

UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION  
Washington, D.C. 20549

PRE-EFFECTIVE AMENDMENT NO. 1  
TO  
FORM S-1 ON FORM S-3  
REGISTRATION STATEMENT  
UNDER  
THE SECURITIES ACT OF 1933

ADVANCED EMISSIONS SOLUTIONS, INC.  
(Exact name of registrant as specified in its charter)

Delaware 2890 27-5472457  
(State or other jurisdiction of incorporation or organization) (Primary Standard Industrial Classification Code Number) (I.R.S. Employer Identification Number)

8051 E. Maplewood Ave., Suite 210  
Greenwood Village, CO 80111  
(720) 598-3500

(Address, including zip code, and telephone number, including area code, of registrant's principal executive offices)

Robert Rasmus  
Chief Executive Officer  
8051 E. Maplewood Ave., Suite 210  
Greenwood Village, CO 80111  
(720) 598-3500

(Name, address, including zip code, and telephone number, including area code, of agent for service)

*Copies to:*

Jonathan Whalen  
Gibson, Dunn & Crutcher LLP  
2001 Ross Ave., Suite 2100  
Dallas, TX 75201  
(214) 698-3196

**Approximate date of commencement of proposed sale of the securities to the public:**  
As soon as practicable after the effectiveness of this registration statement.

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, check the following box.

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a post-effective amendment filed pursuant to Rule 462(d) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer

Accelerated filer

Non-accelerated filer

Smaller reporting company

Emerging growth company

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with new or revised financial accounting standards provided pursuant to Section 7(a)(2)(B) of the Securities Act.

**The Registrant hereby amends this Registration Statement on such date or dates as may be necessary to delay its effective date until the Registrant shall file a further amendment which specifically states that this Registration Statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act of 1933 or until the Registration Statement shall become effective on such date as the Commission, acting pursuant to said Section 8(a), may determine.**

---

---

**EXPLANATORY NOTE**

This Pre-Effective Amendment No. 1 to Form S-1 on Form S-3 is being filed by Advanced Emissions Solutions, Inc. (the "Company") to convert the Registration Statement on Form S-1 (File No. 333-276375) filed by the Company with the Securities and Exchange Commission on January 4, 2024, into a registration statement on Form S-3.

---

The information in this prospectus is not complete and may be changed. The securities may not be sold until the registration statement filed with the Securities and Exchange Commission is effective. This prospectus is not an offer to sell these securities and it is not soliciting an offer to buy these securities in any state where the offer or sale is not permitted.

**Subject to completion,  
Preliminary Prospectus dated January 25, 2024**

**PROSPECTUS**

11,058,387 Shares



**Advanced Emissions Solutions, Inc.**  
Advancing **Cleaner** Energy

Advanced Emissions Solutions, Inc.

Common Stock

The selling stockholders identified in this prospectus may offer and sell, from time to time, in one or more offerings, up to 11,058,387 shares of our common stock, which number consists of (i) 10,732,930 shares of our common stock currently held by the selling stockholders identified in this prospectus and (ii) 325,457 shares of our common stock issuable upon exercise of a warrant to purchase our common stock (the "Warrant") held by a selling stockholder identified in this process. We are not selling any common stock under this prospectus and will not receive any proceeds from the sale of the shares by the selling stockholders. You should carefully read this prospectus and any accompanying prospectus supplement before you decide to invest in the shares that may be offered under this prospectus.

The distribution of the common stock by the selling stockholders may be effected from time to time by a variety of methods, including:

- in underwritten public offerings;
- in ordinary brokerage transactions on securities exchanges, including the Nasdaq Global Market;
- to or through brokers or dealers who may act as principal or agent; or
- in one or more negotiated transactions at prevailing market prices or negotiated prices.

The brokers or dealers through or to whom the shares of common stock may be sold may be deemed underwriters of the shares within the meaning of the Securities Act of 1933, as amended, in which event all brokerage commissions or discounts and other compensation received by those brokers or dealers may be deemed to be underwriting compensation. To the extent required, the names of any underwriters and applicable commissions or discounts and any other required information with respect to any particular sale will be set forth in an accompanying prospectus supplement. See "*Plan of Distribution*" for a further description of how the selling stockholders may dispose of the shares covered by this prospectus.

Our common stock is listed on the Nasdaq Global Market ("Nasdaq") under the symbol "ADES." We expect to change our name to Arq, Inc. and our Nasdaq symbol to "ARQ" on February 1, 2024. On January 22, 2024, the last reported sales price of a share of our common stock on Nasdaq was \$3.07.

---

*Investing in our common stock involves risks. See the section titled "[Risk Factors](#)," beginning on page 3 for a discussion of information that should be considered in connection with an investment in our common stock.*

---

**Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if this prospectus is truthful or complete. Any representation to the contrary is a criminal offense.**

The date of this prospectus is \_\_\_\_\_, 2024.

---

## TABLE OF CONTENTS

	<u>Page</u>
ABOUT THIS PROSPECTUS	<u>ii</u>
WHERE YOU CAN FIND MORE INFORMATION	<u>iii</u>
INCORPORATION BY REFERENCE	<u>iv</u>
ABOUT THE COMPANY	<u>1</u>
RISK FACTORS	<u>2</u>
SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS	<u>3</u>
USE OF PROCEEDS	<u>5</u>
UNAUDITED PRO FORMA CONDENSED COMBINED FINANCIAL STATEMENTS	<u>6</u>
SELLING STOCKHOLDERS	<u>17</u>
DESCRIPTION OF CAPITAL STOCK	<u>19</u>
PLAN OF DISTRIBUTION	<u>23</u>
LEGAL MATTERS	<u>26</u>
EXPERTS	<u>27</u>

---

## ABOUT THIS PROSPECTUS

This prospectus is part of the registration statement that we filed with the U.S. Securities and Exchange Commission (the "SEC"), using a "shelf" registration process. Under this shelf registration process, the selling stockholders may, from time to time, offer and sell certain shares of our common stock in one or more offerings. When a selling stockholder sells shares of common stock under this shelf registration process, we may provide a prospectus supplement that will contain more specific information about the terms of such offering. The prospectus supplement may also add to, update or change any of the information contained in this prospectus. You should carefully read this prospectus, any accompanying prospectus supplement, any free writing prospectuses we have prepared or authorized as well as the information incorporated in this prospectus or any accompanying prospectus supplement by reference. See "Incorporation by Reference." Any information in any accompanying prospectus supplement, any free writing prospectus or any subsequent material incorporated herein or therein by reference will supersede the information in this prospectus or any earlier prospectus supplement.

This prospectus contains summaries of certain provisions in some of the documents described herein, but reference is hereby made to the actual documents for complete information. All of the summaries are qualified in their entirety by reference to the complete text of the actual documents. Copies of some of the documents referred to herein have been filed or will be filed or incorporated by reference as exhibits to the registration statement of which this prospectus is a part, and you may obtain copies of those documents as described below in the section entitled "Where You Can Find More Information."

**Neither we nor any of the selling stockholders have authorized anyone to provide any information or to make any representations other than those contained in this prospectus, in any accompanying prospectus supplement or in any free writing prospectuses we have prepared or authorized. You should rely only on the information provided in this prospectus or any prospectus supplement, including information incorporated by reference herein or therein, or any free writing prospectus that we have specifically referred you to. Neither we nor any of the selling stockholders take responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. This prospectus is an offer to sell only the shares offered hereby and only under circumstances and in jurisdictions where it is lawful to do so. The information contained in this prospectus, any prospectus supplement or any documents we incorporate herein or therein, or in any free writing prospectus, is current only as of the respective dates thereof. Our business, financial condition, results of operations and prospects may have changed since those respective dates.**

No action is being taken in any jurisdiction outside the United States to permit a public offering of common stock or possession or distribution of this prospectus in that jurisdiction. Persons who come into possession of this prospectus in jurisdictions outside the United States are required to inform themselves about and to observe any restriction as to this offering and the distribution of this prospectus applicable to those jurisdictions.

Unless otherwise indicated or the context otherwise requires, all references in this prospectus to "we," "our," "us," "ADES" and the "Company" refer to Advanced Emissions Solutions, Inc. together with its consolidated subsidiaries.

## WHERE YOU CAN FIND MORE INFORMATION

We file annual, quarterly and current reports, proxy statements and other information with the SEC. The SEC maintains an internet website at [www.sec.gov](http://www.sec.gov) that contains periodic and current reports, proxy and information statements, and other information regarding registrants, including us, that file electronically with the SEC.

We also make available, free of charge, on or through our Internet website, [www.advancedemissionssolutions.com](http://www.advancedemissionssolutions.com), our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, Proxy Statements on Schedule 14A and, if applicable, amendments to those reports filed or furnished pursuant to Section 13(a) of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), as soon as reasonably practicable after we electronically file such material with, or furnish it to, the SEC. The information on or that can be accessed through our website is not a part of this prospectus and the inclusion of our website address in this prospectus is an inactive textual reference only. In addition, you may request copies of these filings at no cost at: Advanced Emissions Solutions, Inc., 8051 E. Maplewood Ave., Suite 210, Greenwood Village, Colorado 80111, telephone: (720) 598-3500.

We have filed with the SEC a registration statement on Form S-3 under the Securities Act of 1933, as amended (the "Securities Act"), including exhibits, of which this prospectus forms a part, with respect to the shares of common stock that may be offered hereunder. This prospectus does not contain all of the information set forth in the registration statement and exhibits thereto. For further information with respect to our company and the shares of common stock offered hereby, reference is made to the registration statement, including the exhibits thereto. Whenever we make reference in this prospectus to any of our contracts, agreements or other documents, the references are summaries and are not necessarily complete and you should refer to the exhibits attached to or incorporated by reference into the registration statement for copies of the actual contract, agreement or other document. Our SEC filings, including the registration statement of which this prospectus forms a part and the exhibits thereto, are available to you for free on the SEC's website listed above.

## INCORPORATION BY REFERENCE

The SEC allows us to "incorporate by reference" into this prospectus and any prospectus supplement the information we file with the SEC. This means that we can disclose important information to you by referring you to another document filed separately with the SEC. Any information referenced in this way is considered part of this prospectus. Any subsequent information filed with the SEC will automatically be deemed to update and supersede the information in this prospectus and in our other filings with the SEC.

We incorporate by reference in this prospectus the documents listed below that have been previously filed with the SEC, as well as any filings made by us with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act from the initial filing of the registration statement of which this prospectus forms a part until the termination or completion of the offering of the securities described in this prospectus; provided, however, we are not incorporating by reference any documents or portions of documents deemed to have been furnished rather than filed in accordance with SEC rules:

- our Annual Report on Form 10-K for the year ended December 31, 2022, as filed with the SEC on March 8, 2023;
- the information specifically incorporated by reference into our Annual Report on Form 10-K from our definitive proxy statement on Schedule 14A, filed with the SEC on April 27, 2023;
- our Quarterly Reports on Form 10-Q for the quarter ended March 31, 2023, as filed with the SEC on May 9, 2023; for the quarter ended June 30, 2023, as filed with the SEC on August 9, 2023; and for the quarter ended September 30, 2023, as filed with the SEC on November 8, 2023;
- our Current Reports on Form 8-K filed with the SEC on February 1, 2023, March 2, 2023, March 29, 2023 (Item 8.01 only), April 14, 2023, June 6, 2023, June 15, 2023, July 17, 2023, August 3, 2023, September 18, 2023, November 8, 2023 (filing containing Item 5.02 only) and January 24, 2024;
- the description of our common stock contained or incorporated by reference in our Registration Statement on Form 8-A filed with the SEC on July 6, 2016, as updated by any amendments or reports filed for the purpose of updating such description; and
- the description of our Series B Junior Participating Preferred Stock (currently traded with our common stock (contained or incorporated by reference in our Registration Statement on Form 8-A filed on May 8, 2027, as amended by the Forms 8-A/As filed on April 11, 2018, April 11, 2019, April 9, 2020, April 13, 2021, March 16, 2022 and April 14, 2023, as updated by any amendments or reports filed for the purpose of updating such description.

Notwithstanding the foregoing, information furnished under Items 2.02 and 7.01 of any Current Report on Form 8-K, including the related exhibits under Item 9.01, is not incorporated by reference in this prospectus or any prospectus supplement.

To obtain copies of these filings, see "*Where You Can Find More Information*" above.



## ABOUT THE COMPANY

ADA-ES, Inc. ("ADA"), a Colorado corporation, was incorporated in 1997. Pursuant to an Agreement and Plan of Merger, effective July 1, 2013, Advanced Emissions Solutions, Inc. ("ADES"), a Delaware company incorporated in 2011, succeeded ADA as the publicly-held corporation and ADA became a wholly-owned subsidiary of ADES. In 2018, we acquired ADA Carbon Solutions, LLC as a means to enter into the broader Activated Carbon ("AC") market and to expand our product offerings in the mercury control industry and other applicable AC markets. In February 2023, we acquired the direct subsidiaries of Arq Ltd (hereafter the Arq Limited subsidiaries referred to as "Arq") to secure access to a unique feedstock, a manufacturing facility and certain patented processes as a means to further expand our product offerings to new markets. On January 23, 2024, we announced that we expect to change our name to Arq, Inc. and our Nasdaq symbol to "ARQ" on February 1, 2024. On January 23, 2024, we announced that we expect to change our name to Arq, Inc. and our Nasdaq symbol to "ARQ" on February 1, 2024. On January 23, 2024, we announced that we expect to change our name to Arq, Inc. and our Nasdaq symbol to "ARQ" on February 1, 2024. Our Annual Report on Form 10-K is referred to as the "Form 10-K" or the "Report." As used in this prospectus, the terms the "Company," "we," "us" and "our" means ADES and its consolidated subsidiaries.

