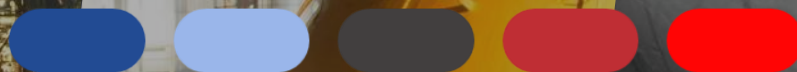




aspen | aerogels®

Investor | Presentation



October 2020

DISCLAIMER

This presentation contains statements that constitute “forward-looking statements” under the Private Securities Litigation Reform Act of 1995. All statements other than statements of historical facts contained in this presentation, including statements regarding our short-term and long-term growth strategies, efforts to develop and commercialize our products, electric vehicle/battery market opportunities, future operations, future financial position, future capacity, future revenue, future Adjusted EBITDA, projected costs, prospects, plans, EP20 initiative, 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. 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.

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 information in this presentation is current as of October 29, 2020 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.

In addition to results presented in accordance with U.S. Generally Accepted Accounting Principles (“GAAP”), this presentation and related tables include Adjusted EBITDA, a non-GAAP financial measure. We have provided a reconciliation of this measure to net income (loss), the most directly comparable GAAP measure, which is available in “reconciliations” starting on slide 25. We define Adjusted EBITDA as net income (loss) before interest expense, taxes, depreciation, amortization, stock-based compensation expense and other items. We believe Adjusted EBITDA is a useful measure of operating performance because it does not include the impact of items that we do not consider indicative of our core operating performance. We use Adjusted EBITDA for planning purposes including the preparation of our annual operating budget, to allocate resources, to enhance the financial performance of our business, and as a performance measure under our bonus plan. We also believe that the presentation of Adjusted EBITDA provides useful information to investors with respect to our results of operations and in assessing the performance and value of our business. Although we believe this non-GAAP financial measure enhances investors’ understanding of our business and performance, this non-GAAP financial measure should not be considered an alternative to or substitute for the accompanying GAAP financial measures. The discussion of non-GAAP financial measures set forth in our Annual Report on Form 10-K for the year ended December 31, 2019 and filed with the SEC on March 6, 2020, as amended by the discussion of non-GAAP financial measures set forth in our Quarterly Report on Form 10-Q for the quarterly period ended June 30, 2020 and filed with the SEC on August 5, 2020, pursuant to the Securities Exchange Act of 1934, as amended, are incorporated by reference into this presentation and should be read in their entirety alongside this presentation. In addition, the risk factors set forth in our Annual Report on Form 10-K for the year ended December 31, 2019 and filed with the SEC on March 6, 2020 as amended by the risk factors set forth in our Quarterly Report on Form 10-Q for the quarterly period ended June 30, 2020 and filed with the SEC on August 5, 2020, pursuant to the Securities Exchange Act of 1934, as amended, are incorporated by reference into this presentation and should be read in their entirety alongside this presentation.

This presentation contains market data and industry forecasts that were obtained from industry publications, third party market research and publicly available information. These publications generally state that the information contained therein has been obtained from sources believed to be reliable, but we have not independently verified, and cannot guarantee the accuracy and completeness of such information. This presentation also contains estimates and other statistical data made by independent parties and by us relating to market size and growth and other data about our industry. We obtained the industry and market data in this presentation from our own research as well as from industry and general publications, surveys and studies conducted by third parties, some of which may not be publicly available. For example, this presentation includes statistical data extracted from an off-the-shelf market research report (World Insulation - #3435) by The Freedonia Group, an independent international market research firm, and a separate custom market research report by Freedonia Custom Research, Inc., a wholly-owned subsidiary of The Freedonia Group, or Freedonia, which was commissioned by us and was issued in January 2017 (the “Freedonia Report”). 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.

The Freedonia Report represents data, research opinion or viewpoints developed independent of us but on our behalf and does not constitute a specific guide to action. In preparing the Freedonia Report, Freedonia used various sources, including publicly available third party financial statements; government statistical reports; press releases; industry magazines; and interviews with manufacturers of related products (including us), manufacturers of competitive products, distributors of related products and government and trade associations. The Freedonia Report speaks as of its final publication date (and not as of the date of this presentation).



