

**Preliminary Prospectus Supplement
(to Prospectus dated August 24, 2022)**

2,000,000 Shares



Common Stock

The selling stockholders identified in this prospectus supplement are selling 2,000,000 shares of our common stock.

We are not selling any securities under this prospectus supplement and will not receive any of the proceeds from the sale of these shares of our common stock by the selling stockholders. We will pay the expenses incurred in registering the shares, including legal and accounting fees, but will not pay underwriting fees or commissions.

Our common stock is listed on the Nasdaq Global Select Market under the symbol "MKSI." The last reported sale price of the common stock on the Nasdaq Global Select Market on May 31, 2023 was \$97.31 per share.

The underwriter has agreed to purchase the shares of common stock from the selling stockholders at a price of \$96.76 per share, which will result in \$193,520,000 of proceeds to the selling stockholders before expenses. The underwriter may offer the shares of common stock in transactions on the Nasdaq Global Select Market, in the over-the-counter market, through negotiated transactions or otherwise at market prices prevailing at the time of sale, at prices related to prevailing market prices or at negotiated prices. We have agreed to reimburse the underwriter for certain expenses in connection with this offering. See "Underwriting" beginning on page S-15.

Investing in our common stock involves significant risks. See "[Risk Factors](#)" on page S-3 and the risks discussed in the documents we file with the Securities and Exchange Commission that are incorporated by reference herein. You should carefully read this prospectus supplement, the accompanying prospectus and the documents incorporated herein and therein by reference before making any investment decision.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or passed upon the adequacy or accuracy of this prospectus supplement or the accompanying prospectus. Any representation to the contrary is a criminal offense.

The underwriter expects to deliver the shares of common stock against payment on or about June 6, 2023.

J.P. Morgan

The date of this prospectus supplement is June 1, 2023.

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Prospectus

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ABOUT THIS PROSPECTUS SUPPLEMENT

This document is in two parts. The first part is this prospectus supplement, which describes the specific terms of the offering of shares of common stock and adds to and updates information contained in the accompanying prospectus and the documents incorporated by reference herein. The second part, the accompanying prospectus, including the documents incorporated by reference, contains a description of our capital stock and gives more general information, some of which may not apply to the shares of common stock offered hereby. To the extent there is a conflict between the information contained in this prospectus supplement and the information contained in the accompanying prospectus or any document incorporated by reference therein filed prior to the date of this prospectus supplement, you should rely on the information in this prospectus supplement; provided that if any statement in one of these documents is inconsistent with a statement in another document having a later date—for example, a document incorporated by reference in the accompanying prospectus—the statement in the document having the later date modifies or supersedes the earlier statement.

We further note that the representations, warranties and covenants made by us in any agreement that is filed as an exhibit to any document that is incorporated by reference herein were made solely for the benefit of the parties to such agreement, including, in some cases, for the purpose of allocating risk among the parties to such agreements, and should not be deemed to be a representation, warranty or covenant to you. Moreover, such representations, warranties or covenants were accurate only as of the date when made. Accordingly, such representations, warranties and covenants should not be relied on as accurately representing the current state of our affairs.

Neither we, the selling stockholders nor the underwriter have authorized anyone to provide any information other than that contained or incorporated by reference in this prospectus supplement, the accompanying prospectus or in any free writing prospectus prepared by or on behalf of us or to which we have referred you. We, the selling stockholders and the underwriter take no responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. The information contained in this prospectus supplement or the accompanying prospectus, or incorporated by reference herein or therein is accurate only as of the respective dates thereof, regardless of the time of delivery of this prospectus supplement and the accompanying prospectus or of any sale of our common stock. It is important for you to read and consider all information contained in this prospectus supplement and the accompanying prospectus, including the documents incorporated by reference herein and therein, in making your investment decision. You should also read and consider the information in the documents to which we have referred you in the sections entitled “Where You Can Find More Information” and “Incorporation of Certain Documents by Reference” in this prospectus supplement and in the accompanying prospectus.

The selling stockholders are offering to sell, and seeking offers to buy, shares of our common stock only in jurisdictions where offers and sales are permitted. The distribution of this prospectus supplement and the accompanying prospectus and the offering of the common stock in certain jurisdictions may be restricted by law. Persons outside the United States who come into possession of this prospectus supplement and the accompanying prospectus must inform themselves about, and observe any restrictions relating to, the offering of the common stock and the distribution of this prospectus supplement and the accompanying prospectus outside the United States. This prospectus supplement and the accompanying prospectus do not constitute, and may not be used in connection with, an offer to sell, or a solicitation of an offer to buy, any securities offered by this prospectus supplement and the accompanying prospectus by any person in any jurisdiction in which it is unlawful for such person to make such an offer or solicitation.

Unless the context otherwise indicates, references in this prospectus to “we,” “our” and “us” refer, collectively, to MKS Instruments, Inc., a Massachusetts corporation, and its consolidated subsidiaries.

FORWARD-LOOKING STATEMENTS

This prospectus supplement and the accompanying prospectus include and incorporate forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended (the “Securities Act”), and Section 21E of the Securities Exchange Act of 1934, as amended (the “Exchange Act”), regarding our future financial performance, business prospects and growth. These statements are only predictions based on current assumptions and expectations. Any statements that are not statements of historical fact (including statements containing the words “will,” “projects,” “intends,” “believes,” “plans,” “anticipates,” “expects,” “estimates,” “forecasts,” “continues” and similar expressions) should be considered to be forward-looking statements. Actual events or results may differ materially from those in the forward-looking statements included or incorporated in this prospectus supplement and the accompanying prospectus.

Among the important factors that could cause actual events to differ materially from those in the forward-looking statements that we make include, but are not limited to: the need to generate sufficient cash flows to service and repay the substantial indebtedness we incurred in connection with our acquisition of Atotech Limited (“Atotech” and such transaction, the “Atotech Acquisition”), which we completed in August 2022; the terms of our existing credit facilities under which we incurred such debt; our entry into the chemicals technology business through the Atotech Acquisition, in which we do not have experience and which may expose us to significant additional liabilities; the risk that we are unable to integrate Atotech successfully or realize the anticipated synergies, cost savings and other benefits of the Atotech Acquisition; the ongoing assessment of the ransomware event we identified on February 3, 2023, including legal, reputational, financial and contractual risks resulting from the incident, including assessments with respect to recovery of unfulfilled orders, and other risks related to cybersecurity, data privacy and intellectual property; competition from larger, more advanced or more established companies in our markets; the ability to successfully grow our business and the businesses of Atotech and Electro Scientific Industries, Inc., which we acquired in February 2019, and financial risks associated with those and potential future acquisitions, including goodwill and intangible asset impairments; manufacturing and sourcing risks, including those associated with limited and sole source suppliers and the impact and duration of supply chain disruptions, component shortages, and price increases; changes in global demand and the impact of COVID-19 or any other pandemic, including with respect to such supply chain disruptions, component shortages and price increases; risks associated with doing business internationally, including trade compliance, regulatory restrictions on our products, components or markets, particularly the semiconductor market, and unfavorable currency exchange and tax rate fluctuations, which risks become more significant as we grow our business internationally and in China specifically; conditions affecting the markets in which we operate, including fluctuations in capital spending in the semiconductor, electronics manufacturing and automotive industries, and fluctuations in sales to our major customers or disruptions or delays from third-party service providers upon which our operations may rely; the ability to anticipate and meet customer demand; the challenges, risks and costs involved with integrating or transitioning local and international operations of the companies we have acquired; risks associated with the attraction and retention of key personnel; potential fluctuations in quarterly results; dependence on new product development; rapid technological and market change; acquisition strategy; volatility of stock price, including any potential reduction of our stock price as a result of sales of our common stock or other equity securities; risks associated with chemical manufacturing and environmental regulation compliance; risks related to defective products; financial and legal risk management; and the other important factors described in in the “Risk Factors” section in this prospectus supplement and in our Annual Report on Form 10-K for the year ended December 31, 2022, which is incorporated herein by reference.