We are an environmental technology company and sell consumable products that utilize AC and chemical-based technologies to a broad range of customers, including coal-fired utilities, industrials, water treatment plants and other diverse markets served by one our major customers. Our primary products are comprised of AC, which is produced from a variety of carbonaceous raw materials. Our AC products include both powdered activated carbon, Colloidal Activated Carbon Product and granular activated carbon. Our proprietary technologies and associated product offerings provide purification solutions to enable our customers to reduce certain contaminants and pollutants to meet the challenges of existing and potential future regulations. Additionally, we own an associated lignite mine that supplies the primary raw material for the manufacturing of our current products.

As of December 31, 2022 and 2021, we held equity interests of 42.5% and 50.0% in Tinum Group, LLC ("Tinum Group") and Tinum Services, LLC ("Tinum Services"), respectively, which are both unconsolidated entities, and through December 31, 2021, both contributed significantly to our financial position and results of operations. We account for Tinum Group and Tinum Services under the equity method of accounting. As a result of the expiration of Internal Revenue Code ("IRC") Section 45 - Production Tax Credit ("Section 45") refined coal tax credit program effective December 31, 2021, both Tinum Group and Tinum Services ceased operations in 2023 and continue to wind down their operations.

### **Our Corporate Information**

We were incorporated as a Delaware corporation in 2011. Our current corporate headquarters address is 8051 E. Maplewood Ave., Suite 210, Greenwood Village, Colorado 80111. For further information please view our official company website at [www.advancedemissionssolutions.com](http://www.advancedemissionssolutions.com). Information included or referred to on, or otherwise accessible through, our website is not deemed to form a part of, or be incorporated by reference into, this prospectus or the registration statement of which this prospectus forms a part, and you should not rely on that information when making a decision to invest in our common stock.

### **Implications of Being a Smaller Reporting Company**

We are currently a "smaller reporting company" as defined in Rule 12b-2 under the Exchange Act. We may take advantage of certain of the scaled disclosures available to smaller reporting companies and will be able to take advantage of these scaled disclosures until the fiscal year following the determination that the aggregate market price of our voting and non-voting common stock held by non-affiliates is more than \$250 million measured on the last business day of our second fiscal quarter, or our annual revenue is more than \$100 million during the most recently completed fiscal year and the aggregate market price of our voting and non-voting common stock held by non-affiliates is more than \$700 million measured on the last business day of our second fiscal quarter. Accordingly, the information contained herein may be different than the information you receive from other public companies in which you hold stock.

## **RISK FACTORS**

Investing in our common stock involves a high degree of risk. You should consider the risks, uncertainties and other factors described in "Risk Factors" and elsewhere in our most recent Annual Report on Form 10-K, as supplemented and updated by subsequent Quarterly Reports on Form 10-Q, that we have filed or will file with the SEC, and in other documents which are incorporated by reference in this prospectus, as well as the risk factors and other information contained in or incorporated by reference in any accompanying prospectus supplement, together with all of the other information included in this prospectus. If any of these or any unanticipated risks actually occur, our business, financial condition and results of operations could be materially and adversely affected and the trading price of our common stock could decline, causing you to lose some or all of your investment in our common stock.

## SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus contains "forward-looking statements" within the meaning of Section 27A of the Securities Act, and Section 21E of the Exchange Act. Forward-looking statements generally relate to future events or our future financial or operating performance. Words or phrases such as "anticipates," "believes," "expects," "estimates," "predicts," the negative expressions of such words, or similar expressions are used in this prospectus to identify forward-looking statements, and such forward-looking statements include, but are not limited to, statements or expectations regarding:

- the anticipated effects from an increase in pricing of our activated carbon ("AC") products;
- the anticipated effects from an increase in costs of our AC products and related cost increases in supply and logistics;
- expected supply and demand for our AC products and services;
- increasing competition in the AC market;
- the effects of the transaction (the "Arq Acquisition") with Arq Limited ("Arq Ltd"), pursuant to which we acquired all of the direct and indirect equity interests of Arq's subsidiaries ("Arq");
- the ability to successfully integrate Arq's business;
- the ability to develop and utilize Arq's products and technology;
- the ability to make Arq's products commercially viable;
- the expected future demand of Arq's products;
- future level of research and development activities;
- future plant capacity expansions and site development projects;
- the effectiveness of our technologies and the benefits they provide;
- probability of any loss occurring with respect to certain guarantees made by Tinuum Group;
- the timing of awards of, and work and related testing under, our contracts and agreements and their value;
- the timing and amounts of, or changes in, future revenues, backlog, funding for our business and projects, margins, expenses, earnings, tax rates, cash flows, royalty payment obligations, working capital, liquidity and other financial and accounting measures;
- the amount and timing of future capital expenditures needed for our business and needed by Arq to fund our business plan;
- awards of patents designed to protect our proprietary technologies both in the U.S. and other countries;
- the adoption and scope of regulations to control certain chemicals in drinking water and other environmental concerns;
- the impact of adverse global macroeconomic conditions, including rising interest rates, recession fears and inflationary pressures, and geopolitical events or conflicts;
- opportunities to effectively provide solutions to U.S. coal-related businesses to comply with regulations, improve efficiency, lower costs and maintain reliability.
- the impact of prices of competing power generation sources such as natural gas and renewable energy on demand for our products; and
- bank failures or other events affecting financial institutions.

The forward-looking statements included in this prospectus involve risks and uncertainties. Actual events or results could differ materially from those discussed in the forward-looking statements as a result of various factors including, but not limited to, timing of new and pending regulations and any legal challenges to or extensions of compliance dates of them; the U.S. government's failure to promulgate regulations that benefit our business; changes in laws and regulations, accounting rules, prices, economic conditions and market demand; impact of competition; availability, cost of and demand for alternative energy sources and other technologies; technical, start up and operational difficulties; our inability to commercialize our advanced purification technologies ("APT") on favorable terms; our inability to ramp up our operations to effectively address recent and expected growth in our business; loss of key personnel; availability of materials and equipment for our business; intellectual property infringement claims from third parties; pending litigation; as well as other factors relating to our business strategy, goals and expectations concerning the Arq Acquisition (including future operations, future performance or results); our ability to maintain relationships with customers, suppliers and other with whom we do business, or our results of operations and business generally; risks related to diverting management's

attention from our ongoing business operations; the ability to meet Nasdaq's listing standards; costs related to the Arq Acquisition; opportunities for additional sales of our lignite AC products and end-market diversification; our ability to meet customer supply requirements; the rate of coal-fired power generation in the U.S., the timing and cost of capital expenditures and the resultant impact to our liquidity and cash flows as described in our filings with the SEC, with particular emphasis on the risk factor disclosures contained in those filings. You are cautioned not to place undue reliance on the forward-looking statements made in this prospectus and to consult filings we have made and will make with the SEC for additional discussion concerning risks and uncertainties that may apply to our business and the ownership of our securities. The forward-looking statements contained in this prospectus are presented as of the date hereof, and we disclaim any duty to update such statements unless required by law to do so.

### **USE OF PROCEEDS**

All shares of our common stock sold pursuant to this prospectus will be offered and sold by the selling stockholders. The selling stockholders will receive all proceeds from the sale of the shares of common stock offered by this prospectus and any accompanying prospectus supplement. We will not receive any of the proceeds from the sale of our common stock by the selling stockholders.

## UNAUDITED PRO FORMA CONDENSED COMBINED FINANCIAL STATEMENTS

### Acquisition

On February 1, 2023 (the "Acquisition Date"), Advanced Emissions Solutions, Inc. ("ADES" or the "Company") entered into a Securities Purchase Agreement (the "Purchase Agreement") with Arq Limited, a company incorporated under the laws of Jersey ("Arq Ltd."), pursuant to which ADES acquired all of the direct and indirect equity interests of Arq Ltd's subsidiaries (the "Acquisition," and hereafter the Arq Ltd. subsidiaries referred to as "Arq") in exchange for consideration (the "Purchase Consideration") totaling \$31.2 million and consisting of (i) 3,814,864 shares of common stock, par value \$0.001 per share, of ADES (the "Common Stock") and (ii) 5,294,462 shares of Series A Convertible Preferred Stock, par value \$0.001 per share, of ADES (the "Preferred Shares"). In connection with the issuance of the Preferred Shares pursuant to the Purchase Agreement, ADES filed the Certificate of Designations of Preferred Stock for the Series A Preferred Stock (the "Certificate of Designations") with the Secretary of State of the State of Delaware.

### Series A Preferred Stock

Each outstanding share of Series A Preferred Stock was automatically converted into the number of shares of Common Stock described below upon approval by the stockholders of the Company. On June 13, 2023, ADES' stockholders approved the issuance of shares of Common Stock in exchange for the conversion of all of the outstanding shares of Series A Preferred Stock.

Each Preferred Share was deemed to have an original issue price of \$4.00 per share (the "Original Issue Amount"). The number of shares of Common Stock issued upon conversion of each Preferred Share was equal to the product of (i) the sum of (A) the Original Issue Amount *plus* (B) an amount equal to the cumulative amount of the accrued and unpaid dividends (the "Series A Dividend") on such share at such time (regardless of whether or not declared or funds for their payment are lawfully available) *divided by* (ii) the Original Issue Amount, subject to adjustment as provided in the Certificate of Designations.

On March 31, 2023, the Company declared a dividend of 68,464 Series A Shares (the "Series A Quarterly Dividend Shares") with respect to the accrued dividends on the Series A Preferred Stock for the first quarter of 2023. The Series A Quarterly Dividend was determined by dividing (i) the Series A Quarterly Dividend payable with respect to all Preferred Shares held by a holder thereof by (ii) the aggregate Original Issue Amount of all Preferred Shares held by a holder thereof. Each fractional Series A Quarterly Dividend Share was rounded to the nearest whole Series A Quarterly Dividend Share (with 0.5 of a share being rounded down to 0.0). The Series A Quarterly Dividend Shares were recorded at the estimated fair value of \$0.2 million as of March 31, 2023 and were issued on April 21, 2023.

### Subscription Agreements

On February 1, 2023, and pursuant to the Arq Acquisition, the Company entered into Subscription Agreements (the "Subscription Agreements") with certain persons (the "Subscribers"), which included existing shareholders of Arq Ltd., pursuant to which the Subscribers subscribed for and purchased shares of Common Stock for an aggregate purchase price of \$15.4 million and at a price per share of \$4.00 (the "PIPE Price Per Share" and such transaction, the "PIPE Investment").

### Loan Agreement

As required under the Purchase Agreement, and on February 1, 2023, ADES, as borrower, certain of its subsidiaries, as guarantors, and CF Global ("CFG"), as administrative agent and lender (the "Lender"), entered into a term loan in the amount of \$10.0 million, less original issue discount of \$0.2 million, (the "Term Loan") upon execution of a Term Loan and Security Agreement (the "Loan Agreement"). The Term Loan has a term of 48 months and bears interest at a rate equal to either (a) Adjusted Term SOFR (subject to a 1.00% floor and a cap of 2.00%) plus a margin of 9.00% paid in cash and 5.00% paid in kind or (b) Base Rate plus a margin of 8.00% paid in cash and 5.00% paid in kind, which interest on the Term Loan in each case shall be payable (or capitalized, in the case of in kind interest) quarterly in arrears. The Term Loan is secured by substantially all of the assets of ADES and its subsidiaries (including those acquired in the Acquisition, but excluding those pledged as collateral under a term loan assumed by the Company in the Arq Acquisition), subject to customary exceptions. The Company incurred issuance costs of \$1.3 million associated with the Loan Agreement.

The Loan Agreement also provided for the issuance of a warrant (the "Warrant") to CFG to purchase 325,457 shares of Common Stock, which represented 1% of the post-transaction fully diluted share capital (as defined in the Loan Agreement), at an exercise price of \$0.01 per share. The Warrant has a term of 10 years and contains a cash-less exercise provision.

### Unaudited Pro Forma Condensed Combined Financial Information

The following unaudited pro forma condensed combined financial information (the "unaudited pro forma financial statements") is based on the historical annual audited consolidated financial statements for the year ended December 31, 2022 of ADES, the historical audited consolidated financial statements for the year ended December 31, 2022 of Arq Ltd., the historical interim unaudited condensed financial statements of ADES for nine months ended September 30, 2023, and the historical unaudited condensed consolidated financial statements of Arq Ltd. and for the period from January 1 to February 1, 2023, as adjusted to give effect to the

Purchase Agreement, the PIPE Investment and the Term Loan and related Warrant issuance (collectively, the "Transactions") for the aforementioned periods. It should be noted that the Arq Ltd. historical financial statements have been prepared under International Financial Reporting Standards ("IFRS") issued by the International Accounting Standards Board. The effects of the Transactions are reflected in the unaudited condensed balance sheet as of September 30, 2023. Accordingly, an unaudited pro forma condensed combined balance sheet is not presented.

The unaudited pro forma condensed combined statements of operations (the "unaudited pro forma statements of operations") for the year ended December 31, 2022 and the nine months ended September 30, 2023 give effect to the Transactions as if they had occurred on January 1, 2022. In addition, certain operating expenses and finance costs pertaining to Arq Ltd. have been excluded in deriving the unaudited pro forma statements of operations.

The unaudited pro forma financial statements are based on and should be read in conjunction with:

- the accompanying notes to the unaudited pro forma financial statements;
- the historical audited consolidated financial statements of ADES as of and for the year ended December 31, 2022 and 2021, which are included in ADES' Annual Report on Form 10-K for the fiscal year ended December 31, 2022 and the historical unaudited condensed consolidated financial statements of ADES as of and for the nine months ended September 30, 2023, which are included in ADES' Quarterly Report on Form 10-Q for the quarterly period ended September 30, 2023.
- the historical audited consolidated financial statements of Arq Ltd. for the year ended December 31, 2022.