EXPERIENCED LEADERSHIP TEAM



Donald R. Young
President & CEO

- President, CEO and member of Board of Aspen Aerogels since 2001
- Prior to 2001, worked in the U.S. and abroad in a range of senior operating roles for Cabot Corporation
- Graduate of Harvard College and earned an MBA from Harvard Business School



John F. Fairbanks
Vice President, CFO & Treasurer

- Has served as CFO since 2006
- More than 10 years of service as a SVP of New England Business Service in senior financial and operating roles
- Earned a BA in Economics from Middlebury College and an MBA from the Wharton School of the University of Pennsylvania

AN AEROGEL TECHNOLOGY COMPANY

DESIGN, DEVELOP AND MANUFACTURE INNOVATIVE, HIGH-PERFORMANCE AEROGEL PRODUCTS

- **First market: large-scale energy infrastructure facilities**
 - \$3.1 billion global energy infrastructure insulation market¹
 - Over \$1.0 billion installed base and poised for continued penetration
- **Second market: building materials**
 - High performance & non-combustible insulation – delivering energy efficiency & building safety
 - Partnered approach with BASF – technical, commercial & financial support
- **Third Market: electric vehicles (EVs)**
 - Passive fire protection – silica aerogel materials impede thermal runaway in lithium-ion batteries
 - Battery materials – carbon aerogels provide unique structure enabling greater energy density

Targeted Energy End Markets



REFINERIES



PETROCHEMICAL



LNG & GAS



OIL SANDS



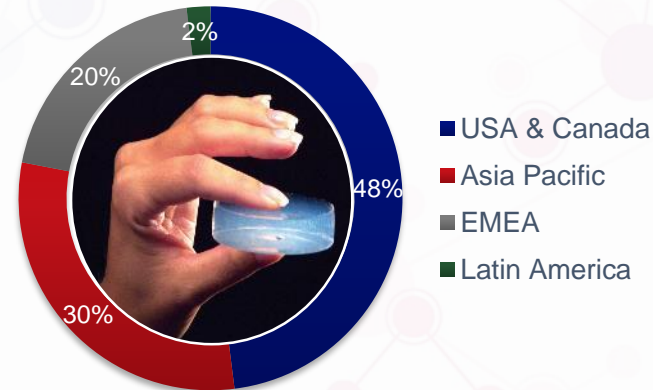
OFFSHORE



POWER

Geography

2019 Product Revenue by Region



UNIQUE INSULATION TECHNOLOGY

Aerogel Materials

- Amorphous silica solids
- Characterized by extreme properties
 - Lowest density solid, ~97% air
 - Lowest thermal conductivity

Our Breakthrough Technology

- Industrially robust
- Unique product form
- Proprietary manufacturing process
- Patent-protected: Over 200 patents issued or pending, owned or co-owned worldwide

Advantages vs. Traditional Insulation

- Leading thermal performance of any widely used insulation product
- Reduces corrosion under insulation
- Enables compact design
- Allows rapid, low-skill installation
- Highly durable & provides fire protection

Our Aerogel Products



STRONG VALUE PROPOSITION IN LNG

10 Years of LNG Growth

In the space of a decade, Cryogel Z has grown from small-scale use, targeting problem areas in LNG and FLNG facilities, to specification, and adoption in over 46 liquefaction and gasification facilities world-wide

2020 Reference Projects

LNG Export



LNG Import

- Cameron LNG, Hackberry LA, USA
- PTT Map Ta Phut, Rayong, Thailand

2019 PTT LNG Award

- Nong Fab Terminal, Rayong, Thailand
- Receiving terminal & regasification facility
- \$35M to \$40M of Cryogel Z insulation
- Deliveries scheduled from Q2 '19 to Q4 '20



