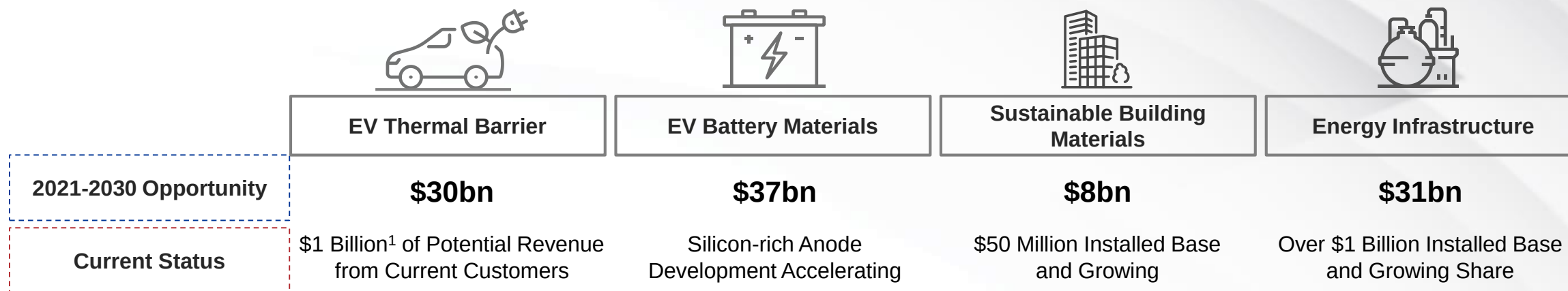
- Positioned to solve an increasing range of global sustainability challenges
- Strong business incubation process powered by a rich technology platform
- Proven commercialization methods with internal and partnership approaches
- Comprehensive, global IP protection with over 260 patents

Targeting large, existing end markets with new solutions to create billion dollar opportunities



Key Takeaways

Deploying a Rich Technology Platform into ESG driven markets – multi-billion dollar opportunities



2023 – Targets & Milestones

- \$225 million in Revenue and 30% Gross Margin fueling future growth
- Our target assumes existing manufacturing assets:
 - PyroThin™ Thermal Barrier revenue principally from existing customers
 - Energy Infrastructure revenue at 2019 (pre-COVID) levels
- First adoption of silicon rich Carbon Aerogel anode material in a lithium-ion EV battery
- Accelerating momentum in Sustainable Building Materials

The Opportunity Through 2025

Double Revenue
Every 24 Months

Multiple
EV Applications

Unique and Protected
Technology

Multi-Year
Platform Wins

Technology Leader
In Sustainability



A Technology Leader In Sustainability



Head Office and R&D

30 Forbes Road, Building B
Northborough, MA 01532
United States



Manufacturing

3 Dexter Road
E. Providence, RI 02914
United States



Phone

Toll-Free: +1 (888) 481-5058
Phone: +1 (508) 691-1185



Website

www.aerogel.com
info@aerogel.com