Any forward-looking statement speaks only as of the date on which such statement is made. We are under no obligation to, and expressly disclaim any obligation to, update or alter these forward-looking statements, whether as a result of new information, future events or otherwise, even if subsequent events cause our views to change. Although we believe that these forward-looking statements are based upon reasonable assumptions, these assumptions are based largely on our expectations and judgments and are subject to a number of risks and uncertainties, many of which are unforeseeable and beyond our control. Accordingly, we cannot give any assurance that our expectations will in fact occur and caution that actual results may differ materially from those in the forward-looking statements. Given these uncertainties, prospective investors are cautioned not to place undue reliance on these forward-looking statements.

PROSPECTUS SUPPLEMENT SUMMARY

This summary highlights selected information contained elsewhere in this prospectus supplement and the accompanying prospectus and in the documents we incorporate by reference herein and therein. This summary does not contain all of the information you should consider before investing in our common stock. You should read this entire prospectus supplement and accompanying prospectus carefully, especially the risks of investing in our common stock discussed under “Risk Factors” in this prospectus supplement and in our Annual Report on Form 10-K for the year ended December 31, 2022, along with our consolidated financial statements and notes to those consolidated financial statements and the other information incorporated by reference in this prospectus supplement and the accompanying prospectus and, if applicable, any related free writing prospectus, before making an investment decision. References to the “selling stockholders” are to Carlyle Partners VI Cayman Holdings, L.P., CEP IV Participations, S.à r.l. SICAR and Gamma Holding Company Limited.

MKS Instruments, Inc.

We enable technologies that transform our world. We deliver foundational technology solutions to leading edge semiconductor manufacturing, electronics and packaging, and specialty industrial applications. We apply our broad science and engineering capabilities to create instruments, subsystems, systems, process control solutions and specialty chemicals technology that improve process performance, optimize productivity and enable unique innovations for many of the world’s leading technology and industrial companies. Our solutions are critical to addressing the challenges of miniaturization and complexity in advanced device manufacturing by enabling increased power, speed, feature enhancement and optimized connectivity. Our solutions are also critical to addressing ever-increasing performance requirements across a wide array of specialty industrial applications.

Corporate Information

Our principal executive offices are located at 2 Tech Drive, Suite 201, Andover, Massachusetts, 01810, our telephone number at that address is (978) 645-5500 and our website address is <http://www.mks.com>. Our website address is included in this prospectus supplement only as an inactive textual reference. Information contained on or accessible through our website is not incorporated by reference into this prospectus supplement, and you should not consider any information contained on, or that can be accessed through, our website as part of this prospectus supplement or in deciding whether to purchase our securities.

We own or have rights to, or have applied for, trademarks, service marks and trade names that we use in connection with the operation of our business, including our corporate name, logos and website names. Other trademarks, service marks and trade names appearing in this prospectus supplement are the property of their respective owners. Solely for convenience, some of the trademarks, service marks and trade names referred to in this prospectus are listed without the ® and ™ symbols, but we will assert, to the fullest extent under applicable law, our rights to our trademarks, service marks and trade names.

The Offering

Common stock offered by the selling stockholders	2,000,000 shares
Common stock to be outstanding before and after this offering	66,669,254 shares
Use of proceeds	The selling stockholders will receive all of the net proceeds from this offering. We will not receive any proceeds from the sale of shares in this offering.
Dividend policy	<p>Holders of our common stock are entitled to receive dividends when and if they are declared by our board of directors. During 2022, our board of directors declared a cash dividend of \$0.22 per share during each quarter of the year. On February 6, 2023, our board of directors declared a quarterly cash dividend of \$0.22 per share that was paid on March 10, 2023 to stockholders of record as of February 27, 2023. On May 16, 2023, our board of directors declared a quarterly cash dividend of \$0.22 per share that will be paid on June 9, 2023 to stockholders of record as of May 30, 2023.</p> <p>Future dividend declarations, if any, as well as the record and payment dates for such dividends, are subject to the final determination of our board of directors.</p>
Risk factors	See “Risk Factors” on page S-3 of this prospectus supplement and in our other filings with the Securities and Exchange Commission (the “SEC”) incorporated by reference in this prospectus supplement or the accompanying prospectus for a discussion of risks you should carefully consider before deciding to invest in our common stock.
Nasdaq Global Select Market symbol	MKSI

The number of shares of our common stock to be outstanding after this offering is based on 66,669,254 shares of our common stock outstanding as of March 31, 2023, and excludes:

- (1) 808,668 shares issuable pursuant to outstanding restricted stock units as of March 31, 2023; and
- (2) 5,421,078 shares reserved for future issuance under our 2022 Stock Incentive Plan as of March 31, 2023; and
- (3) 1,496,739 shares reserved for future issuance under our 2014 Employee Stock Purchase Plan as of March 31, 2023.

RISK FACTORS

Investing in our common stock involves a high degree of risk. Before you decide to invest in our common stock, you should carefully consider the risks and uncertainties described below and in our Annual Report on Form 10-K for the year ended December 31, 2022, together with all other information contained in this prospectus supplement, the accompanying prospectus and in our filings with the SEC that we have incorporated by reference in this prospectus supplement and the accompanying prospectus. If any of the following risks actually occurs, our business, prospects, operating results and financial condition could suffer materially. In such event, the trading price of our common stock could decline and you might lose all or part of your investment.

Risks Related to this Offering

Our stock price may be volatile, and the value of an investment in our common stock may decline.

The stock market has from time to time experienced, and is likely to continue to experience, extreme price and volume fluctuations. For example, the closing price of our common stock ranged from a high of \$180.69 to a low of \$65.09 between January 1, 2022 and May 26, 2023. Prices of securities of technology companies have been especially volatile and have often fluctuated for reasons that are unrelated to the operating performance of the companies. Historically, the market price of shares of our common stock has fluctuated greatly and could continue to fluctuate due to a variety of factors, including those described in this prospectus supplement and the accompanying prospectus and the documents incorporated herein. In the past, companies that have experienced volatility in the market price of their stock have been the objects of securities class action litigation. If we become the subject of securities class action litigation, it could result in substantial costs and a diversion of our management's attention and resources.

There may be future sales or other dilution of our equity, which may adversely affect the market price of our common stock.

Except as described under the heading "Underwriting," we are not restricted from issuing additional shares of our common stock, including securities that are convertible into or exchangeable for, or that represent the right to receive, shares of our common stock. In addition, as of March 31, 2023, we have 808,668 shares issuable pursuant to outstanding restricted stock units, 5,421,078 shares reserved for future issuance under our 2022 Stock Incentive Plan and 1,496,739 shares reserved for future issuance under our 2014 Employee Stock Purchase Plan.

Any issuance of additional shares of our common stock would dilute the ownership interest of existing stockholders. Sales of a substantial number of shares or other equity-related securities in the public market could also depress the market price of our common stock, which could, in turn, impair our ability to raise capital through the sale of additional equity securities. We cannot predict the effect that any future sales of the common stock or other equity-related securities would have on the market price of the common stock. The market price of our common stock could also decline as a result of sales of our stock made after this offering, or the perception that such sales could occur.

We may issue preferred stock, the terms of which could adversely affect the voting power or value of our common stock.

Our Restated Articles of Organization, as amended ("Charter") authorize us to issue, without the approval of our stockholders, one or more classes or series of preferred stock having such designations, preferences and relative rights, including preferences over our common stock respecting dividends and distributions, as our board of directors may determine. The effects of any potential issuance of preferred stock, among other things, could include the dilution in the voting power of our common stock if the preferred stock has voting rights and the reduction or restriction of the rights of holders of common stock to receive a payment in the event of any liquidation, dissolution or winding up of our company. Any issuance of one or more classes or series of preferred stock including such terms could adversely affect the price of our common stock.

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We may not pay dividends on our common stock.

Holders of our common stock are only entitled to receive dividends when and if they are declared by our board of directors. Our credit facilities restrict our ability to pay dividends on our capital stock under certain circumstances. Although we have declared cash dividends on our common stock since 2011, and occasionally increased the dividends from prior quarters, we are not required to do so, and we may reduce or eliminate our cash dividend in the future. This could adversely affect the market price of our common stock.