Cryogel®

FASTER INSTALLATION /
SCHEDULE RECOVERY

REDUCED SITE /
MODULE FOOTPRINT

SIMPLIFIED DESIGN

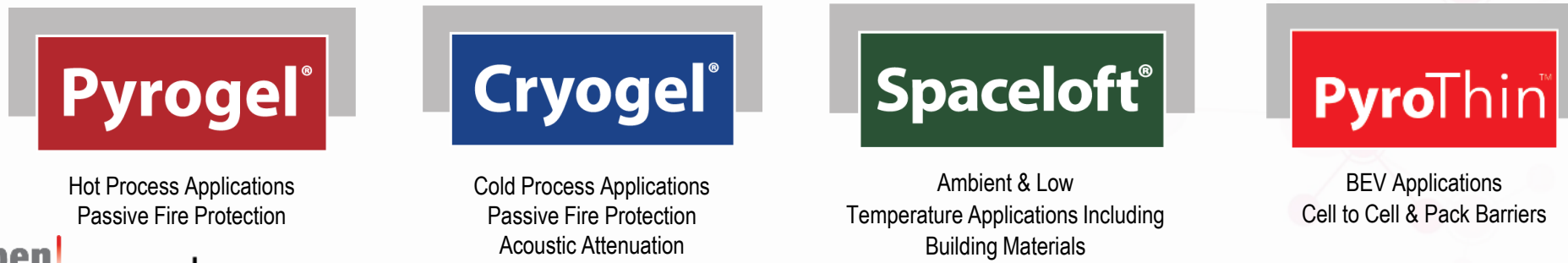
REDUCED EXPENSE

END MARKETS AND PRODUCTS

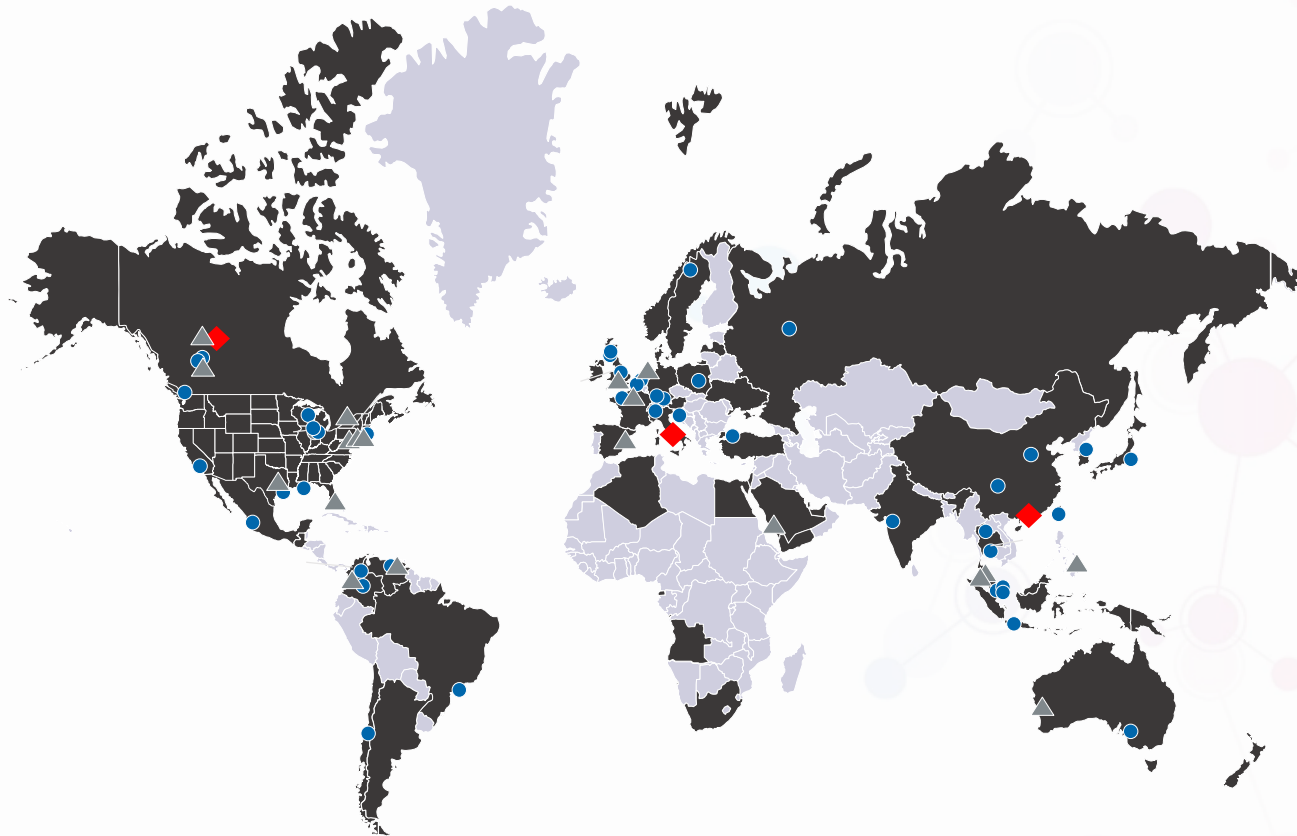


carbon aerogel
→

← silica aerogel blanket →



GLOBAL DISTRIBUTION NETWORK AND INSTALLED BASE



- Nearly 60 sales employees and consultants
- Over 65 distributors
- Installed in more than 50 countries