The unaudited pro forma financial statements are presented using the acquisition method of accounting, with ADES identified as the acquirer of Arq. Under the acquisition method of accounting, the purchase price is allocated to the underlying Arq tangible and intangible assets acquired and liabilities assumed based on their respective fair market values with any excess purchase price allocated to goodwill.

The unaudited pro forma combined financial statements are presented for informational purposes only and have been prepared in accordance with Article 11 of Regulation S-X of the SEC, and do not necessarily reflect what the combined company's financial position or results of operations would have been had the Transactions occurred as of the dates indicated herein, nor do they purport to project the future financial position and operating results of the combined companies. The pro forma financial statements also do not reflect the costs of any integration activities or cost savings or synergies expected to be achieved as a result of the Transactions, and, accordingly, do not attempt to predict or suggest future results.

The unaudited pro forma financial statements include "Transaction Accounting Adjustments" that are necessary to account for the Transactions as of the dates specified above. In addition, the unaudited pro forma financial statements include adjustments for the accounting differences between IFRS and accounting principles generally accepted in the United States ("U.S. GAAP") as well as reclassifications of certain financial statement components in Arq Ltd's historical financial statements to conform to ADES' financial statement presentation.

The assumptions underlying all of the adjustments made in the unaudited pro forma financial statements are described in the accompanying notes. Adjustments are based on information available to us during the preparation of the unaudited pro forma financial statements and assumptions that we believe are reasonable and factually supportable. The adjustments, which are described in the accompanying notes, are based on the actual adjustments recorded upon completion of the Transactions.

The unaudited pro forma condensed combined financial statements have been adjusted for the following Transactions:

- The Acquisition, in which ADES acquired 100% of the equity interests of Arq in exchange for 3,814,864 newly issued shares of ADES Common stock and 5,294,462 Preferred Shares, which totaled \$31.2 million based on the estimated fair values of the shares of Common Stock and the Preferred Shares as of the Acquisition Date.
- The issuance of 3,842,315 shares of ADES Common Stock pursuant to the PIPE Investment in exchange for \$15.4 million of cash at the PIPE Price Per Share of \$4.00.
- The Loan Agreement in the principal amount of \$10.0 million for net cash proceeds of approximately \$8.5 million, net of original issue discount and debt issuance costs, and the related issuance of the Warrant to purchase 325,457 shares of Common Stock.

**ADVANCED EMISSIONS SOLUTIONS, INC.**  
**UNAUDITED PRO FORMA CONDENSED COMBINED STATEMENT OF OPERATIONS**  
**FOR THE YEAR ENDED DECEMBER 31, 2022**

<i>(in thousands)</i>	ADES Historical	Arq Ltd. Historical Reclassified (Note 2)	IFRS to US GAAP Adjustments (Note 3)	Ref	Arq Ltd. Historical Reclassified US GAAP	Transaction Accounting Adjustments (Note 4)	Ref	ADES Pro Forma Combined
Revenues:								
Consumables	\$ 102,987	\$ —	\$ —		\$ —	\$ —		\$ 102,987
Total revenues	102,987	—	—		—	—		102,987
Operating expenses:								
Consumables cost of revenues, exclusive of depreciation and amortization	80,465	—	—		—	—		80,465
Selling, general and administrative	28,140	18,744	5,039	(b), (e)	23,783	(6,421)	(g),(k)	45,502
Depreciation, amortization, depletion and accretion	6,416	3,911	(850)	(b), (c)	3,061	631	(h),(i), (j)	10,108
Other operating expenses	34	—	—		—	—		34
Impairment of long-lived assets	—	44,560	(45)	(d)	44,515	—		44,515
Total operating expenses	115,055	67,215	4,144		71,359	(5,790)		180,624
Operating (loss) income	(12,068)	(67,215)	(4,144)		(71,359)	5,790		(77,637)
Other income (expense):								
Earnings from equity method investments	3,541	—	—		—	—		3,541
Interest expense	(336)	(20,136)	18,178	(a), (b), (c)	(1,958)	(499)	(g),(l)	(2,793)
Other	155	11,478	(5,329)	(a), (b), (f)	6,149	(699)	(g)	5,605
Total other income (loss)	3,360	(8,658)	12,849		4,191	(1,198)		6,353
(Loss) income before income tax expense (benefit)	(8,708)	(75,873)	8,705		(67,168)	4,592		(71,284)
Income tax expense (benefit)	209	(442)	442	(f)	—	—	(m)	209
Net (loss) income	\$ (8,917)	\$ (75,431)	\$ 8,263		\$ (67,168)	\$ 4,592		\$ (71,493)



**ADVANCED EMISSIONS SOLUTIONS, INC.**  
**UNAUDITED PRO FORMA CONDENSED COMBINED STATEMENT OF OPERATIONS**  
**FOR THE NINE MONTHS ENDED SEPTEMBER 30, 2023**

<i>(in thousands)</i>	ADES Historical for the nine months ended September 30, 2023	Arq Ltd. Historical Reclassified for the period from January 1 to February 1, 2023 (Note 2)	IFRS to US GAAP Adjustments (Note 3)	Ref	Arq Ltd. Historical Reclassified US GAAP for the period from January 1 to February 1, 2023	Transaction Accounting Adjustments (Note 4)	Ref	ADES Pro Forma Combined
<b>Revenues:</b>								
Consumables	\$ 71,079	\$ —	\$ —		\$ —	\$ —		\$ 71,079
Total revenues	<u>71,079</u>	<u>—</u>	<u>—</u>		<u>—</u>	<u>—</u>		<u>71,079</u>
<b>Operating expenses:</b>								
Consumables cost of revenue, exclusive of depreciation and amortization	53,218	—	—		—	—		53,218
Selling, general and administrative	29,719	4,624	417	(b),(e)	5,041	(551)	(g),(k)	34,209
Depreciation, amortization, depletion and accretion	7,276	77	(73)	(b),(c)	4	236	(h),(i), (j)	7,516
Other operating expense	(2,695)	—	—		—	—		(2,695)
Total operating expenses	<u>87,518</u>	<u>4,701</u>	<u>344</u>		<u>5,045</u>	<u>(315)</u>		<u>92,248</u>
Operating loss	<u>(16,439)</u>	<u>(4,701)</u>	<u>(344)</u>		<u>(5,045)</u>	<u>315</u>		<u>(21,169)</u>
<b>Other income (expense):</b>								
Earnings from equity method investments	1,512	—	—		—	—		1,512
Interest expense	(2,155)	(2,085)	2,019	(a), (b),(c)	(66)	(149)	(g),(l)	(2,370)
Other	1,510	(12)	27	(f)	15	—		1,525
Total other income (loss)	<u>867</u>	<u>(2,097)</u>	<u>2,046</u>		<u>(51)</u>	<u>(149)</u>		<u>667</u>
(Loss) income before income tax benefit	<u>(15,572)</u>	<u>(6,798)</u>	<u>1,702</u>		<u>(5,096)</u>	<u>166</u>		<u>(20,502)</u>
Income tax benefit	<u>(33)</u>	<u>(27)</u>	<u>27</u>	(f)	<u>—</u>	<u>—</u>	(m)	<u>(33)</u>
Net (loss) income	<u>\$ (15,539)</u>	<u>\$ (6,771)</u>	<u>\$ 1,675</u>		<u>\$ (5,096)</u>	<u>\$ 166</u>		<u>\$ (20,469)</u>

## NOTES TO UNAUDITED PRO FORMA CONDENSED COMBINED FINANCIAL INFORMATION

### 1. Basis of Presentation

The accompanying unaudited pro forma financial statements are prepared from the historical consolidated financial statements of ADES and Arq Ltd. after giving effect to the Transactions and assumptions, reclassifications and adjustments as described in the accompanying notes. The unaudited combined pro forma statements of operations give effect to the Transactions as if they had occurred on January 1, 2022.

The historical annual audited consolidated financial statements and interim unaudited condensed consolidated financial statements of ADES are prepared in accordance with U.S. GAAP and the historical annual audited consolidated financial statements and interim unaudited condensed consolidated financial statements of Arq Ltd. are prepared in accordance with IFRS.

The unaudited pro forma financial statements do not necessarily reflect what the combined company's financial condition or results of operations would have been had the Transactions occurred on the dates indicated and also may not be useful in predicting the future financial condition and results of operations of the combined company. The actual financial position and results of operations may differ significantly from the pro forma amounts reflected herein due to a variety of factors.

ADES has accounted for the Transactions under the acquisition method, which requires recognizing and measuring the identifiable assets acquired and the liabilities assumed at fair value. Accordingly, ADES has used its best estimates and assumptions to assign fair value to the tangible assets acquired, identifiable intangible asset(s) and liabilities assumed as of the Acquisition Date. The value of the Purchase Consideration is based on the estimated fair value of Preferred Shares, as determined by a third party valuation firm, and the closing price per share of Common Stock. All values were determined as of the Acquisition Date.

The fair values assigned to Arq's tangible and identifiable intangible assets acquired and liabilities assumed, as described in Note 4, are based on management's estimates and assumptions. ADES has estimated the fair value of Arq's assets acquired and liabilities assumed based on discussions with Arq's management, preliminary valuation studies, due diligence and information presented in Arq Ltd.'s historical audited and unaudited financial statements. The estimated fair values of these assets acquired and liabilities assumed are considered preliminary and represent management's best estimates of fair value and may be revised as additional information is received. Thus, the provisional measurements of fair value are subject to change.

The Transaction Accounting adjustments have been made solely for the purpose of providing the unaudited pro forma financial information presented herein.

Included in the historical statements of operations of ADES and Arq Ltd. for the nine months ended September 30, 2023 and for the year ended December 31, 2022 are Acquisition-related transaction costs of \$5.9 million and \$6.6 million, respectively, which are not expected to recur in ADES' statement of operations beyond 12 months after the Acquisition Date.

### 2. Arq Ltd. Historical Financial Statements

Arq Ltd.'s historical balances were derived from Arq Ltd.'s historical consolidated financial statements for the year ended December 31, 2022 and for the period from January 1 to February 1, 2023, as described above, and are presented under IFRS. The unaudited pro forma financial statements reflect certain reclassifications of Arq Ltd.'s historical financial statement captions to conform to ADES' presentation in its historical financial statements.

The reclassifications are summarized below (in thousands):

Arq Ltd. Financial Statement Line	Arq Ltd. for the year ended December 31, 2022	Reclassifications	Arq Ltd. Historical Reclassified Amount	ADES Financial Statement Line
Plant operating expenses	\$ 51,316	\$ (51,316) (1)	\$ —	
	—	44,560	44,560	Impairment of long-lived assets
	—	3,911	3,911	Depreciation, amortization, depletion and accretion
Research and development expense	1,815	(1,815) (2)	—	
Administration expenses	14,084	(14,084) (3)	—	
	—	18,744	18,744	Selling, general and administrative
Operating loss	(67,215)	—	(67,215)	
Finance expense	(20,136)	—	(20,136)	Interest expense
Gain on changes to liabilities and debt	11,267	(11,267)	—	
Other income	299	(299)	—	
Other expense	(88)	11,566	11,478	Other
Loss before tax	(75,873)	—	(75,873)	
Income tax income	442	—	442	Income tax expense (benefit)
Net loss for the financial year	(75,431)	—	(75,431)	Net income (loss)
Other comprehensive income	—	—	—	
Total comprehensive loss for the financial year	(75,431)	—	(75,431)	
Attributable to Equity shareholders of the company	\$ (75,431)	\$ —	\$ (75,431)	

(1) Represents amounts which were reclassified to conform with ADES' presentation as follows: approximately \$44.6 million to Impairment of long-lived assets, \$3.1 million to Selling, general and administrative and \$3.6 million to Depreciation, amortization, depletion and accretion.

(2) \$1.8 million was reclassified to Selling, general and administrative to conform with ADES' presentation.

(3) Represents amounts which were reclassified to conform with ADES' presentation as follows: \$13.8 million to Selling, general and administrative and \$0.3 million to Depreciation, amortization, depletion and accretion.

Arq Ltd. Financial Statement Line	Arq Ltd. for the period from January 1 to February 1, 2023	Reclassifications	Arq Ltd. Historical Reclassified Amount	ADES Financial Statement Line
Plant operating expenses	\$ 291	\$ (291) (1)	\$ —	
	—	77	77	Depreciation, amortization, depreciation, and accretion
Research and development expenses	83	(83) (2)	—	
Administration expenses	4,327	(4,327) (3)	—	
	—	4,624	4,624	Selling, general and administrative
Operating loss	(4,701)	—	(4,701)	
Finance expense	(2,085)	—	(2,085)	Interest expense
Other income	80	(92)	(12)	Other
Other expenses	(92)	92	—	
Loss before tax	(6,798)	—	(6,798)	
Income tax income	27	—	27	Income tax expense (benefit)
Net loss and total comprehensive loss attributable to the shareholders of the company	(6,771)	—	(6,771)	Net loss
Attributable to Equity shareholders of the company	\$ (6,771)	\$ —	\$ (6,771)	

(1) Represents amounts which were reclassified to conform with ADES' presentation as follows: approximately \$0.2 million to Selling, general and administrative and \$0.1 million to Depreciation, amortization, depletion and accretion.

(2) \$0.1 million was reclassified to Selling, general and administrative to conform with ADES' presentation.

(3) Represents amounts which were reclassified to conform with ADES' presentation as follows: approximately \$4.3 million to Selling, general and administrative and \$8.0 thousand to Depreciation, amortization, depletion and accretion.

### 3. IFRS to U.S. GAAP adjustments

IFRS differs in certain material respects from U.S. GAAP. The following material adjustments have been made to reflect Arq Ltd.'s historical statements of operations on a U.S. GAAP basis for purposes of presenting unaudited pro forma financial information. In addition, the adjustments have been made to align Arq Ltd.'s historical significant accounting policies under IFRS to ADES' significant accounting policies under U.S. GAAP.