Some provisions of our Charter, our Amended and Restated By-laws (“By-laws”) and Massachusetts law could discourage potential acquisition proposals and could delay or prevent a change in control.

Anti-takeover provisions could diminish opportunities for stockholders to participate in tender offers, including tender offers at a price above the then-current market price of our common stock. Such provisions may also inhibit increases in the market price of our common stock that could result from takeover attempts. For example, while we have no present plans to issue any preferred stock, our board of directors, without further stockholder approval, may issue preferred stock that could have the effect of delaying, deterring or preventing a change in control of us. The issuance of preferred stock could adversely affect the voting power of the holders of our common stock, including the loss of voting control to others. In addition, our By-laws provide for a classified board of directors consisting of three classes. Our classified board could also have the effect of delaying or deterring a change in control.

If securities or industry press or analysts cease covering our common stock, publish negative research or reports about our business, or if they change their recommendations regarding our common stock adversely, the share price and trading volume of our common stock could decline.

The trading market for our common stock may be influenced by the articles, research and reports that industry or securities analysts and press publish about us or our business. If one or more of the analysts who cover us downgrade our common stock, or if industry press publishes negative articles about our company, the share price of our common stock would likely decline. If one or more of these analysts ceased coverage of our company or failed to regularly publish reports on us, we could lose visibility in the financial markets, which in turn could cause our stock price or trading volume to decline.

USE OF PROCEEDS

All of the shares of our common stock being offered hereby are being sold by the selling stockholders identified in this prospectus supplement. We will not receive any of the proceeds from the sale of the shares being offered by the selling stockholders. We will, however, bear the costs associated with the registration of the shares to be sold by the selling stockholders. The selling stockholders will bear underwriting discounts, commissions or other similar expenses payable with respect to the sales of shares hereunder.

DIVIDEND POLICY

Holders of our common stock are entitled to receive dividends when and if they are declared by our board of directors. During 2022, our board of directors declared a cash dividend of \$0.22 per share during each quarter of the year, which totaled \$52 million or \$0.88 per share. On February 6, 2023, our board of directors declared a quarterly cash dividend of \$0.22 per share that was paid on March 10, 2023 to stockholders of record as of February 27, 2023. On May 16, 2023, our board of directors declared a quarterly cash dividend of \$0.22 per share that will be paid on June 9, 2023 to stockholders of record as of May 30, 2023.

Future dividend declarations, if any, as well as the record and payment dates for such dividends, are subject to the final determination of our board of directors. The board of directors intends to declare and pay cash dividends on our common stock based on our financial conditions and results of operations, although it has no obligation to do so. Our credit facilities contain covenants that restrict our ability to grant cash dividends in certain circumstances.

DESCRIPTION OF OUR COMMON STOCK

The following description of our capital stock is intended as a summary only and therefore is not a complete description of our capital stock. This description is based upon, and is qualified by reference to, our Charter and our By-laws, each of which is incorporated by reference in this prospectus supplement, and certain applicable provisions of Massachusetts law.

Our authorized capital stock consists of 200,000,000 shares of common stock, no par value per share, and 2,000,000 shares of preferred stock, \$0.01 par value per share.

Common Stock

Voting Rights. Holders of our common stock are entitled to one vote per share on all matters voted on by the stockholders, including the election of directors. Our common stock does not have cumulative voting rights.

Board of Directors. Our By-laws divide the board of directors into three classes with staggered three-year terms. Under our By-laws, any vacancy on our board of directors, including a vacancy resulting from an enlargement of our board of directors, may be filled by vote of a majority of our directors then in office, unless and until filled by the stockholders. Furthermore, our By-laws provides that the authorized number of directors may be changed only by the resolution of our board of directors. The classification of our board of directors and the limitations on the ability of our stockholders to change the authorized number of directors and fill vacancies could make it more difficult for a third party to acquire, or discourage a third party from seeking to acquire, control of our company.

Advance Notice Requirements. Our By-laws require that we be given advance notice of proposals that stockholders wish to present for action at an annual meeting of stockholders (“Annual Meeting”), including director nominations (other than proposals made in compliance with Rule 14a-8 of the Exchange Act). The required written notice must be delivered to our Secretary at our principal office at least 90 days but no more than 120 days prior to the first anniversary of the preceding year’s Annual Meeting or it will be considered untimely. However, in the event that the date of the Annual Meeting is advanced by more than 20 days, or delayed by more than 60 days, from the first anniversary of the preceding year’s Annual Meeting, a stockholder’s notice must be received no earlier than the 120th day prior to the Annual Meeting and not later than the close of business on the later of (i) the 90th day prior to the Annual Meeting and (ii) the seventh day following the day on which notice of the date of the Annual Meeting was mailed or public disclosure of the date of the Annual Meeting was made, whichever occurs first.

Action by Written Consent; Special Meetings. Although our Charter and By-laws allow stockholders to act by written consent, such written consent must be signed by all stockholders entitled to vote on the matter to be approved. This significantly restricts the ability of our stockholders to act by written consent.

In addition, under our By-laws, special meetings of stockholders may be called only by our President or our board of directors. In addition, upon written application by one or more stockholders holding at least 40% of the shares of stock entitled to vote on the matter, special meetings of stockholders may be called by our Secretary.

Dividend Rights. Subject to the rights of holders of outstanding shares of preferred stock, if any, the holders of common stock are entitled to receive dividends, if any, that may be declared from time to time by our board of directors in its discretion out of funds legally available for the payment of dividends.

Liquidation Rights. Subject to the rights of holders of outstanding shares of preferred stock, if any, holders of common stock will share ratably in all assets legally available for distribution to our stockholders in the event of dissolution.

Other Rights and Preferences. Our common stock has no sinking fund or redemption provisions or preemptive, conversion or exchange rights.

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Blank Check Preferred Stock

Our Charter allows our board of directors to issue shares of preferred stock without the further approval of our stockholders. This is sometimes referred to as “blank check” preferred stock. The effects of such issuance, among other things, could include the dilution in the voting power of our common stock if the preferred stock has voting rights and the reduction or restriction of the rights of holders of common stock to receive a payment in the event of any liquidation, dissolution or winding up of our Company. In some circumstances, the issuance of preferred stock may render more difficult or expensive or tend to discourage a merger, tender offer, or proxy contest, the assumption of control by a holder of a large block of our securities, or the removal of incumbent management. In addition, our board of directors could utilize the shares of preferred stock in order to adopt a stockholder rights plan, or “poison pill,” which could have the effect of discouraging or delaying a takeover of our Company.

Provisions of Our Charter and By-laws and Massachusetts Law that Could Delay or Defer a Change in Control

Our Charter and By-laws contain provisions that may make the acquisition of control without the approval of our board of directors more difficult, as described above.

The Massachusetts General Laws contain anti-takeover provisions regarding, among other things, business combinations with an affiliated stockholder. In general, the Massachusetts General Laws prevent a publicly held Massachusetts corporation from engaging in a business combination, as defined in the Massachusetts General Laws, with an interested stockholder for a period of three years after the date of the transaction in which the person became an interested stockholder, unless:

- before the date on which the person became an interested stockholder, the board of directors of the corporation approved either the business combination or the transaction in which the person became an interested stockholder;
- the interested stockholder acquires at least 90% of the outstanding voting stock of the corporation at the time it becomes an interested stockholder; or
- the business combination is approved by the board of directors and the holders of at least two-thirds of the outstanding voting stock of the corporation voting at a meeting, excluding the voting stock owned by the interested stockholder.

An interested stockholder is generally a person owning 5% or more of the outstanding voting stock of the corporation. A business combination includes mergers, consolidations, stock and asset sales and other transactions with the interested stockholder that result in a financial benefit to the interested stockholder.