INDUSTRY-LEADING ENERGY END USERS

USED BY VIRTUALLY ALL LEADING PETROCHEMICAL AND REFINING COMPANIES



STRATEGY

AEROGEL TECHNOLOGY PLATFORM (ATP)

Invest in and drive innovation



CORE MARKETS

Penetrate and gain global market share, drive capacity utilization and generate cash



SUBSEA



REFINERIES



PETROCHEMICAL

ADJACENT MARKETS

Leverage products and demonstrated technical leadership with global energy companies



LNG & GAS



DISTRICT ENERGY



POWER

NEW MARKETS

Pursue new markets with partners providing commercial, technical and financial resources



BASF RELATIONSHIP



TECHNICAL

Next generation products enabled by Aspen's technology



COMMERCIAL

Elite partner with channels in new, large addressable market



FINANCIAL

Product revenue, prepayments and licensing opportunities

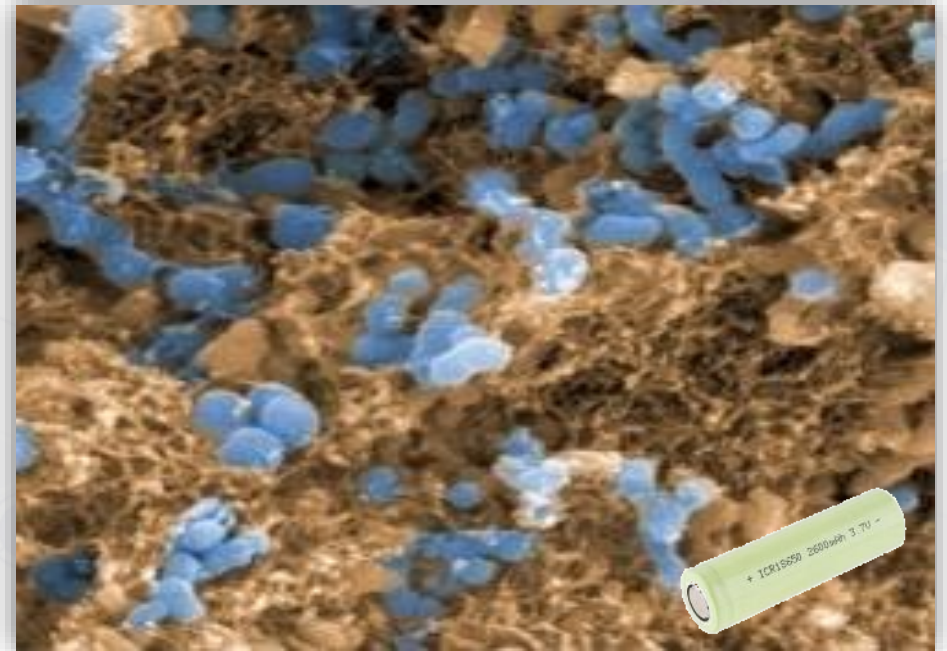
Partnered Approach – Proven Template for Access to New Markets

