July 28, 2022

ASPEN AEROGELS

Q2 2022 FINANCIAL RESULTS CALL

aspen aerogels®

Disclaimer on Forward Looking Statements

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, 2024, and 2025 revenue targets; future revenue opportunities through this decade; 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; 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 the major US automotive OEM ;Investment estimates for Plant II or in R&D; capital expenditure programs, annual revenue capacity with Phase I and Phase II of Plant 2, gross profit and EBITDA estimates with full manufacturing capacity; our expectations about revenue predictability; estimates of Awarded Programs in 2023 and 2025; estimates of product mixes in 2023 and 2025; our expectations about customers and automotive industry's approach towards addressing thermal runaway; 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, 2021, as well as its subsequent annual, 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 at Plant II including due to the coronavirus pandemic, COVID-19 or any other factor, any inability to expand manufacturing capacity Plant II; 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.

Disclaimer on Forward Looking Statements

The presentation contains information regarding certain financial targets with respect to the Company. Such financial targets 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. "Awarded Programs" as used in this presentation is our estimates of the revenues that we believe are potentially derivable from customers based on our knowledge of our customer's selection of our products for use in a specific platform or vehicle lineup. Certain of our customers provide us with various projections of their forecasts for vehicles to be sold in various time frames. Our estimates of Awarded Programs are based on this information provided by customers and certain other assumptions, including expectations regarding future sales volumes and the continuation of our relationship with customers. Our customers generally do not guarantee or commit to sales volumes and many of our arrangements with our customers may be terminated by them at any time without penalty.

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This presentation includes certain non-generally accepted accounting principles (GAAP) financial measures that we use to describe our company's performance or estimated or targeted future performance. The non-GAAP information presented provides investors with additional useful information but should not be considered in isolation or as substitutes for the related GAAP measures. Moreover, other companies may define non-GAAP measures differently, which limits the usefulness of these measures for comparisons with such other companies. We encourage investors to review our financial statements and publicly filed reports in their entirety and not to rely on any single financial measure.

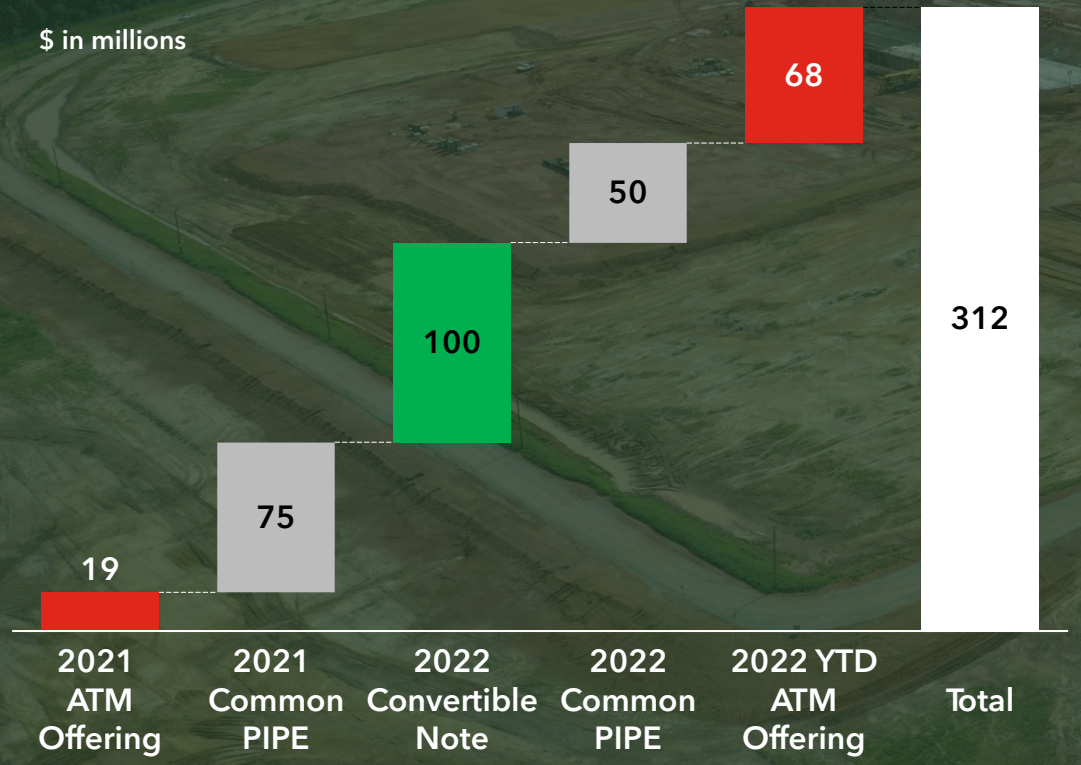
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Recent Financing Activities and Q2 Developments