The Massachusetts General Laws also contain control share acquisitions provisions. We have elected to opt out of the control share acquisitions provisions, however, we may opt into these control share acquisitions provisions by amending our By-laws. In general, the control share acquisitions provisions of the Massachusetts General Laws provide that any person, including his, her or its affiliates, who acquires shares of a corporation that are subject to the control share acquisitions statute and whose shares represent one-fifth or more, one-third or more, or a majority or more, of the voting power of the corporation in the election of directors, cannot exercise any voting power with respect to those shares, or any shares acquired by the person within 90 days before or after an acquisition of this nature, unless these voting rights are authorized by the stockholders of the corporation.

The authorization of voting rights requires the affirmative vote of the holders of a majority of the outstanding voting shares, excluding shares owned by:

- the person making an acquisition of this nature;
- any officer of the corporation; and
- any employee who is also a director of the corporation.

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There are several other types of share acquisitions that are not subject to these provisions of the Massachusetts General Laws, including acquisitions of shares under a tender offer, merger or consolidation which is made in connection with an agreement to which the corporation is a party, and acquisitions of shares directly from the corporation or a wholly owned subsidiary of the corporation.

Transfer Agent and Registrar

The transfer agent and registrar for our common stock is American Stock Transfer and Trust Company.

Listing

Our common stock is listed on the Nasdaq Global Select Market under the symbol “MKSI.”

SELLING STOCKHOLDERS

The following table sets forth the beneficial ownership of our common stock as of March 31, 2023, on an actual basis and as adjusted to reflect the sale of common stock by the selling stockholders in this offering, for each of the selling stockholders. When we refer to the “selling stockholders” in this prospectus supplement, we mean the persons listed in the table below.

Beneficial ownership is determined in accordance with the rules and regulations of the SEC and includes voting or investment power with respect to our common stock. Unless otherwise indicated below, to our knowledge, all persons named in the table have sole voting and investment power with respect to their shares of common stock, except to the extent authority is shared by spouses under applicable law.

The percentage ownership information shown in the table prior to this offering is based upon 66,669,254 shares of common stock outstanding as of March 31, 2023. The percentage ownership information shown in the table assumes the sale of an aggregate of 2,000,000 shares of our common stock by the selling stockholders in this offering.

For information regarding material transactions between us and certain of the selling stockholders, see the information incorporated by reference into the section titled “Certain Relationships and Related Transactions and Director Independence” in our Annual Report on Form 10-K for the year ended December 31, 2022, which is incorporated herein by reference.

<u>Name of Selling Stockholder</u>	<u>Shares of Common Stock Beneficially Owned Prior to Offering</u>		<u>Number of Shares of Common Stock Being Offered</u>	<u>Shares of Common Stock to be Beneficially Owned After Offering⁽¹⁾</u>	
	<u>Number</u>	<u>Percentage</u>		<u>Number</u>	<u>Percentage</u>
Carlyle Partners VI Cayman Holdings, L.P. ⁽¹⁾	3,958,719	5.9%	1,221,312	2,737,407	4.1%
CEP IV Participations, S.à r.l. SICAR ⁽¹⁾	1,726,956	2.6%	532,786	1,194,170	1.8%
Gamma Holding Company Limited ⁽¹⁾	797,057	1.2%	245,902	551,155	0.8%

(1) The Carlyle Group Inc., which is a publicly traded entity listed on Nasdaq, is the sole member of Carlyle Holdings II GP L.L.C., which is the managing member of Carlyle Holdings II L.L.C., which, with respect to the securities reported herein, is the managing member of CG Subsidiary Holdings L.L.C., which is the general partner of TC Group Cayman Investment Holdings, L.P., which is the general partner of TC Group Cayman Investment Holdings Sub L.P., which is the sole stockholder of TC Group VI Cayman, L.L.C., which is the general partner of TC Group VI Cayman, L.P., which is the general partner of Carlyle Partners VI Cayman Holdings, L.P. TC Group Cayman Investment Holdings Sub L.P. is also the sole stockholder of CEP IV Managing GP Holdings, Ltd. and the sole member of CAP IV, L.L.C. CEP IV Managing GP Holdings, Ltd. is the general partner of CEP IV Managing GP, L.P., which is the managing general partner of Carlyle Europe Partners IV, L.P., which is the majority stockholder of CEP IV Participations, S.à r.l. SICAR. CAP IV, L.L.C. is the general partner of CAP IV General Partner, L.P., which is the general partner of Carlyle Asia Partners IV, L.P., which is the majority stockholder of Gamma Holding Company Limited. Accordingly, each of these entities may be deemed to share beneficial ownership of the securities held of record by Carlyle Partners VI Cayman Holdings, L.P., CEP IV Participations, S.à r.l. SICAR and Gamma Holding Company Limited. Each of them disclaims beneficial ownership of such securities.

The address for each of TC Group Cayman Investment Holdings, L.P., TC Group Cayman Investment Holdings Sub L.P., TC Group VI Cayman, L.P., Carlyle Partners VI Cayman Holdings, L.P., CEP IV Managing GP Holdings, Ltd., CAP IV General Partner, L.P., Carlyle Asia Partners IV, L.P. and Gamma Holding Company Limited is c/o Walkers, 190 Elgin Avenue, George Town, Grand Cayman KY1-9001, Cayman Islands. The address for CEP IV Participations, S.à r.l. SICAR is c/o The Carlyle Group, 2, avenue Charles de Gaulle, L-1653 Luxembourg, Luxembourg. The address for each of the remaining entities named in this footnote is c/o The Carlyle Group Inc., 1001 Pennsylvania Avenue NW, Suite 220 South, Washington, D.C. 20004-2505.

MATERIAL U.S. TAX CONSIDERATIONS FOR NON-U.S. HOLDERS OF COMMON STOCK

The following is a discussion of the material U.S. federal income and estate tax considerations applicable to non-U.S. holders with respect to their ownership and disposition of shares of our common stock. This discussion is for informational purposes only and is not tax advice. Accordingly, all prospective non-U.S. holders of our common stock should consult their own tax advisors with respect to the U.S. federal, state, local and non-U.S. tax consequences of the purchase, ownership and disposition of our common stock. For purposes of this discussion, a “non-U.S. holder” means a beneficial owner (other than a partnership or other entity or arrangement classified as a partnership for U.S. federal income tax purposes) of our common stock that is not, for U.S. federal income tax purposes:

- an individual who is a citizen or resident of the United States;
- a corporation created or organized under the laws of the United States, any state thereof or the District of Columbia;
- an estate, the income of which is subject to U.S. federal income tax regardless of its source; or
- a trust if (1) a U.S. court is able to exercise primary supervision over the trust’s administration and one or more U.S. persons has the authority to control all of the trust’s substantial decisions or (2) the trust has a valid election in effect under applicable U.S. Treasury Regulations to be treated as a U.S. person.

This discussion is based on current provisions of the U.S. Internal Revenue Code of 1986, as amended, which we refer to as the Code, existing and proposed U.S. Treasury Regulations promulgated thereunder, current administrative rulings and judicial decisions, all as in effect as of the date of this prospectus supplement, all of which are subject to change or to differing interpretation, possibly with retroactive effect. Any change or differing interpretation could alter the tax consequences to non-U.S. holders described in this prospectus supplement. In addition, there can be no assurance that the Internal Revenue Service, which we refer to as the IRS, will not challenge one or more of the tax consequences described herein. We assume in this discussion that a non-U.S. holder holds shares of our common stock as a capital asset, generally property held for investment.

This discussion does not address all aspects of U.S. federal income and estate taxation that may be relevant to a particular non-U.S. holder in light of that non-U.S. holder’s individual circumstances, nor does it address any aspects of U.S. state, local or non-U.S. taxes, the alternative minimum tax, or the Medicare tax on net investment income. This discussion also does not consider any specific facts or circumstances that may apply to a non-U.S. holder and does not address the special tax rules applicable to particular non-U.S. holders, such as:

- insurance companies;
- tax-exempt organizations;
- financial institutions;
- brokers or dealers in securities;
- pension plans;
- controlled foreign corporations;
- passive foreign investment companies;
- owners that hold our common stock as part of a straddle, hedge, conversion transaction, synthetic security or other integrated investment;
- persons who acquired our common stock pursuant to the exercise of any employee stock option or otherwise as compensation;
- certain taxpayers that file applicable financial statements and are required to recognize income when the associated revenue is reflected on such financial statements; and
- certain U.S. expatriates.