ELECTRIC VEHICLE MARKET OPPORTUNITIES



Thermal Runaway Barriers

Pouch Cell | Prismatic Cell | Pack Assemblies



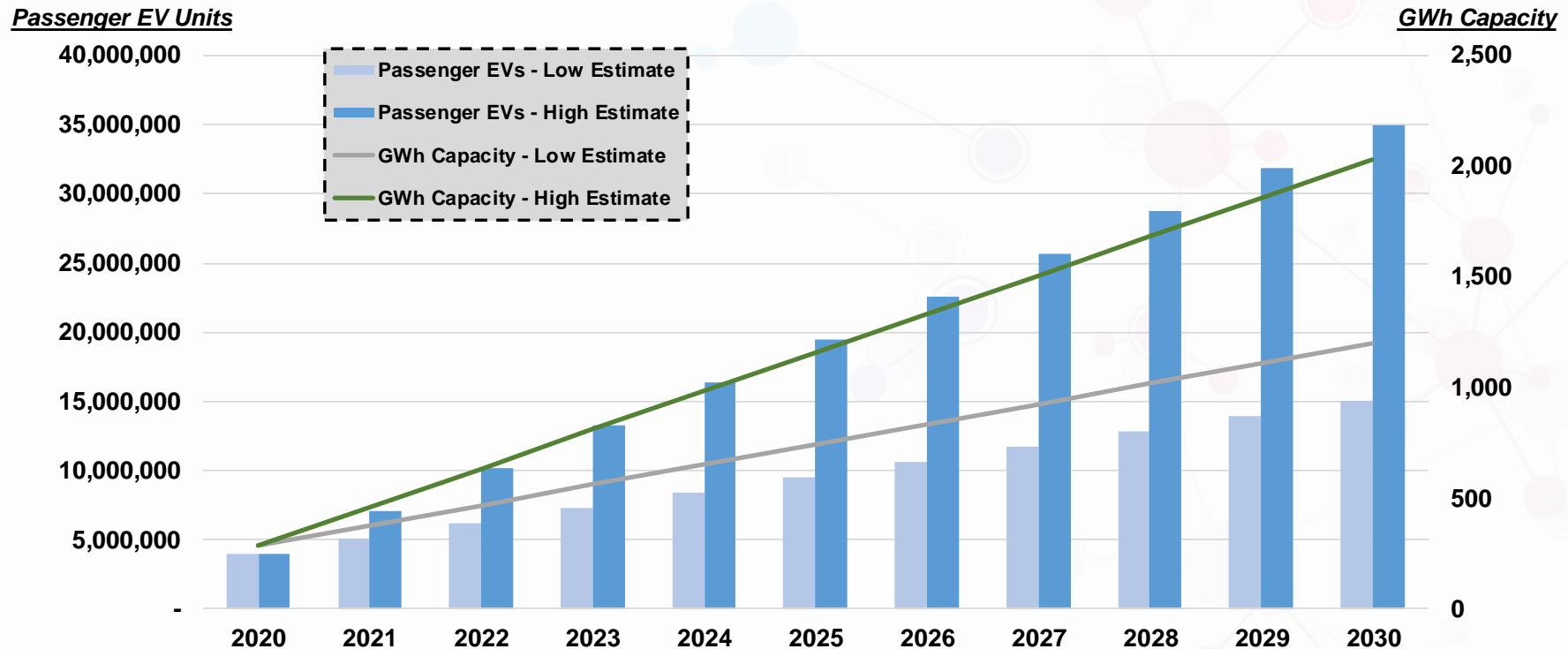
Carbon Aerogel Battery Materials

High Capacity Anodes for Lithium Ion Batteries

ELECTRIC VEHICLE AND LITHIUM-ION BATTERY FORECAST

- Global passenger electric vehicles estimates range from 15 to 35 million units annually by 2030¹
- Industry analysts estimate 1.2 to 2.1 TWh of annual lithium-ion battery production by 2030 for commercial and passenger vehicles as well as energy storage¹