Advancing a plan designed to turn Aspen Aerogels into a potential $1.6B revenue and $400M adjusted EBITDA business

Recent Financing Activities

- $312M raised since January of 2021



Q2 and Recent Highlights

- 44% YoY Revenue Growth
- 19% QoQ Revenue Growth
- Strong Energy Industrial growth driven by maintenance demand, high energy prices and geopolitical environment
- Continued EV thermal barrier volumes growth
- Mexico EV thermal barrier assembly facility in Apodaca, Nuevo Leon has started delivering end-customer parts
- Aerogel Plant 2 on track with $62.5M spent through Q2

Sales Growth Drivers

	Quarter Over Quarter	Year Over Year
THERMAL BARRIERS	42%	34X growth
ENERGY INDUSTRIAL	13%	10%

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Q2 2022 Financial Highlights

44% YoY revenue growth driven by strong demand across all markets and higher than expected thermal barrier volumes

$ in millions except per share figures	Q2 2021	Q2 2022[1]	H1 2021	H1 2022[1]	2022 Outlook[1]	Commentary
REVENUES YoY Growth	$31.7 29%	$45.6 44%	$59.8 13%	$84.0 40%	$180.0 - $200.0 48% 64%	Continued PyroThin ® volume growth and energy infrastructure product demand globally.
Net (Loss)	$(6.7)	$(24.0)	$(12.9)	$(43.5)	$(79.8) - $(86.8)	Significant investment in talent, systems, facilities and tooling to enable continuous EV market growth and productivity investments aimed at driving long-term profitability.
Adj. EBITDA[2]	$(3.4)	$(18.3)	$(6.0)	$(33.0)	$(55.0) - $(62.0)	
EPS	$(0.23)	$(0.68)	$(0.46)	$(1.27)	$(2.16) - $(2.36)	Investments aligned to deliver customer demand and enable supply chain resiliency.
Cap Ex	$2.4	$37.9	$3.9	$52.3	$250.0 - $300.0	R&D facility upgrades, Plant II construction, PyroThin ® fabrication tooling in Mexico, IT systems.

1- Unaudited financials for 2022 (and Outlook)
2- See slide 10 herein for a reconciliation of net loss, the most directly comparable GAAP measure, to Adjusted EBITDA for the presented period

Operating Plan to Drive Down the Cost of Sales

Managing capacity transitions and expansion across both segments enables the path to our target gross margins

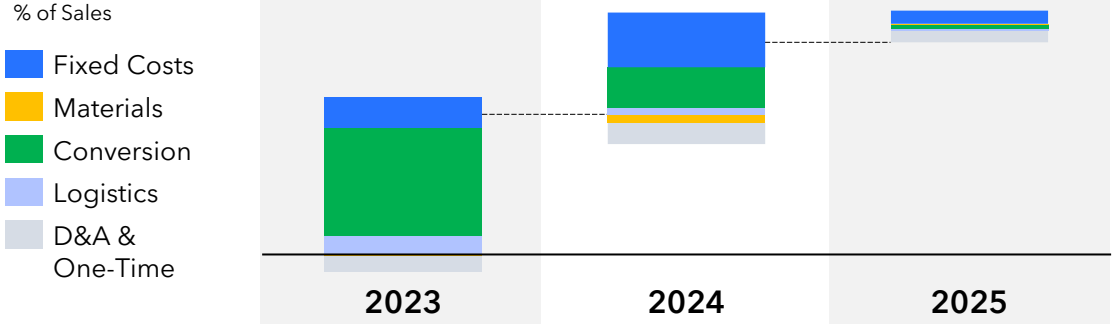
EV Thermal Barriers

Operating Plan Initiatives

2023	2024	2025
• Move to Mexico with new high-volume process • Reduction in part complexity	• Automation transition to enable higher long-term volume • Plant II ramping up	• Enabling non-GM/Toyota OEM volumes at scale • Customer requirement convergence