#### (a) Preferred Units

Under IFRS, Arq Ltd. classified and accounted for certain preferred shares (the "Preferred Units") as liabilities and classified and recorded dividends earned on the Preferred Units as finance costs.

Under U.S. GAAP, the Preferred Units are not classified as liabilities, as they are not mandatorily redeemable as defined in U.S. GAAP. Further, under U.S. GAAP, dividends earned on the Preferred Units represent a "preferred return" and are recorded within equity. In addition, SEC accounting guidance "requires equity instruments with redemption features that are not solely within the control of the issuer to be classified outside of permanent equity (often referred to as classification in "temporary equity"). Accordingly, under U.S. GAAP and SEC accounting guidance, the Preferred Units, including cumulative dividends, are classified as temporary equity. Since the cumulative dividends earned on the Preferred Units do not represent finance costs under U.S. GAAP, they are not expensed in the statement of operations under U.S. GAAP.

For the year ended December 31, 2022 and for the period from January 1 to February 1, 2023, Arq Ltd. reported finance costs of \$17.4 million and \$2.0 million related to the Preferred Units, which are eliminated and recorded to temporary equity under U.S. GAAP. In addition, for the year ended December 31, 2022, Arq Ltd. recognized a gain of \$5.8 million and corresponding reduction to the carrying amount of the Preferred Units related to a modification of conversion terms related to the Preferred Units (the "Preferred Gain"). Under U.S. GAAP, the impact of this modification is not recorded to the statement of operations but recorded within equity.

The following table reflects the decrease in interest expense and the reversal of the Preferred Gain due to the recording of cumulative dividends on the Preferred Units within equity under U.S. GAAP:

<i>(in thousands)</i>	<b>For the year ended December 31, 2022</b>	<b>For the period from January 1 to February 1, 2023</b>
<b>Condensed Statement of Operations</b>		
Decrease to Interest expense	\$ (17,440)	\$ (1,970)
Decrease to Other income	\$ (5,775)	\$ —

#### (b) Leases

Under IFRS, all leases are classified and accounted for as finance leases. Under U.S. GAAP, leases are classified as either finance or operating leases based on satisfying certain criteria, and under U.S. GAAP, certain Arq Ltd. leases meet the definition of operating leases. Arq Ltd. reports right of use ("ROU") assets for all of its leases in Property, plant and equipment. Under U.S. GAAP, ROU assets under operating leases are reported as Other long-term assets. The net carrying amount of ROU assets under operating leases under U.S. GAAP is different from their net carrying amounts as Property, plant and equipment under IFRS, primarily due to differences between depreciation of Property, plant and equipment recognized under IFRS and amortization recognized on ROU assets under operating leases under U.S. GAAP.

In addition, under U.S. GAAP, interest on an operating lease liability and amortization of an operating lease ROU asset are reported a single expense in operating expenses, in contrast to lease cost for finance leases, which are reported separately as interest expense and amortization of ROU assets. In converting the leases that meet the definition of operating leases, amounts for both interest expense and amortization of ROU assets reported under IFRS are reversed, and the aggregate amount of operating lease expense is reported under U.S. GAAP.

The following table reflects the adjustments to report lease costs of certain of Arq Ltd.'s leases as operating leases under U.S. GAAP:

<i>(in thousands)</i>	<b>For the year ended December 31, 2022</b>	<b>For the period from January 1 to February 1, 2023</b>
<b>Condensed Statement of Operations</b>		
Increase to Selling, general and administrative	\$ 1,430	\$ 105
Decrease to Depreciation, amortization, depletion and accretion	\$ (1,074)	\$ (73)
Decrease to Interest expense	\$ (600)	\$ (49)
Increase to Other income	\$ 4	\$ —

(c) *Asset retirement obligations*

Under IFRS, the calculation of an asset retirement obligation ("ARO") is based on a risk-free rate, and under U.S. GAAP, it is determined using a credit adjusted rate. Arq Ltd. calculated its ARO using a discount rate that was significantly lower than a credit adjusted rate required under U.S. GAAP. The higher discount rate under U.S. GAAP resulted in significantly lower ARO and ARO asset amounts at inception reported under U.S. GAAP compared to IFRS. In addition, under IFRS, the accretion of an ARO is reported as interest expense and under U.S. GAAP is reported as accretion expense. The reduction of ARO and ARO asset amounts also impacted the reported amounts of accretion expense and depreciation, respectively, for the periods presented below.

<i>(in thousands)</i>	<b>For the year ended December 31, 2022</b>	<b>For the period from January 1 to February 1, 2023</b>
<b>Condensed Statement of Operations</b>		
Increase to Depreciation, amortization, depletion and accretion	\$ 224	\$ —
Decrease to Interest expense	\$ (138)	\$ —

(d) *Impairment*

The following table reflects the adjustments to recognize changes in impairment under U.S. GAAP related to the IFRS to U.S. GAAP differences in reported asset and liability amounts for ROU assets under operating leases and AROs and ARO assets, as discussed in Notes 3(b) Leases and 3(c) Asset retirement obligations above:

<i>(in thousands)</i>	<b>For the year ended December 31, 2022</b>	<b>For the period from January 1 to February 1, 2023</b>
<b>Condensed Statement of Operations</b>		
Decrease to impairment of long-lived assets	\$ (45)	\$ —

(e) *Stock-based compensation*

Under IFRS, stock-based compensation for graded vesting stock awards containing only service conditions is recognized and measured only as, in substance, multiple awards. Under U.S. GAAP, an accounting election is made to treat graded vesting awards as either a single award (straight-line cost recognition), or, in substance, multiple awards for both recognition and measurement. ADES' policy is to account for all service-based stock awards as a single award and to recognize stock-based compensation expense on a straight-line method over the vesting period. Arq Ltd.'s historical stock awards are graded vesting awards that vest based on service conditions. ADES is adjusting Arq Ltd.'s historical stock-based compensation expense, which is based on an accelerated graded vesting method, to ADES' straight-line method. The calculation of the fair value of Arq Ltd.'s historical stock awards is the same under both IFRS and U.S. GAAP.

The following table reflects the adjustment of stock-based compensation expense from Arq Ltd.'s accelerated graded vesting method to ADES' straight-line method:

<i>(in thousands)</i>	<b>For the year ended December 31, 2022</b>	<b>For the period from January 1 to February 1, 2023</b>
<b>Condensed Statement of Operations</b>		
Increase to Selling, general and administrative	\$ 3,609	\$ 312

(f) *Income taxes*

Arq Ltd. has earned refundable tax credits in the United Kingdom based on qualified research and development expenses incurred. Under IFRS, the tax credits generated are a component of Income tax expense (benefit). Under U.S. GAAP, these tax credits are not presented as a component of income tax expense (benefit) but as a component of Other income. The following table reflects the adjustment to present refundable tax credits as refundable research and development tax credits earned by Arq as a component of Other income rather than as a component of Income tax expense benefit.

<i>(in thousands)</i>	<b>For the year ended December 31, 2022</b>	<b>For the period from January 1 to February 1, 2023</b>
<b>Condensed Statement of Operations</b>		
Increase to Other	\$ 442	\$ 27
Decrease to Income tax expense (benefit)	\$ 442	\$ 27

#### 4. Transaction Accounting Adjustments to the Unaudited Pro Forma Combined Financial Statements

The following transaction accounting adjustments have been made to reflect the Transactions. Further review may identify additional adjustments that could have a material impact on the unaudited pro forma financial statements of the combined company. At this time, ADES is not aware of any additional transaction accounting adjustments that would have a material impact on the unaudited pro forma financial statements that are not reflected or disclosed in the pro forma adjustments.

ADES performed a valuation analysis of the fair value of Arq's assets and liabilities based on the purchase consideration of \$31.2 million. The table below summarizes the allocation of the purchase price to the assets acquired and liabilities assumed for purposes of the unaudited pro forma financial information as of the Acquisition Date:

<i>(in thousands)</i>	<b>Preliminary Purchase Price Allocation</b>	
<b>Fair value of assets acquired:</b>		
Cash	\$	1,411
Prepaid expenses and other current assets		2,229
Restricted cash, long-term		814
Property, plant and equipment, net		39,159
Other long-term assets, net		11,717
Amount attributable to assets acquired	\$	55,330
<b>Fair Value of liabilities assumed:</b>		
Accounts payable and accrued expenses	\$	9,806
Current portion of long-term debt		494
Other current liabilities		103
Long-term debt, net of current portion		9,199
Other long-term liabilities		4,523
Amount attributable to liabilities assumed	\$	24,125
<b>Net assets acquired</b>	<b>\$</b>	<b>31,205</b>

The purchase price allocation, which the Company used in recording the Arq Acquisition in its financial statements on February 1, 2023, has been used to prepare transaction accounting adjustments in the pro forma statements of operations.

As part of its preliminary valuation of Arq, the Company identified an intangible asset, developed technology. The estimated fair value of the developed technology was determined using significant estimates and assumptions. As such, actual amounts may differ from these estimates. The estimated fair value and useful life of the developed technology are as follows:

<i>(in thousands)</i>	<b>Estimated Fair Value</b>	<b>Estimated Useful Life in Years</b>
Developed technology	\$ 7,700	20

#### *Transaction Accounting Adjustments to Unaudited Pro Forma Condensed Combined Statement of Operations*

The following transaction accounting adjustments have been made to reflect the Transactions in the unaudited pro forma combined statements of operations for the year ended December 31, 2022 and nine months ended September 30, 2023 assuming the Transactions had occurred as of January 1, 2022:

(g) Represents elimination of certain expenses solely attributable to Arq Ltd. (in thousands):

	<b>Year ended December 31, 2022</b>	<b>Nine months ended September 30, 2023</b>
Decrease in Stock-based compensation	\$ (5,906)	\$ (480)
Elimination of Interest expense on convertible notes payable	1,492	—
Elimination of gain on conversion of convertible notes payable	(699)	—

(h) Represents an adjustment to historical depreciation of the property, plant and equipment acquired by the company based on its estimated fair value as of the Acquisition Date. The estimated average useful life of the acquired property, plant and equipment was 20 years. The following table summarizes the change in the estimated depreciation (in thousands):

	Year ended December 31, 2022	Nine months ended September 30, 2023
Estimated depreciation	\$ 2,976	\$ 198
Historical depreciation	(2,787)	(5)
Transaction accounting adjustment to depreciation	\$ 189	\$ 193

(i) Represents the amortization of Arq's developed technology acquired by the Company based on its estimated fair value as of the Acquisition Date. The following table summarizes the change in the estimated amortization (in thousands):

	Year ended December 31, 2022	Nine months ended September 30, 2023
Estimated amortization	\$ 385	\$ 32
Historical amortization	—	—
Transaction accounting adjustment to amortization	\$ 385	\$ 32

(j) Represents the increase in accretion on asset retirement obligations assumed by the Company based on their estimated fair values as of the Acquisition Date. The following table summarizes the change in the estimated accretion (in thousands):

	Year ended December 31, 2022	Nine months ended September 30, 2023
Estimated accretion	\$ 235	\$ 23
Historical accretion	(178)	(12)
Transaction accounting adjustment to accretion	\$ 57	\$ 11

(k) Represents the decrease in operating lease expense on operating leases assumed by the Company based on their estimated fair values as of the Acquisition Date. The following table summarizes the change in operating lease expense (in thousands):

	Year ended December 31, 2022	Nine months ended September 30, 2023
Estimated operating lease expense	\$ 616	\$ 51
Historical operating lease expense	(1,131)	(122)
Transaction accounting adjustment to operating lease expense	\$ (515)	\$ (71)

(l) Represents the increase to interest expense resulting from the stated interest on the Term Loan and the amortization of related debt discount and debt issuance costs as follows (in thousands):

	Year ended December 31, 2022	Nine months ended September 30, 2023
Interest expense on Term Loan (1)	\$ (1,458)	\$ (99)
Amortization of Term Loan discount and debt issuance costs (2)	(533)	(50)
Transaction accounting adjustment to interest expense	\$ (1,991)	\$ (149)

- (1) The Term Loan bears interest at a per annum rate equal to: (i) Term SOFR plus a margin of 9.0% paid in cash quarterly and (ii) 5.0% paid-in-kind ("PIK"), with PIK interest added to the principal balance of the Term Loan on a quarterly basis. Term SOFR is capped at a rate of 2.0% per annum and floored at a rate of 1.0% per annum. The stated interest rate assumed for purposes of preparing this unaudited pro forma consolidated financial information is 16.0% per annum (Term SOFR of 2.0% plus margin of 9.0% plus PIK interest of 5.0%). A 100 basis point decrease in the Term SOFR would result in a decrease in interest expense of approximately \$0.1 million for the year ended December 31, 2022 and approximately \$4.0 thousand for the nine months ended September 30, 2023.
- (2) The Term Loan was recorded at the principal amount of \$10.0 million, less original issue discount and debt issuance costs of \$0.2 million and \$1.3 million, respectively, and debt discount associated with the allocation of cash proceeds to the Warrant of \$0.9 million. The Company estimated the standalone fair values of the Term Loan and the Warrant and allocated the proceeds to each instrument based on its relative fair value. The amount allocated to the Warrant is recorded as a debt discount and is amortized to interest expense over the term of the Term Loan. The standalone fair value of the Term Loan was based on a comparison of borrowings, credit ratings, etc. As the Warrant is exercisable for \$0.01 per share, the fair value was deemed to be equal to the fair value of the underlying shares, and accordingly, the fair value of the Warrant was determined as the number of shares issuable from the exercise of the Warrant (based on 1.0% of post-transaction fully diluted share capital) multiplied by the closing price of ADES' common stock on the Acquisition Date;

(m) For the year ended December 31, 2022, both ADES and Arq incurred pretax losses, and pro forma combined income tax expense is comprised of out of period tax items incurred by ADES. As of December 31, 2022, both ADES and Arq do not forecast the ability to utilize the pretax losses, and accordingly, the transaction accounting adjustments have been tax-effected at a zero percent tax rate.