Lithium-ion Battery Production Capacity and Passenger EV Forecast Estimates

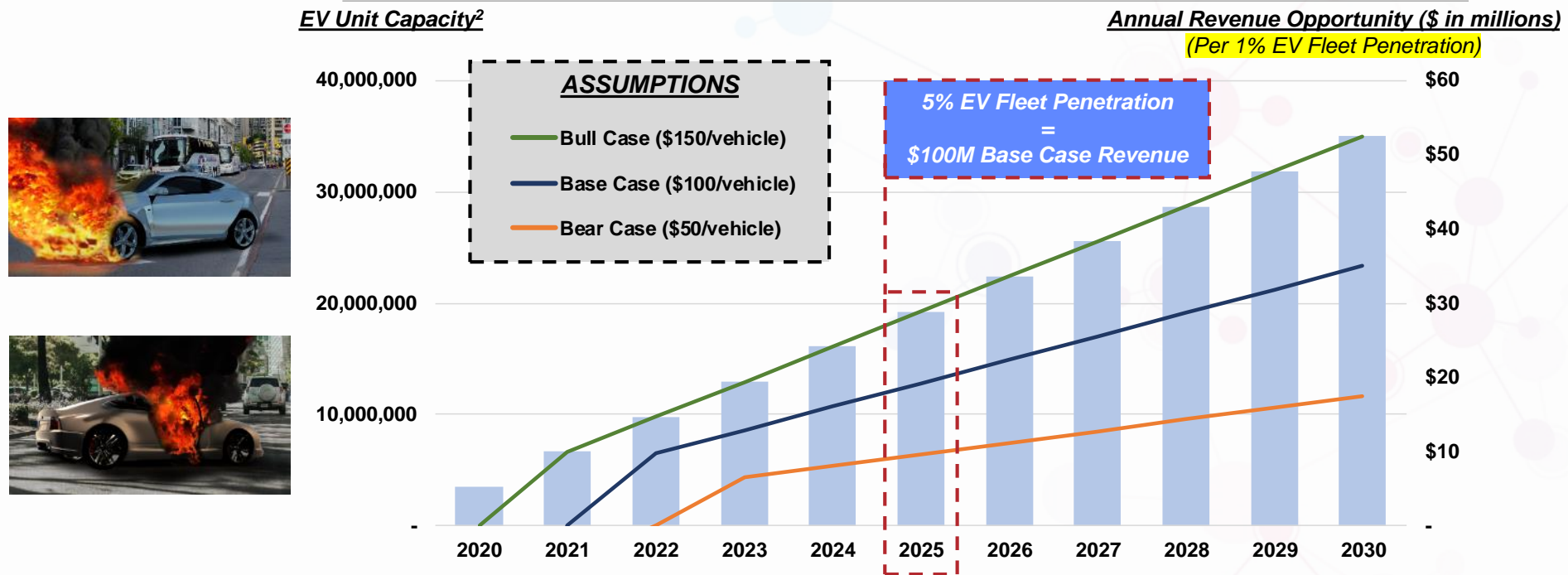


(1) Electric Vehicle Research 2040 Forecast (Wood Mackenzie), Li-ion Battery Innovation Roadmap (LUX Research, January 2020), The Emerging Battery Markets Beyond XEV (Fraunhofer ISI, January 2020), EV Battery Arms Race Enters New Gear with 115 Megafactories (Benchmark Mineral Intelligence, December 2019)

THERMAL RUNAWAY BARRIERS

- Thermal runaway in lithium-ion battery packs can lead to fires that exceed 1000°C¹ and is facing increasing regulatory scrutiny and EV manufacturer concerns
- Aspen’s silica aerogel blankets offer a thin-profile, compressible, non-combustible solution for EV passenger and first responder safety
- Aspen’s passive fire protection product can be manufactured with existing assets in our East Providence facility

Passive Fire Protection Market Opportunity



(1) Why Some Lithium-Ion Batteries Explode, livescience.com
 (2) EV Battery Arms Race Enters New Gear with 115 Megafactories (Benchmark Mineral Intelligence, December 2019)