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In addition, this discussion does not address the tax treatment of partnerships or persons who hold our common stock through partnerships or other entities or arrangements classified as partnerships for U.S. federal income tax purposes. A partner in a partnership or other pass-through entity that will hold our common stock should consult his, her or its own tax advisor regarding the tax consequences of acquiring, holding and disposing of our common stock through a partnership or other pass-through entity, as applicable.

Distributions on Our Common Stock

Distributions on our common stock generally will constitute dividends for U.S. federal income tax purposes to the extent paid from our current or accumulated earnings and profits, as determined under U.S. federal income tax principles. If a distribution exceeds our current and accumulated earnings and profits, the excess will be treated as a tax-free return of the non-U.S. holder's investment, up to such holder's tax basis in the common stock. Any remaining excess will be treated as capital gain, subject to the tax treatment described below in "Gain on Sale, Exchange or Other Taxable Disposition of Our Common Stock." Any such distributions will also be subject to the discussion below under the section titled "Withholding and Information Reporting Requirements—FATCA."

Dividends paid to a non-U.S. holder generally will be subject to withholding of U.S. federal income tax at a 30% rate or such lower rate as may be specified by an applicable income tax treaty between the United States and such holder's country of residence.

Dividends that are treated as effectively connected with a trade or business conducted by a non-U.S. holder within the United States and, if an applicable income tax treaty so provides, that are attributable to a permanent establishment or a fixed base maintained by the non-U.S. holder within the United States, are generally exempt from the 30% withholding tax if the non-U.S. holder satisfies applicable certification and disclosure requirements (generally including provision of a validly completed and executed IRS Form W-8ECI (or applicable successor form) certifying that the dividends are effectively connected with the non-U.S. holder's conduct of a trade or business within the United States). However, such U.S. effectively connected income, net of specified deductions and credits, is generally taxed at the same U.S. federal income tax rates applicable to United States persons (as defined in the Code). Any U.S. effectively connected income received by a non-U.S. holder that is a corporation may also, under certain circumstances, be subject to an additional "branch profits tax" at a 30% rate or such lower rate as may be specified by an applicable income tax treaty between the United States and such holder's country of residence.

A non-U.S. holder of our common stock who claims the benefit of an applicable income tax treaty between the United States and such holder's country of residence generally will be required to provide a properly completed and executed IRS Form W-8BEN or W-8BEN-E (or successor form) and satisfy applicable certification and other requirements. Non-U.S. holders are urged to consult their tax advisors regarding their entitlement to benefits under a relevant income tax treaty.

A non-U.S. holder that is eligible for a reduced rate of U.S. withholding tax under an income tax treaty may obtain a refund or credit of any excess amounts withheld by timely filing the required information with the IRS.

Gain on Sale, Exchange or Other Taxable Disposition of Our Common Stock

In general, a non-U.S. holder will not be subject to any U.S. federal income tax on any gain realized upon such holder's sale, exchange or other taxable disposition of shares of our common stock unless:

- the gain is effectively connected with the non-U.S. holder's conduct of a trade or business within the United States and, if an applicable income tax treaty so provides, is attributable to a permanent establishment or a fixed base maintained by such non-U.S. holder in the United States, in which case the non-U.S. holder generally will be taxed at the U.S. federal income tax rates applicable to United States persons (as defined in the Code) and, if the non-U.S. holder is a foreign corporation, the branch profits tax described above in "Distributions on Our Common Stock" also may apply;

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- the non-U.S. holder is a nonresident alien individual who is present in the United States for 183 days or more in the taxable year of the taxable disposition and certain other conditions are met, in which case the non-U.S. holder will be subject to a 30% tax (or such lower rate as may be specified by an applicable income tax treaty between the United States and such holder's country of residence) on the net gain derived from the taxable disposition, which may be offset by certain U.S.-source capital losses of the non-U.S. holder, if any; or
- we are, or have been, at any time during the five-year period preceding such taxable disposition (or the non-U.S. holder's holding period, if shorter) a "U.S. real property holding corporation," unless our common stock is regularly traded on an established securities market and the non-U.S. holder holds no more than 5% of our outstanding common stock, directly or indirectly, during the shorter of the five-year period ending on the date of the taxable disposition or the period that the non-U.S. holder held our common stock. If we are determined to be a U.S. real property holding corporation and the non-U.S. holder holds more than 5% of our outstanding common stock, directly or indirectly, during the shorter of the five-year period ending on the date of the taxable disposition or the period that the non-U.S. holder held our common stock, then the non-U.S. holder generally will be taxed on its net gain derived from the disposition at the U.S. federal income tax rates applicable to United States persons (as defined in the Code). Generally, a corporation is a U.S. real property holding corporation only if the fair market value of its U.S. real property interests equals or exceeds 50% of the sum of the fair market value of its worldwide real property interests plus its other assets used or held for use in a trade or business. Although there can be no assurance, we do not believe that we are, or have been, a U.S. real property holding corporation, or that we are likely to become one in the future. No assurance can be provided that our common stock will be regularly traded on an established securities market for purposes of the rules described above.

U.S. Federal Estate Tax

Shares of our common stock that are owned or treated as owned at the time of death by an individual who is not a citizen or resident of the United States, as specifically defined for U.S. federal estate tax purposes, are considered U.S. situs assets and will be included in the individual's gross estate for U.S. federal estate tax purposes. Such shares, therefore, may be subject to U.S. federal estate tax, unless an applicable estate tax or other treaty provides otherwise.

Backup Withholding and Information Reporting

We must report annually to the IRS and to each non-U.S. holder the gross amount of the distributions on our common stock paid to such holder and the tax withheld, if any, with respect to such distributions. Non-U.S. holders may have to comply with specific certification procedures to establish that the holder is not a United States person (as defined in the Code) in order to avoid backup withholding at the applicable rate with respect to dividends on our common stock. Generally, a non-U.S. holder will comply with such procedures if it provides a properly completed and executed IRS Form W-8BEN or W-8BEN-E (or other applicable Form W-8) or otherwise meets the documentary evidence requirements for establishing that it is not a United States person or otherwise establishes an exemption. Dividends paid to non-U.S. holders subject to withholding of U.S. federal income tax, as described above in "Distributions on Our Common Stock," generally will be exempt from U.S. backup withholding.

Information reporting and backup withholding will generally apply to the proceeds of a disposition of our common stock by a non-U.S. holder effected by or through the U.S. office of any broker, U.S. or non-U.S., unless the holder certifies its status as a non-U.S. holder and satisfies certain other requirements, or otherwise establishes an exemption. Generally, information reporting and backup withholding will not apply to a payment of disposition proceeds to a non-U.S. holder where the transaction is effected outside the United States through a non-U.S. office of a broker. However, for information reporting purposes, dispositions effected through a non-U.S. office of a broker with substantial U.S. ownership or operations generally will be treated in a manner

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similar to dispositions effected through a U.S. office of a broker. Non-U.S. holders should consult their own tax advisors regarding the application of the information reporting and backup withholding rules to them.

Copies of information returns may be made available to the tax authorities of the country in which the non-U.S. holder resides or is incorporated under the provisions of a specific treaty or agreement.

Backup withholding is not an additional tax. Any amounts withheld under the backup withholding rules from a payment to a non-U.S. holder can be refunded or credited against the non-U.S. holder's U.S. federal income tax liability, if any, provided that an appropriate claim is timely filed with the IRS.

Withholding and Information Reporting Requirements—FATCA

Provisions of the Code commonly referred to as the Foreign Account Tax Compliance Act, or FATCA, generally impose a U.S. federal withholding tax at a rate of 30% on payments of dividends on, or gross proceeds from the sale or other disposition of, our common stock paid to foreign entities, unless (i) if the foreign entity is a "foreign financial institution," such foreign entity undertakes certain due diligence, reporting, withholding, and certification obligations, (ii) if the foreign entity is not a "foreign financial institution," such foreign entity identifies certain of its U.S. investors, if any, or (iii) the foreign entity is otherwise excepted under FATCA.