For the nine months ended September 30, 2023, both ADES and Arq incurred pretax losses, and pro forma combined income tax benefit is comprised of out of period tax items incurred by ADES. As of September 30, 2023, both ADES and Arq do not forecast the ability to utilize the losses, and accordingly, the transaction accounting adjustments for this period have been tax-effected at a zero percent tax rate.

**Pro forma earnings (loss) per share**

Pro forma income (loss) per share amounts for the Unaudited Pro Forma Combined Statements of Operations have been recalculated after giving effect to the Transactions, on a basic and diluted outstanding share basis, assuming that the Preferred Shares and shares of Common Stock issued in connection with the Transactions were outstanding at the beginning of the periods presented. The effect of anti-dilutive potential ordinary shares is ignored in calculating pro forma diluted income (loss) per share.

	For the year ended December 31, 2022	
	Historical ADES	ADES Pro Forma Combined
<i>(in thousands, except for per share data)</i>		
Net loss	\$ (8,917)	\$ (71,493)
Preferred Shares dividends (1)	—	(1,510)
Loss attributable to common shareholders - basic	\$ (8,917)	\$ (73,003)
Weighted average number of common shares outstanding - basic (2)	18,453	26,436
<b>Loss per share - basic</b>	<b>\$ (0.48)</b>	<b>\$ (2.76)</b>
Net loss	\$ (8,917)	\$ (71,493)
Preferred Shares dividends (1)	—	(1,510)
Loss attributable to common shareholders - diluted	\$ (8,917)	\$ (73,003)
Weighted average number of common shares outstanding - diluted	18,453	26,436
<b>Loss per share - diluted</b>	<b>\$ (0.48)</b>	<b>\$ (2.76)</b>
	For the nine months ended September 30, 2023	
	Historical ADES	ADES Pro Forma Combined
<i>(in thousands, except for per share data)</i>		
Net loss	\$ (15,539)	\$ (20,469)
Preferred Shares dividends (1)	(157)	(157)
Loss attributable to common shareholders - basic	\$ (15,696)	\$ (20,626)
Weighted average number of common shares outstanding - basic (2)	27,894	28,781
<b>Loss per share - basic</b>	<b>\$ (0.56)</b>	<b>\$ (0.72)</b>
Loss attributable to common shareholders - diluted	\$ (15,696)	\$ (20,626)
Weighted average number of common shares outstanding - diluted	27,894	28,781
<b>Loss per share - diluted</b>	<b>\$ (0.56)</b>	<b>\$ (0.72)</b>

(1) Preferred Shares dividends are calculated based on an 8% annual rate, compounded quarterly, of the Original Issue Amount and assume payment in kind (payable in Preferred Shares).

(2) The weighted-average number of common shares outstanding for basic and diluted net income (loss) per share for the year ended December 31, 2022 and nine months ended September 30, 2023 includes 325,457 shares issuable upon the exercise of the Warrant at \$0.01 per share.



## SELLING STOCKHOLDERS

This prospectus covers an aggregate of up to 11,058,387 shares of our common stock that may be sold or otherwise disposed of by the selling stockholders, which number consists of (i) 10,732,930 shares of our common stock currently held by the selling stockholders and (ii) 325,457 shares of our common stock issuable upon exercise of the Warrant held by a selling stockholder. The shares offered by this prospectus may be offered from time to time by the selling stockholders. The selling stockholders may sell some, all or none of their shares. We do not know how long the selling stockholders will hold the shares offered hereunder before selling them. The selling stockholders may have sold or transferred, in transactions exempt from the registration requirements of the Securities Act, some or all of their respective shares since the date on which the information in the table below is presented. Information about the selling stockholders may change over time. As used in this prospectus, the term "selling stockholders" includes the selling stockholders listed below, and any donee, pledgee, transferee or other successor in interest selling shares received after the date of this prospectus from a selling stockholder as a gift, pledge, or other non-sale related transfer.

The following table sets forth the name of each selling stockholder, the number of shares of our common stock and the percentage of our common stock beneficially owned by each selling stockholder prior to this offering, the number of shares that may be offered under this prospectus by each selling stockholder, and the number of shares of our common stock and the percentage of our common stock to be beneficially owned by each selling stockholder after completion of this offering, assuming that all shares offered hereunder are sold as contemplated herein. The number of shares in the column "Maximum Number of Shares That May Be Offered" represents all of the shares that the selling stockholder may offer under this prospectus.

There were 33,249,075 shares of common stock outstanding as of January 22, 2024.

Beneficial ownership is determined under the rules of the SEC and generally includes voting or investment power over securities. Except in cases where community property laws apply or as indicated in the footnotes to this table, we believe that each stockholder identified in the table possesses sole voting and investment power over all shares of common stock shown as beneficially owned by the stockholder. Shares of common stock subject to options and warrants that are exercisable or exercisable within 60 days of the date of this prospectus are considered outstanding and beneficially owned by the person holding the options for the purpose of computing the percentage ownership of that person but are not treated as outstanding for the purpose of computing the percentage ownership of any other person.

Name of Selling Stockholder	Shares of common stock beneficially owned prior to this offering		Shares of common stock offered pursuant to this prospectus	Shares of common stock beneficially owned after this offering (assuming the sale of all shares that may be sold hereunder)	
	Shares of common stock	Percentage of Total Outstanding common stock (%) (1)		Shares of common stock	Percentage of total outstanding common stock (%)
Julian McIntyre(2)	3,044,836	9.16 %	3,044,836	—	*
Jeremy Blank(3)	2,224,115	6.69 %	2,224,115	—	*
Arq Limited(4)	1,026,361	3.09 %	1,026,361	—	*
FDAF Dislocated Asset Fund IV LP	925,276	2.78 %	925,276	—	*
FDAF Dislocated Asset Fund II LP	632,528	1.90 %	632,528	—	*
Vitol Energy (Bermuda) Limited	511,392	1.54 %	511,392	—	*
Exuma Capital LP	415,635	1.25 %	415,635	—	*
BNZ Investment SAL	391,030	1.18 %	391,030	—	*
Lacerta Fund	381,639	1.15 %	381,639	—	*
Integrity Coal Sales Inc	374,443	1.13 %	374,443	—	*
Clean Carbon Holdings	267,748	*	267,748	—	*
Richard Campbell-Breeden(5)	149,940	*	149,940	—	*
Infinity Project Management	125,554	*	125,554	—	*
Marsey Holdings LLC	117,697	*	117,697	—	*
Dinan Management LP	110,663	*	110,663	—	*
Gavin Colquhoun	48,150	*	48,150	—	*
Other Stockholders(6)	311,380	*	311,380	—	*

\* Designated ownership of less than 1% of our common stock.

- (1) Applicable percentage of ownership is based upon 33,249,075 shares of common stock outstanding as of January 22, 2024.
- (2) Julian McIntyre, a member of our board of directors, reported being the beneficial owner of 3,044,836 shares, of which 2,636,370 shares are held by Allard Services Limited, 348,632 shares are held by MWB Limited, 39,271 shares are held by Markham Fuels Management Limited and 20,563 shares are held by Stannard Limited. Mr. McIntyre controls Allard Services Limited and Markham Fuels Management Limited and therefore is an indirect beneficial owner of the securities reported herein. Further, Mr. McIntyre's spouse controls Stannard Limited and therefore Mr. McIntyre may be deemed to be an indirect beneficial owner of the securities reported herein. The securities reported herein do not include those shares of common stock that Mr. McIntyre may receive upon the release of an aggregate of 844,698 shares of common stock held in escrow pending the resolution of a tax matter related to the Arq Acquisition.
- (3) Jeremy Blank, a member of our board of directors, reported being the beneficial owner of 2,224,115 shares, of which 1,855,388 shares are held by YGF 100 LP ("YGF"), 43,270 shares are held by Community SPV GP LP and 325,457 shares of common stock issuable upon the exercise of a warrant to purchase common stock are held by CF Global Credit LP. Mr. Blank is the ultimate control person of YGF and is an investor in YGF; therefore he is an indirect beneficial owner of a portion of these shares. Further, Mr. Blank is the ultimate control person of Community SPV GP LP. Mr. Blank disclaims beneficial ownership of these shares except to the extent of his pecuniary interest therein. The securities reported herein do not include those shares of common stock that Mr. Blank may receive upon the release of an aggregate of 844,698 shares of common stock held in escrow pending the resolution of a tax matter related to the Arq Acquisition.
- (4) The securities reported herein include 844,698 shares of common stock held in escrow that Arq Limited stockholders may receive upon the resolution of a tax matter related to the Arq Acquisition.
- (5) Richard Campbell-Breeden, a member of our board of directors, reported being the beneficial owner of 149,940 shares, of which 142,542 shares are held by Omeshorn Holdings Limited ("Omeshorn"). Mr. Campbell-Breeden is the ultimate control person of Omeshorn and is an investor in Omeshorn; therefore he is an indirect beneficial owner of a portion of these shares. Mr. Campbell-Breeden disclaims beneficial ownership of these shares except to the extent of his pecuniary interest therein. The securities reported herein do not include those shares of common stock that Mr. Campbell-Breeden may receive upon the release of an aggregate of 844,698 shares of common stock held in escrow pending the resolution of tax matter related to the Arq Acquisition.
- (6) Includes 30 other stockholders not otherwise listed above, none of which currently owns more than .25% of the Company's common stock. Collectively, these stockholders own less than 1% of the Company's common stock. The securities reported herein do not include those shares of common stock that the stockholders may receive upon the release of an aggregate of 844,698 shares of common stock held in escrow pending the resolution of a tax matter related to the Arq Acquisition.

## DESCRIPTION OF CAPITAL STOCK

The following descriptions of our capital stock and certain provisions of our second amended and restated certificate of incorporation, our bylaws, as amended, and our Tax Asset Protection Plan (as defined below), as amended, are summaries and are qualified by reference to our second amended and restated certificate of incorporation and bylaws, copies of which have been incorporated by reference as exhibits to the registration statement of which this prospectus forms a part.

Our authorized capital stock consists of 150,000,000 shares of capital stock, par value \$0.001 per share, of which:

- 100,000,000 shares are designated as common stock; and
- 50,000,000 shares are designated as preferred stock.

As of January 22, 2024, there were 33,249,075 shares of our common stock outstanding and no shares of our preferred stock outstanding. Our board of directors is authorized, without stockholder approval except as required by the listing standards of Nasdaq, to issue additional shares of our capital stock. 50,000 shares of Series B Junior Participating Preferred Stock, par value \$0.001 per share, are authorized and reserved for issuance upon the exercise of the Rights (as defined below) under our Tax Asset Protection Plan, as described below.

### Common Stock

As of January 22, 2024, we had 33,249,075 shares of common stock issued and outstanding.

#### *Voting Rights*

Each holder of common stock is entitled to one vote for each share on all matters submitted to a vote of the stockholders. Our second amended and restated certificate of incorporation does not provide for cumulative voting rights. Our bylaws provide that the election of any director and proposals designated by the directors will be decided by a plurality of the votes cast at a meeting of the stockholders by the holders of stock entitled to vote in the election. With respect to matters other than the election of directors and proposals designated by the director as being subject to a plurality vote, such matters shall be approved if the votes cast favoring the matter exceed the votes cast opposing the matter at a meeting of the stockholders by the holders of stock entitled to vote. The holders of one-third of the voting power of the outstanding shares of Common Stock entitled to vote at the meeting, present in person or represented by proxy, shall constitute a quorum for the transaction of business at all meetings of the stockholders.

#### *Dividends*

Our bylaws provide that, subject to applicable law, dividends upon shares of our capital stock may be declared by the board of directors and may be paid in cash, in property or in shares of our capital stock, unless otherwise provided by applicable law.

#### *Liquidation*

In the event of our liquidation, dissolution or winding up, whether voluntary or involuntary, after payment or provision for payment of our debts and other liabilities and the preferential amounts to which the holders of any outstanding shares of preferred stock are entitled to receive on dissolution, liquidation, or winding up, the holders of the common stock are entitled to share on a pro rata basis in our remaining assets.

#### *Rights and Preferences*

Holders of our common stock have no preemptive, conversion, subscription or other rights, and there are no redemption or sinking fund provisions applicable to our common stock. The rights, preferences and privileges of the holders of our common stock are subject to and may be adversely affected by the rights of the holders of shares of any series of our preferred stock that we may designate in the future.

#### *Fully Paid and Nonassessable*

All of our outstanding shares of common stock are fully paid and nonassessable.

### Preferred Stock

As of January 22, 2024, there were no shares of preferred stock outstanding.

Our second amended and restated certificate of incorporation provides that our board of directors has the authority, subject to limitations prescribed by Delaware law, to issue preferred stock in one or more series, to establish from time to time the number of shares to be included in each series, and to fix the designation, powers, preferences, and rights of the shares of each series and any of its qualifications, limitations, or restrictions, in each case without further vote or action by our stockholders. Our board of directors also has the authority to increase or decrease the number of shares of any series of preferred stock, but not below the number of shares of that series then outstanding, without any further vote or action by our stockholders. Our board of directors may authorize the

issuance of preferred stock with voting or conversion rights that could adversely affect the voting power or other rights of the holders of our common stock. The issuance of preferred stock, while providing flexibility in connection with possible acquisitions and other corporate purposes, could, among other things, have the effect of delaying, deferring, or preventing a change in control of our company and might adversely affect the market price of our common stock and the voting and other rights of the holders of our common stock. We have no current plan to issue any shares of preferred stock.