CARBON AEROGEL BATTERY MATERIALS



OPPORTUNITY

- Energy storage \$100B opportunity
- Majority is Li-ion for EVs

TECHNOLOGY ROADMAPS

- Diminishing returns on cost/performance
- Demands new materials



VALUE PROPOSITION

- Carbon aerogels platform
- Drop-in Si anode solution
- Robust battery roadmap

CONSUMER IMPACT

- Increased drive range
- Fast charge
- Low cost



EMERGING PARTNERSHIPS

- Battery and auto OEMs
- Technical, commercial & financial support

STATUS

- Prototype evaluations
- Development agreements
- Multiple engagements

TARGETING EV BATTERY MARKET

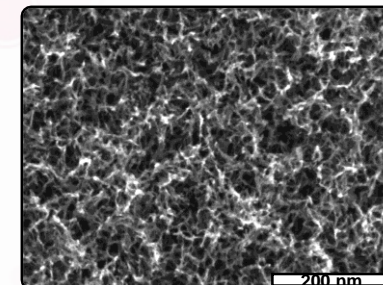
IMPROVE PERFORMANCE, COST, DURABILITY & SAFETY OF LI-ION BATTERIES

- Over a decade of carbon aerogel development
 - Strong technology platform and IP coverage
 - Proven aerogel manufacturing capabilities
- Actively engaging industry leaders in battery materials market
 - To accelerate adoption of our aerogel technology in emerging EV market
 - Formed partnerships with Evonik and SKC
- Initial focus on silicon-rich, high-capacity anodes in Li-ion batteries
 - Potential 20% to 40% improvement in EV drive range

Carbon aerogel powder



Unique nanostructure combines physical strength, conductivity and porosity



Joint Evaluation Agreement
January 2020

- Leverage SK Group battery materials market knowledge to target specific performance and applications
- Potential commercialization partner of our battery technology



Secrecy and Evaluation Agreement
November 2019

- Evaluate incorporation of Evonik's innovative silicon nanoparticles into Aspen's carbon aerogel anodes
- Potential supplier of Si nanoparticles to Aspen or our commercialization partners

Financial Overview

EP20 INITIATIVE AND FINANCIAL POTENTIAL

EP20 Initiative

- Expand East Providence manufacturing facility capacity by 20%
- Increase annual capacity from 50 million s.f. in 2018 to 60 million s.f. by the end of 2021
- Phased deployment of enhanced chemical and process technologies

Millions	2019 Actual	2020 Capacity	EP20 Potential	NBD
Product Revenue	\$137	\$168 - \$180	\$184 - \$198	Breakout Value
Adjusted EBITDA	Breakeven	\$22 - \$27	\$28 - \$35	

Energy & Building Markets

Penetrate Energy Market, Generate Cash

New Business Development

Invest For Breakout Value

* Values rounded to nearest million.

ANNUAL REVENUE & ADJUSTED EBITDA

STRONG REVENUE & PROFIT GROWTH IN 2019

	For the Year Ended December 31,				
(\$ in thousands)	2015	2016	2017	2018	2019
Total Revenue	\$ 122,518	\$ 117,738	\$ 111,631	\$ 104,361	\$ 139,375
Cost of Revenue	97,870	94,427	92,960	91,692	113,091
Gross Profit	24,648	23,311	18,671	12,669	26,284
Operating Expenses	30,883	34,531	37,807	46,585	40,443
Operating Loss	(6,235)	(11,220)	(19,136)	(33,916)	(14,159)
Other Expense, Net	(182)	(803)	(185)	(524)	(406)
Net Loss	(6,417)	(12,023)	(19,321)	(34,440)	(14,565)
Adjusted EBITDA Add-backs	15,482	15,969	16,029	22,969	14,390
Adjusted EBITDA	\$ 9,065	\$ 3,946	\$ (3,292)	\$ (11,471)	\$ (175)
Revenue Growth	20 %	(4)%	(5)%	(7)%	34 %
Gross Margin	20 %	20 %	17 %	12 %	19 %
Adjusted EBITDA Margin	7 %	3 %	(3)%	(11)%	(0)%

See slide 25 herein for a reconciliation of net loss, the most directly comparable GAAP measure, to Adjusted EBITDA for the periods presented.

2020 PERFORMANCE

REVENUE, GROSS PROFIT AND ADJUSTED EBITDA IMPACTED BY COVID-19

	Nine Months Ended		Change	
	9/30/20	9/30/19	\$	%
<i>(\$ in thousands)</i>				
Total Revenue	\$ 77,255	\$ 92,870	\$ (15,615)	(17)%
Cost of Revenue	<u>66,524</u>	<u>77,896</u>	<u>(11,372)</u>	<u>(15)%</u>
Gross Profit	10,731	14,974	(4,243)	(28)%
Operating Expenses	<u>26,169</u>	<u>28,303</u>	<u>(2,134)</u>	<u>(8)%</u>
Operating Loss	(15,438)	(13,329)	(2,109)	(16)%
Interest Expense, Net	<u>(182)</u>	<u>(280)</u>	<u>98</u>	<u>35 %</u>
Net Loss	(15,620)	(13,609)	(2,011)	(15)%
Adjusted EBITDA Add-backs	<u>10,842</u>	<u>10,816</u>	<u>26</u>	<u>0 %</u>
Adjusted EBITDA	<u>\$ (4,778)</u>	<u>\$ (2,793)</u>	<u>\$ (1,985)</u>	<u>(71)%</u>
Gross Margin	14 %	16 %		
Adjusted EBITDA Margin	(6)%	(3)%		

See slide 26 herein for a reconciliation of net loss, the most directly comparable GAAP measure, to Adjusted EBITDA for the periods presented.