Withholding under FATCA generally will apply to payments of dividends on our common stock. While withholding under FATCA may apply to payments of gross proceeds from a sale or other disposition of our common stock, under proposed U.S. Treasury Regulations, withholding on payments of gross proceeds is not required. Although such regulations are not final, applicable withholding agents may rely on the proposed regulations until final regulations are issued.

If withholding under FATCA is required on any payment related to our common stock, investors not otherwise subject to withholding (or that otherwise would be entitled to a reduced rate of withholding) on such payment may seek a refund or credit from the IRS. An intergovernmental agreement between the United States and an applicable foreign country may modify these rules. Non-U.S. holders should consult their own tax advisors regarding the possible implications of FATCA on their investment in our common stock and the entities through which they hold our common stock.

The preceding discussion of material U.S. federal tax considerations is for informational purposes only. It is not legal or tax advice. Prospective investors should consult their own tax advisors regarding the particular U.S. federal, state, local and non-U.S. tax consequences of purchasing, holding and disposing of our common stock, including the consequences of any proposed changes in applicable law.

UNDERWRITING

J.P. Morgan Securities LLC is acting as the underwriter in connection with this offering. Subject to the terms and conditions set forth in an underwriting agreement between us, the selling stockholders and the underwriter, the selling stockholders have agreed to sell to the underwriter, and the underwriter has agreed to purchase from the selling stockholders, 2,000,000 shares of our common stock.

We and the selling stockholders have agreed to indemnify the underwriter against certain liabilities, including liabilities under the Securities Act, or to contribute to payments the underwriter may be required to make in respect of those liabilities.

The underwriter is offering the shares, subject to prior sale, when, as and if issued to and accepted by them, subject to approval of legal matters by their counsel, including the validity of the shares, and other conditions contained in the underwriting agreement, such as the receipt by the underwriter of officer's certificates and legal opinions. The underwriter reserves the right to withdraw, cancel or modify offers to the public and to reject orders in whole or in part.

Commissions and Discounts

The underwriter is purchasing the shares of common stock from the selling stockholders at \$96.76 per share (representing approximately \$193,520,000 aggregate proceeds to the selling stockholders). The underwriter may offer the shares of common stock from time to time for sale in one or more transactions on the Nasdaq Global Select Market, in the over-the-counter market, through negotiated transactions or otherwise at market prices prevailing at the time of sale, at prices related to prevailing market prices or at negotiated prices. The underwriter may effect such transactions by selling shares of common stock to or through dealers, and such dealers may receive compensation in the form of discounts, concessions or commissions from the underwriter and/or purchasers of shares of common stock for whom they may act as agents or to whom they may sell as principal.

In connection with the sale of the shares of common stock offered hereby, the underwriter may be deemed to have received compensation in the form of underwriting discounts.

The expenses of the offering, including expenses incurred by the selling stockholders but not including underwriting discounts, commissions or other similar expenses, are estimated at \$700,000 and will be payable by us. We have also agreed to reimburse the underwriter for certain of its expenses in an amount up to \$45,000.

No Sales of Similar Securities

We, our executive officers and directors and the selling stockholders have agreed, subject to certain exceptions, not to sell or transfer any common stock or securities convertible into, exchangeable for, exercisable for, or repayable with shares of common stock, for 30 days after the date of this prospectus supplement without first obtaining the written consent of the underwriter. Specifically, we and these other persons have agreed, with certain limited customary exceptions, not to directly or indirectly:

- offer, pledge, sell or contract to sell any common stock;
- sell any option or contract to purchase any common stock;
- purchase any option or contract to sell any common shares;
- grant any option, right or warrant to purchase, lend or otherwise transfer or dispose of any common stock;
- otherwise transfer or dispose of or transfer any common stock;

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- enter into any hedging, swap or other agreement or transaction that transfers, in whole or in part, any of the economic consequences of ownership of the common stock;
- request or demand that we file a registration statement related to the common shares; or
- publicly disclose the intention to do any of the foregoing.

This lock-up provision applies to common shares and to securities convertible into or exercisable or exchangeable for common stock. It also applies to common stock owned now or acquired later by the person executing the agreement or for which the person executing the agreement later acquires the power of disposition.

Requests for the consent of the underwriter to the sale of shares by us, our executive officers or our directors or by the selling stockholders prior to the expiration of these lock-up agreements will be considered on a case-by-case basis by the underwriter. When determining whether or not to grant its consent the underwriter may consider, among other factors, the reasons given by us, any of our executive officers or directors or the relevant shareholder, as applicable, for requesting the consent, the number of shares for which the consent is being requested and market conditions at such time.

Nasdaq Global Select Market Listing

The shares are listed on the Nasdaq Global Select Market under the symbol “MKSI”.

Short Positions

In connection with the offering, the underwriter may purchase and sell our common stock in the open market. Purchases and sales in the open market may include short sales, purchases to cover short positions and stabilizing purchases. Short sales involve secondary market sales by the underwriter of a greater number of shares than they are required to purchase in the offering, and a short position represents the amount of such sales that have not been covered by subsequent purchases. Covering transactions involve purchases of shares in the open market in order to cover short positions. Stabilizing transactions involve bids to purchase shares so long as the stabilizing bids do not exceed a specified maximum.

Similar to other purchase transactions, the underwriter’s purchases to cover the syndicate short sales may have the effect of raising or maintaining the market price of our common stock or preventing or retarding a decline in the market price of our common stock. As a result, the price of our common stock may be higher than the price that might otherwise exist in the open market. The underwriter may conduct these transactions on the Nasdaq Global Select Market, in the over-the-counter market or otherwise.

Neither we nor the underwriter makes any representation or prediction as to the direction or magnitude of any effect that the transactions described above may have on the price of our common stock. In addition, neither we nor the underwriter make any representation that the underwriter will engage in these transactions or that these transactions, once commenced, will not be discontinued without notice.

Electronic Distribution

In connection with the offering, the underwriter may distribute prospectuses by electronic means, such as e-mail.

Other Relationships

The underwriter and its affiliates have engaged in, and may in the future engage in, investment banking and other commercial dealings in the ordinary course of business with us or our affiliates. The underwriter has received, or may in the future receive, customary fees and commissions for these transactions.

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In addition, in the ordinary course of its business activities, the underwriter and its affiliates may make or hold a broad array of investments and actively trade debt and equity securities (or related derivative securities) and financial instruments (including bank loans) for their own account and for the accounts of their customers. Such investments and securities activities may involve securities and/or instruments of ours or our affiliates. The underwriter and its affiliates may also make investment recommendations and/or publish or express independent research views in respect of such securities or financial instruments and may hold, or recommend to clients that they acquire, long and/or short positions in such securities and instruments.

European Economic Area and the United Kingdom

In relation to each Member State of the European Economic Area and the United Kingdom (each a “Relevant State”), no Shares have been offered or will be offered pursuant to the offering to the public in that Relevant State prior to the publication of a prospectus in relation to the Shares which has been approved by the competent authority in that Relevant State or, where appropriate, approved in another Relevant State and notified to the competent authority in that Relevant State, all in accordance with the Prospectus Regulation, except that offers of Shares may be made to the public in that Relevant State at any time under the following exemptions under the Prospectus Regulation:

- (a) to any legal entity which is a qualified investor as defined under the Prospectus Regulation;
- (b) to fewer than 150 natural or legal persons (other than qualified investors as defined under the Prospectus Regulation), subject to obtaining the prior consent of representative for any such offer; or
- (c) in any other circumstances falling within Article 1(4) of the Prospectus Regulation,

provided that no such offer of Shares shall require the Company or any underwriter to publish a prospectus pursuant to Article 3 of the Prospectus Regulation or supplement a prospectus pursuant to Article 23 of the Prospectus Regulation.