#### **Warrant**

As of January 22, 2024, there was an outstanding warrant to purchase 325,457 shares of our common stock, subject to adjustment as set forth in such warrant. The Warrant has an exercise price of \$0.01 per share, subject to adjustment as set forth in the warrant, is exercisable immediately and will expire on February 1, 2030. The terms of the Warrant do not allow for cash exercise, and the Warrant may only be exercised pursuant to the terms thereof.

#### **Anti-Takeover Provisions**

Certain provisions of Delaware law, and our amended and restated certificate of incorporation and amended and restated bylaws, which are summarized below, may have the effect of delaying, deferring, or discouraging another person from acquiring control of us. They are also designed, in part, to encourage persons seeking to acquire control of us to negotiate first with our board of directors. We believe that the benefits of increased protection of our potential ability to negotiate with an unfriendly or unsolicited acquirer outweigh the disadvantages of discouraging a proposal to acquire us because negotiation of these proposals could result in an improvement of their terms.

##### ***Delaware Takeover Statute and Certain Business Combinations***

We have elected not to be governed by the provisions of Section 203 of the DGCL. In general, Section 203 prohibits a public Delaware corporation from engaging in a "business combination" with an "interested stockholder" for a period of three years after the date of the transaction in which the person became an interested stockholder, subject to certain exceptions. Our second amended and restated certificate of incorporation includes provisions requiring certain business combinations to be approved by the affirmative vote of the holders of at least a majority of the voting power of the then outstanding voting stock, voting together as a single class, including the affirmative vote of the holders of at least a majority of the voting power of the then outstanding voting stock not owned directly or indirectly by any interested stockholder (i.e. a person who owns 10% or more of our outstanding voting stock) or any affiliate of an interested stockholder. Subject to some exceptions set forth in the second amended and restated certificate of incorporation, such affirmative vote shall be required notwithstanding the fact that no vote may be required, or that a lesser percentage may be permitted, by applicable law or in any agreement with any national securities exchange or otherwise.

##### ***Removal of Directors; Vacancies.***

The DGCL provides that a director may be removed, with or without cause, by the holders of a majority of the shares entitled to vote at an election of directors. Our bylaws provide that newly created directorships resulting from an increase in the authorized number of directors and any vacancies occurring in the board of directors, may be filled by the affirmative votes of a majority of the remaining members of the board of directors, although less than a quorum. A director so elected shall hold office until the earlier of the expiration of the term of office of the director whom he or she has replaced, a successor is duly elected and qualified or the earlier of such director's death, resignation or removal.

***No Cumulative Voting.*** The DGCL provides that stockholders are not entitled to cumulate votes in the election of directors unless a corporation's certificate of incorporation provides otherwise. Our second amended and restated certificate of incorporation does not provide for cumulative voting.

***Stockholder Meetings; Requirements for Advance Notice.*** Our bylaws provide that special meetings of stockholders for any purpose or purposes may be called pursuant to a resolution approved by the board of directors or by the holders of shares entitled to cast not less than 20% of the votes at the meeting, and shall be held at such place, on such date, and at such time as the board of directors shall fix. Our bylaws provide that notice of the place, if any, date, hour, the record date for determining the stockholders entitled to vote at the meeting (if such date is different from the record date for stockholders entitled to notice of the meeting) and means of remote communication, if any, of every meeting of stockholders shall be given not less than ten days nor more than 60 days before such meeting (unless a different time is specified by law) to every stockholder entitled to vote at the meeting as of the record date for determining the stockholders entitled to notice of the meeting and that notices of special meetings shall also specify the purpose or purposes for which the meeting has been called.

***Authorized but Unissued Shares.*** Our authorized but unissued shares of common stock and preferred stock will be available for future issuances without stockholder approval, except as required by the listing standards of Nasdaq, and could be utilized for a variety of corporate purposes, including future offerings to raise additional capital, acquisitions and employee benefit plans. The existence of authorized but unissued and unreserved common stock and preferred stock could render more difficult or discourage an attempt to obtain control of the company by means of a proxy contest, tender offer, merger or otherwise.

**Tax Asset Protection Plan.** On May 5, 2017, our board of directors approved the Tax Asset Protection Plan (the "Original TAPP", and as amended up to the date of this prospectus, the "TAPP") and declared a dividend of one preferred share purchase right (each, a "Right") for each outstanding share of our common stock. During the years 2018-2023, we executed amendments to the TAPP (the "TAPP Amendments"), which extend the duration of the TAPP to a later "Final Expiration Date" and make associated changes in connection therewith. The most recent TAPP Amendment was approved at our 2023 annual meeting of stockholders and extended the Final Expiration Date to the close of business on December 31, 2024.

Subject to the terms, provisions and conditions of the TAPP, if the Rights become exercisable, each Right would initially represent the right to purchase one ten-thousandth of a shares of our Series B Junior Participating Preferred Stock, par value \$0.001 per share, for a purchase price of \$50.00, subject to certain adjustments. The description and terms of the Rights were set forth in the Original TAPP, dated as of May 5, 2017, by and between us and Computershare Trust Company, N.A., as Rights Agent, as amended.

The TAPP was adopted in an effort to protect stockholder value by attempting to diminish the risk that our ability to use certain general business credits carryforwards to reduce potential future federal income tax obligations may become substantially limited if we experience an "ownership change," as defined by Section 382 of the Internal Revenue Code. The TAPP is intended to act as a deterrent to any person acquiring beneficial ownership of 4.99% or more of our outstanding common stock without the approval of the board of directors. Stockholders who beneficially owned 4.99% or more of our outstanding common stock upon execution of the TAPP will not trigger the TAPP so long as they do not acquire beneficial ownership of additional shares of our common stock. The board of directors may, in its sole discretion, also exempt any person from triggering the TAPP.

#### **Transfer Agent and Registrar**

The transfer agent and registrar for our common stock is Computershare Trust Company, N.A.

#### **Limitations of Liability and Indemnification**

Our bylaws provide that the Company is only authorized to provide indemnification to present or former directors or officers after a determination to do so (i) by a majority vote of the directors who are not parties to such action, suit or proceeding, even though less than a quorum, or (ii) by a committee of such directors designated by a majority vote of such directors, even though less than a quorum, or (iii) if there are no such directors, or if such directors so direct, by independent legal counsel in a written opinion, or (iv) by the stockholders.

If a determination to provide indemnification is made, then to the fullest extent permitted by applicable law, any person who was or is a party or is threatened to be made a party to any threatened, pending or completed action, suit or proceeding, whether civil, criminal, administrative or investigative (other than an action by or in the right of the corporation), by reason of the fact that such person is or was a director or officer of the corporation, or is or was a director or officer of the corporation serving at the request of the corporation as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise, against expenses (including attorneys' fees), judgments, fines and amounts paid in settlement actually and reasonably incurred by such person in connection with such action, suit or proceeding if such person acted in good faith and in a manner such person reasonably believed to be in or not opposed to the best interests of the corporation, and, with respect to any criminal action or proceeding, had no reasonable cause to believe such person's conduct was unlawful, except that no indemnification shall be made in respect of any claim, issue or matter as to which such person shall have been adjudged to be liable to the corporation unless and only to the extent that the Court of Chancery of the State of Delaware or the court in which such action or suit was brought shall determine upon application that, despite the adjudication of liability but in view of all the circumstances of the case, such person is fairly and reasonably entitled to indemnity for such expenses which the Court of Chancery or such other court shall deem proper.

Our second amended and restated certificate of incorporation and amended and restated bylaws further provide that to the fullest extent permitted by law, a director shall not be personally liable to the Company or to our stockholders for monetary damages for any breach of fiduciary duty as a director. No amendment to, modification of or repeal of this provision shall apply to or have any effect on the liability or alleged liability of any director for or with respect to any acts or omissions of such by a director occurring prior to such amendment.

The limitation of liability and indemnification provisions in our organizational documents may discourage stockholders from bringing a lawsuit against directors for breach of their fiduciary duties. They may also reduce the likelihood of derivative litigation against directors and officers, even though an action, if successful, might benefit us and our stockholders. Moreover, a stockholder's investment may be harmed to the extent we pay the costs of settlement and damage awards against directors and officers pursuant to these indemnification provisions. Insofar as indemnification for liabilities arising under the Securities Act may be permitted to our directors, officers and controlling persons pursuant to the foregoing provisions, or otherwise, we have been advised that, in the opinion of the SEC, such indemnification is against public policy as expressed in the Securities Act, and is, therefore, unenforceable. There is no pending litigation or proceeding naming any of our directors or officers as to which indemnification is being sought, nor are we aware of any pending or threatened litigation that may result in claims for indemnification by any director or officer.

**Listing**

Our common stock is listed on Nasdaq under the symbol "ADES." On January 23, 2024, we announced that we expect to change our name to Arq, Inc. and our Nasdaq symbol to "ARQ" on February 1, 2024.

## PLAN OF DISTRIBUTION

The selling stockholders may offer and sell, from time to time, some or all of the shares of common stock covered by this prospectus. Registration of the shares of common stock covered by this prospectus does not mean, however, that those shares necessarily will be offered or sold, or if they are, that they will be sold pursuant to this prospectus. We will not receive any proceeds from any sale by the selling stockholders of their shares of common stock. See "Use of Proceeds." We will pay all costs, expenses and fees incurred by the Company in connection with the registration of the shares of common stock, including fees of our counsel and accountants, and fees payable to the SEC. The selling stockholders will pay all legal fees incurred by the selling stockholders in connection with the registration of the shares of common stock, as well as any underwriting discounts and commissions and similar selling expenses, if any, attributable to the sale of the shares of common stock covered by this prospectus.

The selling stockholders may sell the shares of common stock covered by this prospectus from time to time, at market prices prevailing at the time of sale, at prices related to market prices, at a fixed price or prices subject to change or at negotiated prices, in any manner permitted by the Securities Act, including any one or more of the following ways:

- on any national securities exchange or quotation service on which the shares may be listed or quoted at the time of sale;
- in privately negotiated transactions;
- through broker-dealers, who may act as agents or principals;
- in a block trade in which a broker-dealer will attempt to sell a block of shares of common stock as agent but may position and resell a portion of the block as principal to facilitate the transaction;
- through one or more underwriters on a firm commitment or best-efforts basis;
- directly to one or more purchasers;
- through selling agents; or
- in any combination of the above.

In effecting sales, brokers or dealers engaged by a selling stockholder may arrange for other brokers or dealers to participate. Broker-dealer transactions may include:

- purchases of the shares of common stock by a broker-dealer as principal and resales of the shares of common stock by the broker-dealer for its account pursuant to this prospectus;
- ordinary brokerage transactions; or
- transactions in which the broker-dealer solicits purchasers.

At any time a particular offer of the shares of common stock covered by this prospectus is made, a prospectus supplement, if required, will be distributed which will set forth the aggregate amount of shares of common stock covered by this prospectus being offered and the terms of the offering, including the name or names of any underwriters, dealers, brokers or agents, any option under which underwriters may purchase additional shares of common stock from the selling stockholder(s), any discounts, commissions, concessions and other items constituting compensation from the selling stockholder(s) and any discounts, commissions or concessions allowed or reallocated or paid to dealers. Such prospectus supplement, and, if necessary, a post-effective amendment to the registration statement of which this prospectus is a part, will be filed with the SEC to reflect the disclosure of additional information with respect to the distribution of the shares of common stock covered by this prospectus.

In connection with the sale of the shares of common stock covered by this prospectus through underwriters, underwriters may receive compensation in the form of underwriting discounts or commissions and may also receive commissions from purchasers of shares of common stock for whom they may act as agent. Underwriters may sell to or through dealers, and such dealers may receive compensation in the form of discounts, concessions or commissions from the underwriters and/or commissions from the purchasers for whom they may act as agent.

Any underwriters, broker-dealers or agents participating in the distribution of the shares of common stock covered by this prospectus may be deemed to be "underwriters" within the meaning of the Securities Act, and any commissions received by any of those underwriters, broker-dealers or agents may be deemed to be underwriting commissions under the Securities Act. The selling stockholders and any broker-dealers or agents that are involved in selling the securities may be deemed to be "underwriters" within the meaning of the Securities Act in connection with such sales. In such event, any commissions received by such broker-dealers or agents and any profit on the resale of the securities purchased by them may be deemed to be underwriting commissions or discounts under the Securities Act.

Selling stockholders may enter into hedging transactions with broker-dealers or other financial institutions. In connection with such transactions, broker-dealers or other financial institutions may engage in short sales of shares of common stock in the course of hedging transactions, broker-dealers or other financial institutions may engage in short sales of shares of common stock in the course of hedging the positions they assume with a selling stockholder. Selling stockholders may also sell shares of common stock short and redeliver the securities to close out such short positions. Selling stockholders may also enter into option or other transactions with broker-dealers or other financial institutions which require the delivery to such broker-dealer or other financial institution of shares of common stock offered by this prospectus, which shares such broker-dealer or other financial institution may resell pursuant to this prospectus, as supplemented or amended to reflect such transaction to the extent required. Selling stockholders may also pledge shares of common stock offered hereby to a broker-dealer or other financial institution, and, upon a default, such broker-dealer or other financial institution, may effect sales of the pledged securities pursuant to this prospectus, as supplemented or amended to reflect such transaction to the extent required.

The selling stockholders may enter into derivative transactions with third parties, or sell shares of common stock to third parties in privately negotiated transactions. If the applicable prospectus supplement indicates, in connection with those derivatives, the third parties may sell shares of common stock covered by this prospectus and the applicable prospectus supplement, including in short sale transactions. If so, the third party may use shares of common stock pledged by a selling stockholder or borrowed from a selling stockholder or others to settle those sales or to close out any related open borrowings of stock, and may use shares of common stock received from such selling stockholder in settlement of those derivatives to close out any related open borrowings of stock. The third party in such sale transactions will be an underwriter and, if not identified in this prospectus, will be identified in the applicable prospectus supplement (or a post-effective amendment).