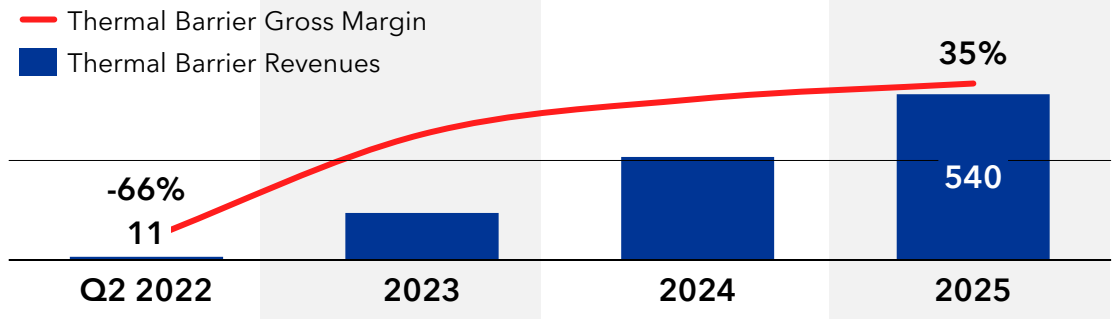
Annual Gross Margin Driver Targets

% of Sales



Illustrative Revenue Trajectory and Target Gross Margin

$ in millions and % of Sales



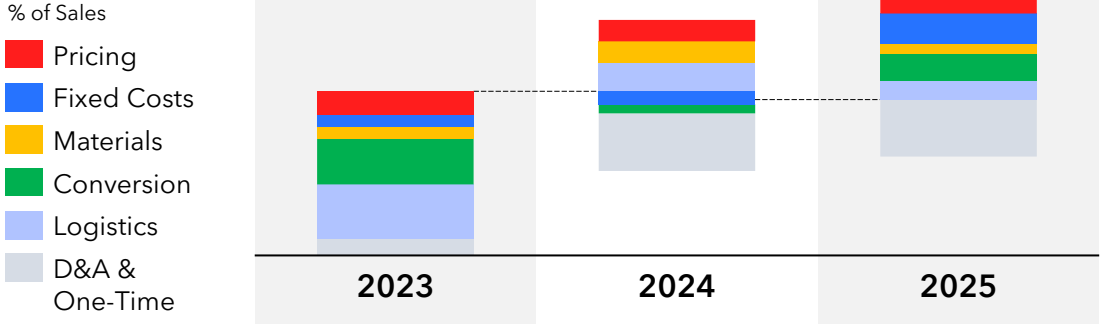
Energy Industrial

Operating Plan Initiatives

2023	2024	2025
• Product portfolio management • Focusing on higher yields on most accretive products	• Plant II online • Optimize process development and productivity investments across both Plants	• Chemical formulation enhancements drive productivity