Each person in a Relevant State who initially acquires any Shares or to whom any offer is made will be deemed to have represented, acknowledged and agreed to and with the Company and the Managers that it is a qualified investor within the meaning of the Prospectus Regulation.

In the case of any Shares being offered to a financial intermediary as that term is used in Article 5(1) of the Prospectus Regulation, each such financial intermediary will be deemed to have represented, acknowledged and agreed that the Shares acquired by it in the offer have not been acquired on a non-discretionary basis on behalf of, nor have they been acquired with a view to their offer or resale to, persons in circumstances which may give rise to an offer to the public other than their offer or resale in a Relevant State to qualified investors, in circumstances in which the prior consent of the underwriter has been obtained to each such proposed offer or resale.

The Company, the underwriter and their affiliates will rely upon the truth and accuracy of the foregoing representations, acknowledgments and agreements.

For the purposes of this provision, the expression an “offer to the public” in relation to any Shares in any Relevant State means the communication in any form and by any means of sufficient information on the terms of the offer and any Shares to be offered so as to enable an investor to decide to purchase or subscribe for any Shares, and the expression “Prospectus Regulation” means Regulation (EU) 2017/1129.

References to the Prospectus Regulation includes, in relation to the UK, the Prospectus Regulation as it forms part of UK domestic law by virtue of the European Union (Withdrawal) Act 2018.

The above selling restriction is in addition to any other selling restrictions set out below.

Notice to Prospective Investors in the United Kingdom

This document is for distribution only to persons who (i) have professional experience in matters relating to investments and who qualify as investment professionals within the meaning of Article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005 (as amended, the “Financial Promotion Order”), (ii) are persons falling within Article 49(2)(a) to (d) (“high net worth companies, unincorporated associations etc.”) of the Financial Promotion Order, (iii) are outside the United Kingdom, or (iv) are persons to whom an invitation or inducement to engage in investment activity (within the meaning of Section 21 of the Financial Services and Markets Act 2000, as amended (“FSMA”)) in connection with the issue or sale of any securities may otherwise lawfully be communicated or caused to be communicated (all such persons together being referred to as “relevant persons”). This document is directed only at relevant persons and must not be acted on or relied on by persons who are not relevant persons. Any investment or investment activity to which this document relates is available only to relevant persons and will be engaged in only with relevant persons.

Notice to Prospective Investors in Switzerland

The shares may not be publicly offered in Switzerland and will not be listed on the SIX Swiss Exchange (“SIX”) or on any other stock exchange or regulated trading facility in Switzerland. This document has been prepared without regard to the disclosure standards for issuance prospectuses under art. 652a or art. 1156 of the Swiss Code of Obligations or the disclosure standards for listing prospectuses under art. 27 ff. of the SIX Listing Rules or the listing rules of any other stock exchange or regulated trading facility in Switzerland. Neither this document nor any other offering or marketing material relating to the shares or the offering may be publicly distributed or otherwise made publicly available in Switzerland.

Neither this document nor any other offering or marketing material relating to the offering, the Company, the shares have been or will be filed with or approved by any Swiss regulatory authority. In particular, this document will not be filed with, and the offer of shares will not be supervised by, the Swiss Financial Market Supervisory Authority FINMA (FINMA), and the offer of shares has not been and will not be authorized under the Swiss Federal Act on Collective Investment Schemes (“CISA”). The investor protection afforded to acquirers of interests in collective investment schemes under the CISA does not extend to acquirers of shares.

Notice to Prospective Investors in the Dubai International Financial Centre

This prospectus supplement relates to an Exempt Offer in accordance with the Offered Securities Rules of the Dubai Financial Services Authority (“DFSA”). This prospectus supplement is intended for distribution only to persons of a type specified in the Offered Securities Rules of the DFSA. It must not be delivered to, or relied on by, any other person. The DFSA has no responsibility for reviewing or verifying any documents in connection with Exempt Offers. The DFSA has not approved this prospectus supplement nor taken steps to verify the information set forth herein and has no responsibility for the prospectus supplement. The shares to which this prospectus supplement relates may be illiquid and/or subject to restrictions on their resale. Prospective purchasers of the shares offered should conduct their own due diligence on the shares. If you do not understand the contents of this prospectus supplement you should consult an authorized financial advisor.

Notice to Prospective Investors in Australia

No placement document, prospectus, product disclosure statement or other disclosure document has been lodged with the Australian Securities and Investments Commission (“ASIC”), in relation to the offering. This prospectus does not constitute a prospectus, product disclosure statement or other disclosure document under the Corporations Act 2001 (the “Corporations Act”), and does not purport to include the information required for a prospectus, product disclosure statement or other disclosure document under the Corporations Act.

Any offer in Australia of the shares may only be made to persons (the “Exempt Investors”) who are “sophisticated investors” (within the meaning of section 708(8) of the Corporations Act), “professional

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investors” (within the meaning of section 708(11) of the Corporations Act) or otherwise pursuant to one or more exemptions contained in section 708 of the Corporations Act so that it is lawful to offer the shares without disclosure to investors under Chapter 6D of the Corporations Act.

The shares applied for by Exempt Investors in Australia must not be offered for sale in Australia in the period of 12 months after the date of allotment under the offering, except in circumstances where disclosure to investors under Chapter 6D of the Corporations Act would not be required pursuant to an exemption under section 708 of the Corporations Act or otherwise or where the offer is pursuant to a disclosure document which complies with Chapter 6D of the Corporations Act. Any person acquiring shares must observe such Australian on-sale restrictions.

This prospectus contains general information only and does not take account of the investment objectives, financial situation or particular needs of any particular person. It does not contain any securities recommendations or financial product advice. Before making an investment decision, investors need to consider whether the information in this prospectus is appropriate to their needs, objectives and circumstances, and, if necessary, seek expert advice on those matters.

Notice to Prospective Investors in Hong Kong

The shares have not been offered or sold and will not be offered or sold in Hong Kong, by means of any document, other than (a) to “professional investors” as defined in the Securities and Futures Ordinance (Cap. 571) of Hong Kong and any rules made under that Ordinance; or (b) in other circumstances which do not result in the document being a “prospectus” as defined in the Companies Ordinance (Cap. 32) of Hong Kong or which do not constitute an offer to the public within the meaning of that Ordinance. No advertisement, invitation or document relating to the shares has been or may be issued or has been or may be in the possession of any person for the purposes of issue, whether in Hong Kong or elsewhere, which is directed at, or the contents of which are likely to be accessed or read by, the public of Hong Kong (except if permitted to do so under the securities laws of Hong Kong) other than with respect to the shares which are or are intended to be disposed of only to persons outside Hong Kong or only to “professional investors” as defined in the Securities and Futures Ordinance and any rules made under that Ordinance.

Notice to Prospective Investors in Japan

The shares have not been and will not be registered under the Financial Instruments and Exchange Law of Japan (Law No. 25 of 1948, as amended) and, accordingly, will not be offered or sold, directly or indirectly, in Japan, or for the benefit of any Japanese Person or to others for re-offering or resale, directly or indirectly, in Japan or to any Japanese Person, except in compliance with all applicable laws, regulations and ministerial guidelines promulgated by relevant Japanese governmental or regulatory authorities in effect at the relevant time. For the purposes of this paragraph, “Japanese Person” shall mean any person resident in Japan, including any corporation or other entity organized under the laws of Japan.

Notice to Prospective Investors in Singapore

This prospectus has not been registered as a prospectus with the Monetary Authority of Singapore. Accordingly, the shares were not offered or sold or caused to be made the subject of an invitation for subscription or purchase and will not be offered or sold or caused to be made the subject of an invitation for subscription or purchase, and this prospectus or any other document or material in connection with the offer or sale, or invitation for subscription or purchase, of the shares, has not been circulated or distributed, nor will it be circulated or distributed, whether directly or indirectly, to any person in Singapore other than (i) to an institutional investor (as defined in Section 4A of the Securities and Futures Act (Chapter 289) of Singapore, as modified or amended

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from time to time (the “SFA”) pursuant to Section 274 of the SFA, (ii) to a relevant person (as defined in Section 275(2) of the SFA) pursuant to Section 275(1) of the SFA, or any person pursuant to Section 275(1A) of the SFA, and in accordance with the conditions specified in Section 275 of the SFA, or (iii) otherwise pursuant to, and in accordance with the conditions of, any other applicable provision of the SFA.