The selling stockholders may authorize underwriters, dealers and agents to solicit from third parties offers to purchase shares of common stock under contracts providing for payment and delivery on future dates. The applicable prospectus supplement will describe the material terms of these contracts, including any conditions to the purchasers' obligations, and will include any required information about commissions the selling stockholders may pay for soliciting these contracts.

Agents, underwriters and dealers may be entitled under agreements which may be entered into with us or selling stockholders to indemnification by us or selling stockholders against specified liabilities, including liabilities incurred under the Securities Act, or to contribution by us or selling stockholders to payments it may be required to make in respect of such liabilities. The prospectus supplement will describe the terms and conditions of such indemnification or contribution. Some of the agents, underwriters or dealers, or their affiliates may be customers of, engage in transactions with or perform services for us or our subsidiaries in the ordinary course of business.

In connection with the offering, the underwriters may purchase and sell shares of common stock in the open market. These transactions may include short sales, stabilizing transactions and purchases to cover positions created by short sales. Short sales involve the sale by the underwriters of a greater number of shares than they are required to purchase in the offering. "Covered" short sales are sales made in an amount not greater than the underwriters' option to purchase additional shares from the selling stockholders in the offering. The underwriters may close out any covered short position by either exercising their option to purchase additional shares or purchasing shares in the open market. In determining the source of shares to close out the covered short position, the underwriters will consider, among other things, the price of shares available for purchase in the open market as compared to the price at which they may purchase shares through the overallotment option. "Naked" short sales are any sales in excess of such option. The underwriters must close out any naked short position by purchasing shares in the open market. A naked short position is more likely to be created if the underwriters are concerned that there may be downward pressure on the price of the common stock in the open market after pricing that could adversely affect investors who purchase in the offering. Stabilizing transactions consist of various bids for or purchases of common stock made by the underwriters in the open market prior to the completion of the offering.

The underwriters may also impose a penalty bid. This occurs when a particular underwriter repays to the underwriters a portion of the underwriting discount received by it because the representatives have repurchased shares sold by or for the account of such underwriter in stabilizing or short covering transactions.

Purchases to cover a short position and stabilizing transactions may have the effect of preventing or retarding a decline in the market price of the Company's stock, and together with the imposition of the penalty bid, may stabilize, maintain or otherwise affect the market price of the common stock. As a result, the price of the common stock may be higher than the price that otherwise might exist in the open market. If these activities are commenced, they may be discontinued at any time.

Certain underwriters, agents or dealers or their affiliates may have provided from time to time, and may provide in the future, investment, commercial banking, derivatives and financial advisory services to the Company, the selling stockholders and their respective affiliates in the ordinary course of business, for which they have received or may receive customary fees and commissions.

In addition, a selling stockholder that is an entity may elect to make a pro rata in-kind distribution of securities to its members, partners or stockholders pursuant to the registration statement of which this prospectus is a part by delivering a prospectus.



Such members, partners or stockholders would thereby receive freely tradeable securities pursuant to the distribution through the registration statement of which this prospectus is a part. To the extent a distributee is an affiliate of ours (or to the extent otherwise required by law), we may file a prospectus supplement in order to permit the distributees to use the prospectus to resell the securities acquired in the distribution.

Some of the shares of common stock covered by this prospectus may be sold in private transactions or under Rule 144 under the Securities Act rather than pursuant to this prospectus.

## LEGAL MATTERS

The validity of the shares of common stock offered hereby will be passed upon for us by Gibson, Dunn & Crutcher LLP. Certain legal matters in connection with the shares of common stock offered hereby may be passed upon for any underwriters, dealers or agents by counsel named in the applicable prospectus supplement.

## EXPERTS

The consolidated financial statements of Advanced Emissions Solutions, Inc. and subsidiaries (the “Company”) as of December 31, 2022 and 2021 and for the years then ended, incorporated in this prospectus by reference from the Annual Report on Form 10-K of the Company for the year ended December 31, 2022, and the effectiveness of internal control over financial reporting, have been audited by Moss Adams, LLP, an independent registered public accounting firm, as stated in their reports, which are incorporated herein by reference. Such consolidated financial statements are incorporated by reference in reliance upon the reports of such firm given their authority as experts in accounting and auditing.

The consolidated financial statements of Arq Limited as of 31 December 2022 and 2021, and for each of the two years in the period ended 31 December 2022, appearing in this registration statement have been audited by Ernst & Young LLP, independent auditors, as set forth in their report thereon (which contains an explanatory paragraph describing a basis of preparation other than going concern as described in Note 2 to the consolidated financial statements) appearing elsewhere herein, and are included in reliance upon such report given on the authority of such firm as experts in accounting and auditing.

---

---

---

11,058,387 Shares

**Advanced Emissions Solutions, Inc.**

Common Stock

---

**Prospectus**

---



Advanced Emissions Solutions, Inc.  
Advancing **Cleaner** Energy

, 2024

---

---

---

**PART II**  
**INFORMATION NOT REQUIRED IN PROSPECTUS**

**Item 13. Other Expenses of Issuance and Distribution.**

The following table sets forth the fees and expenses, other than underwriting discounts and commissions, payable by us in connection with the offering described in this registration statement. All amounts shown are estimates other than the SEC registration fee and the FINRA filing fee.

SEC registration fee	\$	4,962
FINRA filing fee		*
Printing fees and expenses		*
Legal fees and expenses		*
Accounting fees and expenses		*
Miscellaneous expenses		*
		<hr/>
Total		<hr/> <hr/> \$ *

\* The applicable prospectus supplement will set forth the estimated aggregate amount of expenses payable in respect of any offering of securities.

**Item 14. Indemnification of Directors and Officers.**

Section 145 of the DGCL provides that a corporation may indemnify directors and officers as well as other employees and individuals against expenses (including attorneys' fees), judgments, fines and amounts paid in settlement actually and reasonably incurred by such person in connection with any threatened, pending or completed actions, suits or proceedings in which such person is made a party by reason of such person being or having been a director, officer, employee or agent to the registrant. The DGCL provides that Section 145 is not exclusive of other rights to which those seeking indemnification may be entitled under any bylaw, agreement, vote of stockholders or disinterested directors or otherwise. Our amended and restated bylaws that will be effective upon the closing of this offering provide for indemnification by the registrant of its directors, officers and employees to the fullest extent permitted by the DGCL.

Section 102(b)(7) of the DGCL permits a corporation to provide in its certificate of incorporation that a director of the corporation shall not be personally liable to the corporation or its stockholders for monetary damages for breach of fiduciary duty as a director, except for liability (i) for any breach of the director's duty of loyalty to the corporation or its stockholders, (ii) for acts or omissions not in good faith or which involve intentional misconduct or a knowing violation of law, (iii) for unlawful payments of dividends or unlawful stock repurchases, redemptions or other distributions, or (iv) for any transaction from which the director derived an improper personal benefit. Our amended and restated certificate of incorporation that will be effective upon the closing of this offering provides for such limitation of liability.

We maintain standard policies of insurance under which coverage is provided (a) to our directors and officers against loss arising from claims made by reason of breach of duty or other wrongful act, and (b) to us with respect to payments we may make to our officers and directors pursuant to the above indemnification provision or otherwise as a matter of law.

In addition, any Underwriting Agreement to be filed and incorporated by reference as an exhibit to this registration statement may provide for indemnification of our directors and officers by the underwriters against certain liabilities.

**Item 15. Recent Sales of Unregistered Securities.**

Within the past three years, the Registrant has sold the following securities:

On February 1, 2023, we entered into a Securities Purchase Agreement (the "Purchase Agreement") with Arq Limited, pursuant to which the Company acquired all of the direct and indirect equity interests of Arq's subsidiaries (collectively, the "Purchased Interests") in exchange for consideration consisting of (i) 3,814,864 shares of common stock, par value \$0.001 per share, of ADES (the "Common Stock"), representing 19.9% of the outstanding shares of Common Stock prior to the completion of the transactions contemplated by the Purchase Agreement, and (ii) 5,294,462 shares of Series A Convertible Preferred Stock, par value

\$0.001 per share, of ADES (the "Series A Preferred Stock" and the acquisition by ADES of the Purchased Interests, the "Transaction"). At our 2023 Annual Meeting of Stockholders held on June 13, 2023, our stockholders approved the conversion of all shares of the Series A Preferred Stock into common stock and the conversion of such shares occurred on such date. The issuance of the securities in the Transaction was deemed to be exempt from registration under the Securities Act in reliance upon Section 4(a)(2) of the Securities Act, and did not involve any underwriters, underwriting discounts or commissions or any public offering.

In connection with the Transaction, on February 1, 2023, the Company also issued CF Global Credit LP warrant to purchase 325,457 shares of common stock at an exercise price of \$0.01 per share. The warrant has a term of 10 years and contains a cashless exercise provision. The issuance of the warrant was deemed to be exempt from registration under the Securities Act in reliance upon Section 4(a)(2) of the Securities Act, and did not involve any underwriters, underwriting discounts or commissions or any public offering.

On February 1, 2023, the Company further entered into subscription agreements (the "Investor Subscription Agreements") with certain persons pursuant to which certain persons (the "Subscribers") subscribed for and purchased shares of Common Stock for an aggregate purchase price of approximately \$15.4 million and at a price per share of \$4.00 (the "PIPE Price Per Share" and such transaction, the "PIPE Investment"). The securities issued to the Subscribers under the Investor Subscription Agreements were issued pursuant to an exemption from registration under Section 4(a)(2) of the Securities Act of 1933, as amended (the "Securities Act"), Rule 506 of Regulation D, which is promulgated thereunder, and Regulations S of the Securities Act. ADES is relying on this exemption from registration based in part on representations made by each of the Subscribers under the Investor Subscription Agreements.

On July 17, 2023, the Company entered into a Subscription Agreement (the "Subscription Agreement") with Mr. Robert Rasmus and entities controlled by Mr. Rasmus, in connection with his appointment as the Company's President and Chief Executive Officer. Pursuant to the Subscription Agreement, Mr. Rasmus subscribed for and agreed to purchase 950,000 shares of Common Stock from the Company for an aggregate purchase price of \$1.8 million (at a price per share of approximately \$1.90). In September 2023, the Company received cash of \$1.0 million and issued 527,779 shares of Common Stock to Mr. Rasmus pursuant to the Subscription Agreement. The Company expects to receive the remaining cash of \$0.8 million due under the Subscription Agreement during the first quarter of 2024 and, when received, will issue Mr. Rasmus 422,221 shares of Common Stock. The issuance of the Common Stock pursuant to the Subscription Agreement was deemed to be exempt from registration under the Securities Act in reliance upon Section 4(a)(2) of the Securities Act.

**Item 16. Exhibits and Financial Statement Schedules.**

<b>Exhibit Number</b>	<b>Description</b>
1.1*	Form of Underwriting Agreement.
3.1	<a href="#">Second Amended and Restated Certificate of Incorporation of Advanced Emissions Solutions, Inc. (filed with the SEC as Exhibit 3.1 to the Company's Quarterly Report on Form 10-Q filed with the SEC on August 9, 2013 and incorporated herein by reference).</a>
3.2	<a href="#">Conformed Copy of the Bylaws of Advanced Emissions Solutions, Inc. (filed with the SEC as Exhibit 3.1 to the Company's Quarterly Report on Form 10-Q filed with the SEC on November 8, 2023 and incorporated herein by reference).</a>
3.3	<a href="#">Certificate of Designation, Preferences, and Rights of Series B Junior Participating Preferred Stock of Advanced Emissions Solutions, Inc. (incorporated by reference to Exhibit 3.1 to the Current Report on Form 8-K (File No. 001-37822) filed by Advanced Emissions Solutions, Inc. with the SEC on May 8, 2017).</a>
4.1	<a href="#">Tax Asset Protection Plan dated as of May 5, 2017, by and between the Company and Computershare Trust Company N.A., as rights agent, which includes as Exhibit B the Form of Rights Certificate (incorporated by reference to Exhibit 4.1 to the Current Report on Form 8-K (File No. 001-37822) filed by Advanced Emissions Solutions, Inc. with the SEC on May 8, 2017).</a>
4.2	<a href="#">First Amendment to Tax Asset Protection Plan, dated as of April 6, 2018 by and between the Company and Computershare Trust Company, N.A., as rights agent (incorporated by reference to Exhibit 4.2 to the Current Report on Form 8-K (File No. 001-37822) filed on April 11, 2018).</a>
4.3	<a href="#">Second Amendment to Tax Asset Protection Plan, dated as of April 5, 2019 by and between the Company and Computershare Trust Company, N.A., as rights agent (incorporated by reference to Exhibit 4.3 to the Current Report on Form 8-K (File No. 001-37822) filed on April 11, 2019).</a>
4.4	<a href="#">Third Amendment to Tax Asset Protection Plan, dated as of April 8, 2020 by and between the Company and Computershare Trust Company, N.A., as rights agent (incorporated by reference to Exhibit 4.4 to the Current Report on Form 8-K (File No. 001-37822) filed on April 9, 2020).</a>
4.5	<a href="#">Fourth Amendment to Tax Asset Protection Plan, dated as of April 9, 2021 by and between the Company and Computershare Trust Company, N.A., as rights agent (incorporated by reference to Exhibit 4.5 to the Current Report on Form 8-K (File No. 001-37822) filed on April 13, 2021).</a>
4.6	<a href="#">Fifth Amendment to Tax Asset Protection Plan, dated as of March 15, 2022 by and between the Company and Computershare Trust Company, N.A., as rights agent (incorporated by reference to Exhibit 4.6 to the Current Report on Form 8-K (File No. 001-37822) filed on March 16, 2022).</a>
4.7	<a href="#">Sixth Amendment to Tax Asset Protection Plan, dated as of April 13, 2023 by and between the Company and Computershare Trust Company, N.A., as rights agent (incorporated by reference to Exhibit 4.7 to the Current Report on Form 8-K (File No. 001-37822) filed on April 14, 2023).</a>
4.8	<a href="#">Form of Warrant (incorporated by reference to Exhibit 4.1 to the Current Report on Form 8-K (File No. 002-37822) filed on February 1, 2023).</a>
5.1	<a href="#">Opinion of Gibson, Dunn &amp; Crutcher LLP.</a>
23.1	<a href="#">Consent of Moss Adams LLP.</a>
23.2	<a href="#">Consent of Ernst &amp; Young LLP, UK.</a>
23.3	<a href="#">Consent of Gibson, Dunn &amp; Crutcher LLP (included in Exhibit 5.1).</a>
24.1	<a href="#">Power of Attorney (included on the signature page to the initial filing of this registration statement).</a>
99.1 **	<a href="#">Audited consolidated financial statements of Arq Ltd as of December 31, 2022 and December 31, 2021 and for each of the two years in the years then ended, and the notes thereto.</a>
107	<a href="#">Filing Fee Table.</a>

\* To be filed by amendment or as an exhibit to a document to be incorporated by reference herein in connection with an offering of securities. Previously filed with this registration statement on January 4, 2024.