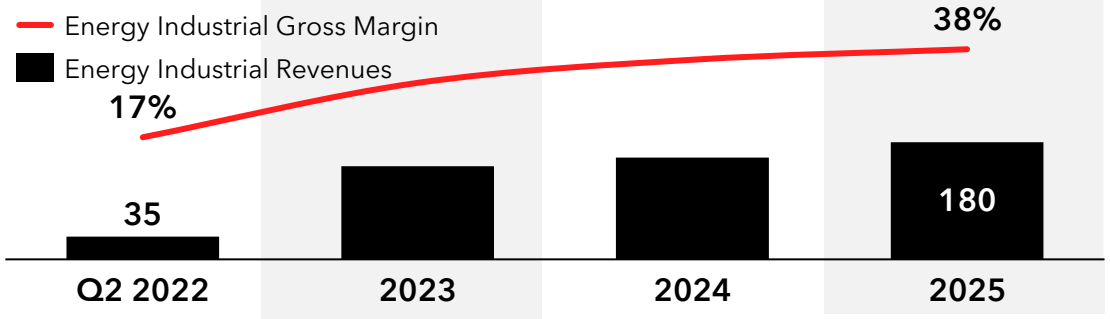
Annual Gross Margin Driver Targets

% of Sales



Illustrative Revenue Trajectory and Target Gross Margin

$ in millions and % of Sales



OEMs' Increasing Cell-to-Cell Barrier Adoption

7 of the top 8 EV OEMs use compatible cell form factors and can add cell-to-cell barriers to enhance safety

	Market Position [1]		Battery Strategy [2]		Passive Thermal Runaway Solutions [3]				
					More Protection →				
OEM Group	2021 Global EV Share	2025 Global EV Share	Cell Chemistry	Cell Form Factor	Cooling System	Pack Barriers	Module Barriers	Cell to Cell Barriers	Approach Summary
TESLA	20%	20%	LFP / NCA	Cylindrical	✓	✓		Bonding Foams	Invested in current design that uses small cylindrical cells structurally
GM	10%	9%	NMC	Pouch	✓	✓	✓	PyroThin™	Leading and optimizing system with a scalable platform approach
STELLANTIS	4%	9%	NMC	Prismatic	✓	✓	✓	PyroThin® Compatible	Battery JV assessing designs to increase protection
VW	10%	8%	NMC	Prismatic	✓	✓			Increasing focus on cell-to-cell protection for next gen platforms
BYD	7%	6%	LFP	Prismatic	✓	✓	✓		Increased focus on large and long prismatic cells for temp dissipation
RENAULT NISSAN MITSUBISHI	5%	6%	NMC	Pouch	✓	✓	✓		Continuously assessing new safety measures for thermal runaway
Ford	1%	5%	NMC	Pouch	✓	✓	✓		Continuously assessing new safety measures for thermal runaway
TOYOTA	0.4%	2%	NMC	Prismatic	✓	✓	✓	PyroThin™	Incorporating cell to cell barriers in new EV nameplates in the future
All Others	42%	35%	Various	Various	Various	Various		Generally Compatible [4]	Increasingly aware of thermal runaway and thermal propagation

1- Source: Piper Sandler – Forecasting Global Vehicle Demand (and EV Sales) Through 2040, 2nd Edition
2 and 3 – Munro & Associates Battery Teardowns, A2MAC and Commercial Discussions
4- Tesla, Rivian and Lucid use cylindrical cells

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Relevant Regulatory Landscape Developments

Warning of thermal propagation and runaway is a key part of emerging global EV safety and testing standards

EMERGING REGULATIONS AND TESTING STANDARDS AIMED AT EV SAFETY…

UNECE

UN GTR No. 20 – EV Safety (Adopted 2018)[1]

"The vehicle shall provide an advance warning indication to allow egress of 5 minutes prior to the presence of a hazardous situation inside the passenger compartment caused by ***thermal propagation*** *which is triggered by an internal short circuit leading to a* ***single cell thermal runaway such as fire, explosion or smoke****."*

ARE DRIVING COUNTRY LEVEL STANDARDS FOR THERMAL PROPAGATION

Country Level Implementation of GTR No. 20

Region	Key Action Dates	Recent or Expected Outcomes[3]
	2022 (notice & comment)	NHTSA to propose GTR 20 as amendment to Motor Vehicle Safety Standards ("MVSS") for public comment in Sept. 2022
	2021 (in force)	Harmonized with GTR20 and "adopted them in Safety Regulations for Road Vehicles"
	2022 (mandatory for all)	Indian Automotive Industry Standard revised "to be in line with GTR20"
	2021 (mandatory for new)	Adopted GB38031 to "establish relevant National Regulation harmonized with GTR20."
	2021 (mandatory for new)	Rechargeable Electrical Energy Storage Systems in Korea MVSS harmonized w/ GTR20
	2025 (harmonization)	Russia to follow the Eurasian Economic Union; expected to follow GTR20
	TBD	Follows US in adopting GTR20 ("[Canadian] MVSS references … [US] MVSS.)
	TBD	EU transposition proceeds with translation of the amendments in EU all languages