2020 FINANCIAL OUTLOOK

COST CONTROLS PARTIALLY OFFSETTING COVID-19 RELATED REVENUE DECLINE

	2019	2020 Outlook	
	Actual	Low	High
<i>(in thousands, except EPS)</i>			
Total Revenue	\$ 139,375	\$ 102,000	\$ 106,000
Net Loss	\$ (14,565)	\$ (20,600)	\$ (18,600)
Adjusted EBITDA	\$ (175)	\$ (6,000)	\$ (4,000)
EPS	\$ (0.60)	\$ (0.78)	\$ (0.71)
Shares Outstanding	24,099	26,300	26,300
Depreciation & Amortization	\$ 10,213	\$ 10,400	\$ 10,400
Stock-Based Compensation	\$ 3,771	\$ 4,000	\$ 4,000
Interest Expense, Net	\$ 406	\$ 200	\$ 200
Gross Margin	19%	14%	

See slide 27 herein for a reconciliation of net loss, the most directly comparable GAAP measure, to Adjusted EBITDA for the periods presented.

Summary



ASPEN OPPORTUNITY

- Global Aerogel Technology Leader
 - Extensive portfolio of product and process patents – enforced successfully
 - More than \$1 billion of aerogel revenue since 2008
- Assets in Place to Support Strong Revenue, Profit and Cash Flow Growth in Core Energy Markets
 - Potential to generate nearly \$200 million in revenue and \$35 million in Adjusted EBITDA per year
- Leveraging Aerogel Technology Platform Into High Potential Electric Vehicle Market
- Partnerships with Leading Energy, Building Materials and EV Battery OEMs
- Experienced Management Team Focused on Creating Long-Term Value

Appendices

RECONCILIATION

(\$ in thousands)

	Year Ended December 31				
	2015	2016	2017	2018	2019
Net loss	\$ (6,417)	\$ (12,023)	\$ (19,321)	\$ (34,440)	\$ (14,565)
Depreciation and amortization	9,887	9,853	10,753	10,787	10,213
Stock-based compensation	5,413	5,313	5,091	4,302	3,771
Interest expense, net	182	147	185	524	406
Impairment of construction in process	–	–	–	7,356	–
Postponed financing costs	–	656	–	–	–
Adjusted EBITDA	<u>\$ 9,065</u>	<u>\$ 3,946</u>	<u>\$ (3,292)</u>	<u>\$ (11,471)</u>	<u>\$ (175)</u>

Note: The table above presents a reconciliation of net loss, the most directly comparable GAAP measure, to Adjusted EBITDA for the periods presented.

RECONCILIATION

	For the Nine Months Ended	
(\$ in thousands)	9/30/20	9/30/19
Net loss	\$ (15,620)	\$ (13,609)
Depreciation and amortization	7,670	7,651
Stock-based compensation	2,990	2,885
Interest expense net	182	280
Adjusted EBITDA	<u>\$ (4,778)</u>	<u>\$ (2,793)</u>

Note: The table above presents a reconciliation of net loss, the most directly comparable GAAP measure, to Adjusted EBITDA for the periods presented.

RECONCILIATION

(\$ in thousands)

	2019	2020 Outlook	
	Actual	Low	High
Net loss	\$ (14,565)	\$ (20,600)	\$ (18,600)
Depreciation & amortization	10,213	10,400	10,400
Stock-based compensation	3,771	4,000	4,000
Interest expense, net	406	200	200
Adjusted EBITDA	\$ (175)	\$ (6,000)	\$ (4,000)

Note: The table above presents a reconciliation of net loss, the most directly comparable GAAP measure, to Adjusted EBITDA for the periods presented.