† Schedules and exhibits have been omitted pursuant to Item 601(a)(5) of Regulation S-K. The Company hereby undertakes to furnish supplemental copies of any of the omitted schedules and exhibits upon request by the SEC.

**Item 17. Undertakings.**

The undersigned registrant hereby undertakes:

- (1) To file, during any period in which offers or sales are being made, a post-effective amendment to this registration statement:
  - (i) To include any prospectus required by Section 10(a)(3) of the Securities Act of 1933;
  - (ii) To reflect in the prospectus any facts or events arising after the effective date of the registration statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in the registration statement. Notwithstanding the foregoing, any increase or decrease in volume of securities offered (if the total dollar value of securities offered would not exceed that which was registered) and any deviation from the low or high end of the estimated maximum offering range may be reflected in the form of prospectus filed with the Commission pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than a 20% change in the maximum aggregate offering price set forth in the "Calculation of Registration Fee" table in the effective registration statement.
  - (iii) To include any material information with respect to the plan of distribution not previously disclosed in this registration statement or any material change to such information in this registration statement;

provided, however, that paragraphs (1)(i), (1)(ii) and (1)(iii) of this section do not apply if the information required to be included in a post-effective amendment by those paragraphs is contained in reports filed with or furnished to the Commission by the registrant pursuant to Section 13 or Section 15(d) of the Securities Exchange Act of 1934 that are incorporated by reference in this registration statement, or is contained in a form of prospectus filed pursuant to Rule 424(b) that is part of this registration statement.
- (2) That, for the purpose of determining any liability under the Securities Act of 1933, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.
- (3) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.
- (4) That, for the purpose of determining any liability under the Securities Act of 1933 to any purchaser, each prospectus filed by the registrant pursuant to Rule 424(b) as part of this registration statement relating to an offering, other than registration statements relying on Rule 430B or other than prospectuses filed in reliance on Rule 430A, shall be deemed to be part of and included in this registration statement as of the date it is first used after effectiveness. Provided, however, that no statement made in this registration statement or prospectus that is part of this registration statement or made in a document incorporated or deemed incorporated by reference into the registration statement or prospectus that is part of the registration statement will, as to a purchaser with a time of contract of sale prior to such first use, supersede or modify any statement that was made in the registration statement or prospectus that was part of the registration statement or made in any such document immediately prior to such date of first use.
- (5) That, for purposes of determining any liability under the Securities Act of 1933, each filing of the registrant's annual report pursuant to Section 13(a) or 15(d) of the Exchange Act of 1934 (and, where applicable, each filing of an employee benefit plan's annual report pursuant to Section 15(d) of the Exchange Act of 1934) that is incorporated by reference in this registration statement shall be deemed to be a new registration statement relating to the securities offered herein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.
- (6) Insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to directors, officers and controlling persons of the registrant pursuant to the indemnification provisions described herein, or otherwise, the registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Securities Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the registrant of expenses incurred or paid by a director, officer or controlling person of the registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the registrant will, unless in the opinion of its counsel the matter has been settled by controlling



precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Securities Act of 1933 and will be governed by the final adjudication of such issue.

- (7) That, for purposes of determining any liability under the Securities Act of 1933, the information omitted from the form of prospectus filed as part of this registration statement in reliance upon Rule 430A and contained in a form of prospectus filed by the registrant pursuant to Rule 424(b)(1) or (4) or 497(h) under the Securities Act shall be deemed to be part of this registration statement as of the time it was declared effective.
- (8) That, for the purpose of determining any liability under the Securities Act of 1933, each post-effective amendment that contains a form of prospectus shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

**SIGNATURES**

Pursuant to the requirements of the Securities Act of 1933, the Registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-3 and has duly caused this Registration Statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Greenwood Village, Colorado, on January 25, 2024.

ADVANCED EMISSIONS SOLUTIONS, INC.

By:           /s/ Robert Rasmus            
           Name: Robert Rasmus  
           Title: Chief Executive Officer

Pursuant to the requirements of the Securities Act of 1933, as amended, the following persons have signed this Registration Statement in the capacities and on the date indicated.

Name	Title	Date
<u>          /s/ Robert Rasmus          </u> Robert Rasmus	Chief Executive Officer (Principal Executive Officer)	January 25, 2024
<u>          /s/ Stacia Hansen          </u> Stacia Hansen	Chief Accounting Officer (Principal Accounting and Financial Officer)	January 25, 2024
* <u>          Jeremy Blank          </u>	Director	January 25, 2024
* <u>          Laurie Bergman          </u>	Director	January 25, 2024
* <u>          Richard Campbell-Breeden          </u>	Director	January 25, 2024
* <u>          Carol Eicher          </u>	Director	January 25, 2024
* <u>          Gilbert Li          </u>	Director	January 25, 2024
* <u>          Julian McIntyre          </u>	Director	January 25, 2024
* <u>          L. Spencer Wells          </u>	Director	January 25, 2024

\*Pursuant to Power of Attorney

By:           /s/ Robert Rasmus            
           Robert Rasmus  
           Attorney-in-Fact

## Calculation of Filing Fee Tables

### FORM S-3

(Form Type)

### Advanced Emissions Solutions, Inc.

(Exact Name of Registrant as Specified in its Charter)

Table 1: Newly Registered Securities

	Security Type	Security Class Title	Fee Calculation or Carry Forward Rule	Amount Registered(1)	Proposed Maximum Offering price Per Unit	Maximum Aggregate Offering Price(2)	Fee Rate	Amount of Registration Fee
Fees to be Paid	Equity (2)	Common stock, par value \$0.001 per share	457(a) and 457(c)	11,058,387	\$3.04 (3)	\$ 33,617,496	0.0001476 \$	4,962
Fees Previously Paid	Equity (2)	Common stock, par value \$0.001 per share	457(a) and 457(c)	10,709,755	\$2.74 (4)	\$ 29,344,729	0.0001476 \$	4,331
		Total Offering Amounts				\$ 33,617,496	\$	4,962
		Total Fees Previously Paid					\$	4,331
		Total Fee Offsets					\$	—
		Net Fee Due					\$	631

- (1) Pursuant to Rule 416 under the Securities Act of 1933, as amended, the shares being registered hereunder include such indeterminate number of shares of common stock as may be issuable with respect to the shares being registered hereunder, as a result of stock splits, stock dividends or other similar transactions.
- (2) This registration statement registers 11,058,387 shares of common stock for resale by the selling stockholders. This registration statement was initially filed with the Securities and Exchange Commission (“SEC”) on January 4, 2024 as a Registration Statement on Form S-1 (File No. 333-276375) registering 10,709,755 shares of common stock (the “Initial Registration Statement”), at which time a filing fee based on a bona fide estimate of the maximum offering price, computed in accordance with Rule 457 under the Securities Act, was paid as described in note 4 below.
- (3) Estimated solely for the purpose of calculating the registration fee pursuant to Rule 457(c) under the Securities Act of 1933, as amended (“Securities Act”), based on the average of the high and low prices of a share of common stock on The Nasdaq Global Market on January 23, 2024, which was \$3.04.
- (4) Estimated in connection with the filing of the Initial Registration Statement solely for the purpose of calculating the amount of the registration fee pursuant to Rule 457(c) under the Securities Act, based on the average of the high and low prices of a share of common stock on The Nasdaq Global Market on January 3, 2024, which was \$2.74.

Gibson, Dunn & Crutcher LLP

2001 Ross Avenue  
Dallas, TX 75201  
Tel 214.698.3100  
gibsondunn.com

January 25, 2024

Advanced Emissions Solutions, Inc.  
8051 E. Maplewood Ave., Suite 210  
Greenwood Village, CO 80111

Re: *Advanced Emissions Solutions, Inc.*  
*Registration Statement on Form S-3*

Ladies and Gentlemen:

We have examined the Registration Statement on Form S-3 (the “Registration Statement”) of Advanced Emissions Solutions, a Delaware corporation (the “Company”), to be filed on the date hereof with the Securities and Exchange Commission (the “Commission”) pursuant to the Securities Act of 1933, as amended (the “Securities Act”), in connection with the registration by the Company for resale from time to time by the selling stockholders identified in the Registration Statement (the “Selling Stockholders”) of (a) up to 11,058,387 shares of the Company’s common stock, par value \$0.001 per share (the “Common Stock”), beneficially owned by the Selling Stockholders, 10,732,930 of which are issued and outstanding on the date hereof (the “Outstanding Shares”) and the remainder of which are issuable from time to time upon conversion of the Warrant to Purchase Shares of Common Stock of the Company (the “Warrant”) held by a certain Selling Stockholder as of the date hereof (the “Warrant Shares”), and (b) the associated preferred share purchase rights (the “Rights”), the terms of which are set forth in the Tax Asset Protection Plan, dated as of May 5, 2017, by and between the Company and Computershare Trust Company, N.A., as Rights Agent (as amended through the date hereof, the “TAPP”).

In arriving at the opinions expressed below, we have examined originals, or copies certified or otherwise identified to our satisfaction as being true and complete copies of the originals, of such documents, corporate records, certificates of officers of the Company and of public officials and other instruments as we have deemed necessary or advisable to enable us to render the opinions set forth below. In our examination, we have assumed without independent investigation the genuineness of all signatures, the legal capacity and competency of all natural persons, the authenticity of all documents submitted to us as originals and the conformity to original documents of all documents submitted to us as copies.

Based upon the foregoing, and subject to the assumptions, exceptions, qualifications and limitations set forth herein, we are of the opinion that:

---

1. The Outstanding Shares are validly issued, fully paid and non-assessable and the Rights associated with the Outstanding Shares are validly issued.
2. The Warrant Shares, when and if issued from time to time upon conversion of the Warrant in accordance with its terms, and for any additional consideration specified therein, which consideration, on a per-share basis, shall not be less than the par value of the Common Stock, will be validly issued, fully paid and non-assessable and the Rights associated with the Warrant Shares will be validly issued.

With respect to our opinions concerning the Rights, we express no opinion regarding the TAPP or whether or not the Board of Directors of the Company in adopting the TAPP and approving the issuance of the Rights acted in a manner consistent with its fiduciary duties under applicable law and such opinions are based upon the assumption that such adoption and issuance was consistent with such duties. Furthermore, we advise you that the Board of Directors of the Company may be required to redeem or terminate, or take other action with respect to, the Rights at some future time based on the facts and circumstances existing at that time.

- A. We render no opinion herein as to matters involving the laws of any jurisdiction other than the Delaware General Corporation Law. This opinion is limited to the effect of the current state of Delaware General Corporation Law and the facts as they currently exist. We assume no obligation to revise or supplement this opinion in the event of future changes in such laws or the interpretations thereof or such facts.

We consent to the filing of this opinion as an exhibit to the Registration Statement, and we further consent to the use of our name under the caption "Legal Matters" in the Registration Statement and the prospectus that forms a part thereof. In giving these consents, we do not thereby admit that we are within the category of persons whose consent is required under Section 7 of the Securities Act or the rules and regulations of the Commission promulgated thereunder.

Very truly yours,

/s/ Gibson, Dunn & Crutcher LLP

## **Consent of Independent Registered Public Accounting Firm**

We consent to the incorporation by reference in this pre-effective Amendment No. 1 to Registration Statement on Form S-1, on Form S-3 of Advanced Emissions Solutions, Inc. of our reports dated March 8, 2023, relating to the consolidated financial statements of Advanced Emissions Solutions, Inc. and subsidiaries (the "Company") and the effectiveness of internal control over financial reporting of the Company, appearing in the Annual Report on Form 10-K of the Company for the year ended December 31, 2022, filed with the Securities and Exchange Commission. We also consent to the reference to us under the heading "Experts" in such Registration Statement.

/s/ Moss Adams LLP

Denver, Colorado  
January 25, 2024

**CONSENT OF INDEPENDENT AUDITORS**

We consent to the reference to our firm under the caption "Experts" and to the use of our report dated 4 January 2024, with respect to the consolidated financial statements of Arq Limited included in the Pre-Effective Amendment No. 1 to Form S-1 on Form S-3 (Form S-3) of Advanced Emissions Solutions, Inc., filed with the Securities and Exchange Commission.

/s/ Ernst & Young LLP  
London, United Kingdom  
25 January 2024