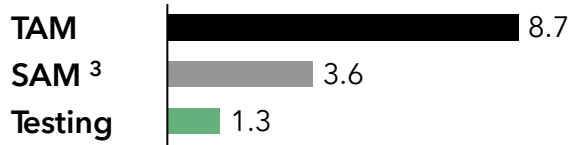
1. Source: Global Technical Regulation on the Electric Vehicle Safety (EVS), Addendum 20: Global Technical Regulation No. 20, May 3, 2018
2. Source: National Standards of the People's Republic of China – Electric Vehicles Traction Battery Safety Requirements, GB 38031-2020, May 12, 2020
3. Source: Transposition of GTR20 (Phase 1) to National Regulation - Progress Report - 23rd EVS-GTR IWG, Mar. 2022 Recent or expected outcomes from source documents; UNECE or member state projections, not Aspen's

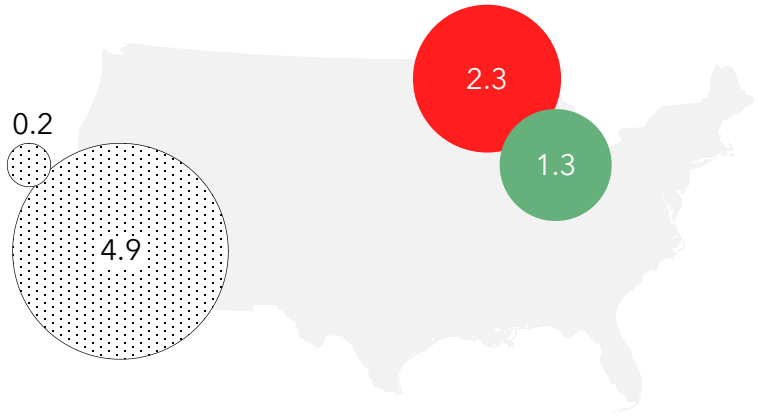
EV Thermal Barrier Commercial Progress

Aspen has been awarded business, is quoting, or in discussions with several OEMs that it believes will drive EV production

2025 Forecasted EV Production Volume (M units) and Sourcing Status by OEM Group HQ Location [1]

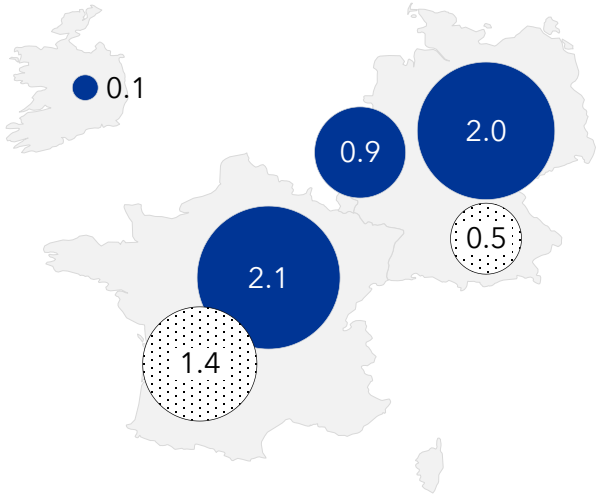
North America



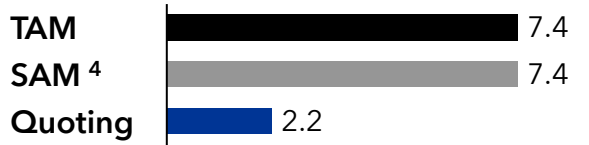


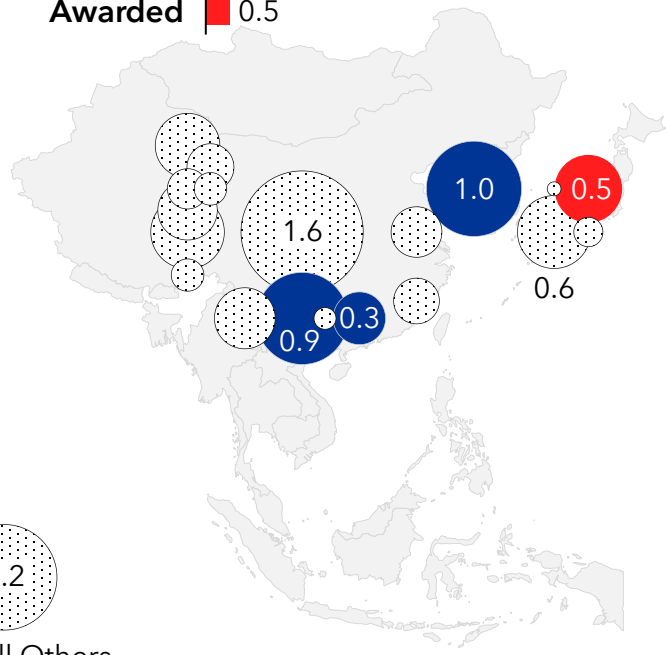
Western Europe





Asia

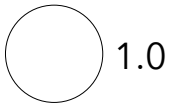


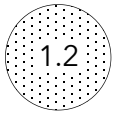


Commercial Status [2]

- Not Active
- Awarded
- Quoting
- Testing

2025 OEM EV Production Volume (M units)





All Others

1. Source: Piper Sandler – Forecasting Global Vehicle Demand (and EV Sales) Through 2040, TAM and SAM are for 2025, 2nd Edition
2. Aspen Aerogels' commercial discussion status assessment. There can be no assurance Aspen will be successful in generating new business from these discussions. In addition, there can be no assurance awarded business will result in sales
3. SAM adjusted to reflect volume reduction of OEMs using cylindrical cells
4. Management estimates through 2025 expect there will be no OEMs using cylindrical cells

Our Strategy to Create Stakeholder Value

Leveraging our platform in markets with favorable dynamics while focusing on doing the right things well creates value

WHO WE ARE

PROPRIETARY AEROGEL TECHNOLOGY PLATFORM™, PROCESSES, SCALE AND CRITICAL TALENT BASE

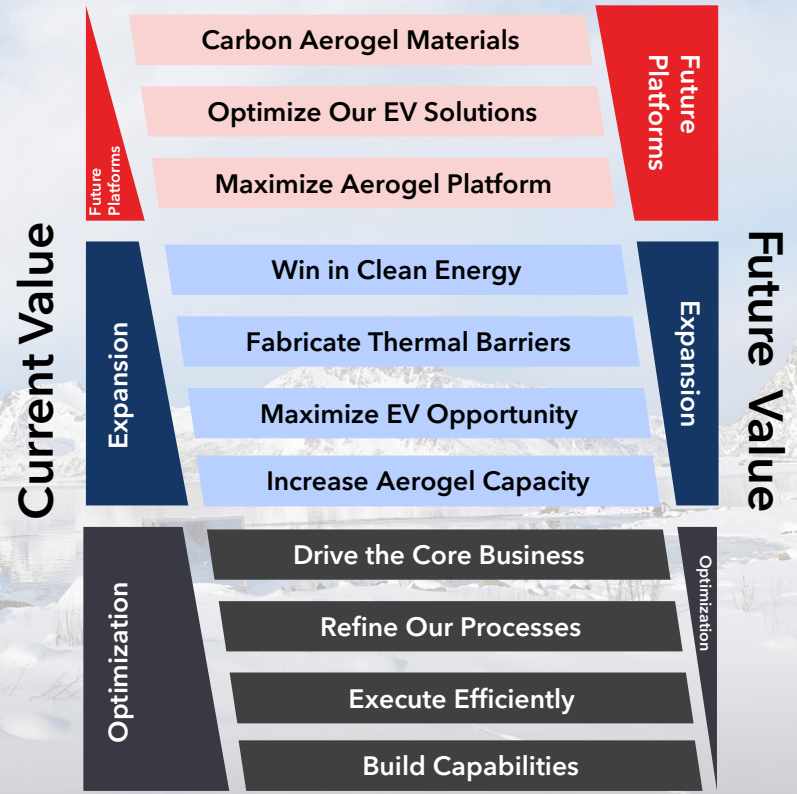
WHERE WE PLAY

AT THE CRUX OF 4 ACCELERATING TRENDS REQUIRING SOLUTIONS

- EV SAFETY, RELIABILITY, SERVICEABILITY
- ENERGY DENSITY, COST, RELIABILITY
- ASSET EFFICIENCY, RESILIENCY, SAFETY
- THERMAL EFFICIENCY AND FIRE SAFETY

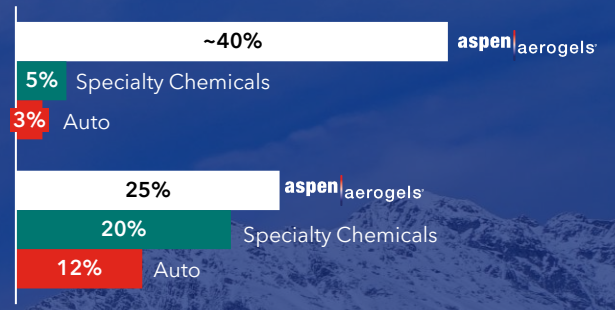
WHAT WE DO

OPTIMIZE AND EXPAND OUR PLATFORM WHILE INVESTING TOWARDS THE FUTURE

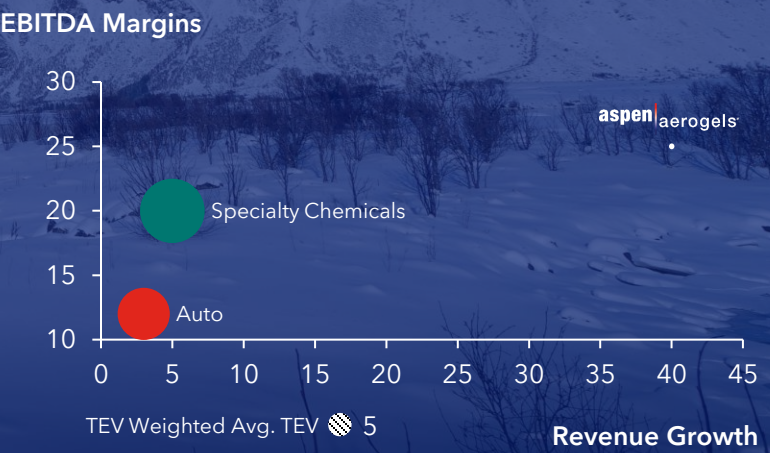


CREATES VALUE

Peers' [1] Revenue Growth / EBITDA Margins [2] side by side with Aspen's targeted performance at Full Capacity [3]



Peers' [1] TEV, Revenue Growth / EBITDA Margins [2] relative to Aspen's targeted performance at Full Capacity [3]



Data from S&P Capital IQ, accessed post market close on 7/25/2022
1- Auto Peers are the S&P Global 1200 Auto Parts & Equipment Index and Specialty Chemicals Peers are the S&P Global 1200 Specialty Chemicals Index. Peer TEV is TEV weighted
2- 7-year look-back of average performance
3- Excludes potential revenue and EBITDA contributions of Aspen Battery Materials

Appendix

GAAP-Non-GAAP Reconciliation

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GAAP to Non-GAAP Reconciliation

($ in thousands)	Q2		Q2 YTD		FY 2022	
	2022	2021	2022	2021	Low	High
Net loss	(24,050)	(6,669)	(43,534)	(12,919)	(86,800)	(79,800)
Depreciation and Amortization	2,032	2,104	4,161	4,742	9,700	9,700
Stock-based Compensation	2,295	1,070	4,123	2,046	8,300	8,300
Interest Expense, net	1,404	55	2,264	130	6,800	6,800
Adjusted EBITDA	**(18,319)**	**(3,440)**	**(32,986)**	**(6,001)**	**(62,000)**	**(55,000)**


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