Where the shares are subscribed or purchased under Section 275 of the SFA by a relevant person which is:

- (a) a corporation (which is not an accredited investor (as defined in Section 4A of the SFA)) the sole business of which is to hold investments and the entire share capital of which is owned by one or more individuals, each of whom is an accredited investor; or
- (b) a trust (where the trustee is not an accredited investor) whose sole purpose is to hold investments and each beneficiary of the trust is an individual who is an accredited investor,

securities or securities-based derivatives contracts (each term as defined in Section 2(1) of the SFA) of that corporation or the beneficiaries’ rights and interest (howsoever described) in that trust shall not be transferred within six months after that corporation or that trust has acquired the shares pursuant to an offer made under Section 275 of the SFA except:

- (a) to an institutional investor or to a relevant person, or to any person arising from an offer referred to in Section 275(1A) or Section 276(4) (i)(B) of the SFA;
- (b) where no consideration is or will be given for the transfer;
- (c) where the transfer is by operation of law; or
- (d) as specified in Section 276(7) of the SFA.

Solely for the purposes of its obligations pursuant to section 30913(1)(a) and 30913(1)(c) of the SFA and the Securities and Futures (Capital Markets Products) Regulations 2018 of Singapore (the “CMP Regulations 2018”), the issuer has determined, and hereby notifies all relevant persons (as defined in Section 309A(1) of the SFA), that the shares are “prescribed capital markets products” (as defined in the CMP Regulations 2018) and Excluded Investment Products (as defined in MAS Notice SFA 04-N12: Notice on the Sale of Investment Products; and MAS notice FAA-N16: Notice on Recommendations on Investment Products).

Notice to Prospective Investors in Canada

The shares may be sold only to purchasers purchasing, or deemed to be purchasing, as principal that are accredited investors, as defined in National Instrument 45-106 Prospectus Exemptions or subsection 73.3(1) of the Securities Act (Ontario), and are permitted clients, as defined in National Instrument 31-103 Registration Requirements, Exemptions and Ongoing Registrant Obligations. Any resale of the shares must be made in accordance with an exemption from, or in a transaction not subject to, the prospectus requirements of applicable securities laws.

Securities legislation in certain provinces or territories of Canada may provide a purchaser with remedies for rescission or damages if prospectus supplement (including any amendment thereto) contains a misrepresentation, provided that the remedies for rescission or damages are exercised by the purchaser within the time limit prescribed by the securities legislation of the purchaser’s province or territory. The purchaser should refer to any applicable provisions of the securities legislation of the purchaser’s province or territory for particulars of these rights or consult with a legal advisor.

Pursuant to section 3A.3 (or, in the case of securities issued or guaranteed by the government of a non-Canadian jurisdiction, section 3A.4) of National Instrument 33-105 Underwriting Conflicts (NI 33-105), the underwriter is not required to comply with the disclosure requirements of NI 33-105 regarding underwriter conflicts of interest in connection with this offering.

LEGAL MATTERS

The validity of the common stock offered by this prospectus supplement has been passed upon by Wilmer Cutler Pickering Hale and Dorr LLP, Boston, Massachusetts. Certain legal matters will be passed upon for the underwriter by Milbank LLP, New York, New York.

EXPERTS

The financial statements and management's assessment of the effectiveness of internal control over financial reporting (which is included in Management's Report on Internal Control over Financial Reporting) incorporated in this prospectus by reference to the Annual Report on Form 10-K of MKS Instruments, Inc. for the year ended December 31, 2022 have been so incorporated in reliance on the report (which contains a paragraph relating to the effectiveness of internal control over financial reporting due to the exclusion of Atotech Limited because it was acquired by the Company in a purchase business combination during 2022) of PricewaterhouseCoopers LLP, an independent registered public accounting firm, given on the authority of said firm as experts in auditing and accounting.

The consolidated financial statements of Atotech Limited as of December 31, 2021 and 2020, and for each of the years in the three-year period ended December 31, 2021, have been incorporated by reference herein in reliance on the report of KPMG AG Wirtschaftsprüfungsgesellschaft, independent registered public accounting firm, incorporated by reference herein, and upon the authority of said firm as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

We file annual, quarterly and current reports, proxy statements and other information with the SEC. Our SEC filings are available to the public over the Internet at the SEC's website at <http://www.sec.gov>. Copies of certain information filed by us with the SEC are also available on our website at <http://www.mks.com>. Our website is not a part of this prospectus supplement and is not incorporated by reference in this prospectus supplement.

This prospectus supplement is part of a registration statement that we filed with the SEC. The registration statement contains more information than this prospectus supplement and the accompanying prospectus regarding us and the securities, including certain exhibits and schedules. You can obtain a copy of the registration statement from the from the SEC's internet site.

INCORPORATION OF CERTAIN DOCUMENTS BY REFERENCE

The SEC allows us to incorporate by reference in this prospectus supplement and the accompanying prospectus much of the information we file with the SEC, which means that we can disclose important information to you by referring you to those publicly available documents. The information that we incorporate by reference in this prospectus supplement and the accompanying prospectus is considered to be part of this prospectus supplement and the accompanying prospectus. Because we are incorporating by reference future filings with the SEC, this prospectus supplement and the accompanying prospectus is continually updated and those future filings may modify or supersede some of the information included or incorporated in this prospectus supplement and the accompanying prospectus. This means that you must look at all of the SEC filings that we incorporate by reference to determine if any of the statements in this prospectus supplement, the accompanying prospectus or in any document previously incorporated by reference have been modified or superseded. This prospectus supplement and the accompanying prospectus incorporate by reference the documents listed below (File No. 000-23621) and any future filings we make with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act (in each case, other than those documents or the portions of those documents not deemed to be filed) until the offering of the securities offered hereby is terminated or completed:

- (1) Our Annual Report on Form 10-K for the year ended December 31, 2022 filed on [March 14, 2023](#), including the information specifically incorporated by reference into our Annual Report on Form 10-K from our [definitive proxy statement](#) for our 2023 Annual Meeting of Stockholders;
- (2) Our Quarterly Report on Form 10-Q for the three months ended March 31, 2023 filed on [May 5, 2023](#);
- (3) Our Current Reports on Form 8-K filed on [February 6, 2023](#), [February 13, 2023](#) and [May 18, 2023](#);
- (4) Our Current Report on Form 8-K/A filed on [August 24, 2022](#); and
- (5) The description of our common stock contained in our Registration Statement on Form 8-A filed on [March 2, 1999](#), as the description therein has been updated and superseded by the description of our capital stock contained in [Exhibit 4.2](#) to our Annual Report on Form 10-K for the fiscal year ended December 31, 2019, as filed with the SEC on February 28, 2020, including any amendments or reports filed for the purpose of updating such description.

You may request a copy of these documents, which will be provided to you at no cost, by writing or telephoning us using the following contact information:

MKS Instruments, Inc.
2 Tech Drive, Suite 201
Andover, Massachusetts 01810
Attn: Investor Relations
(978) 645-5500

PROSPECTUS

MKS Instruments, Inc.

8,482,732 SHARES OF COMMON STOCK

This prospectus relates to resales of shares of common stock previously issued by MKS Instruments, Inc. to certain former stockholders of Atotech Limited, a registered public company incorporated and existing under the laws of Jersey, in connection with our acquisition of that company.

We will not receive any proceeds from the sale of the shares.

The selling stockholders identified in this prospectus, or their pledgees, assignees, donees, transferees or other successors-in-interest, may offer the shares from time to time through public or private transactions at prevailing market prices, at prices related to prevailing market prices or at privately negotiated prices.

Our common stock is traded on the Nasdaq Global Select Market under the symbol "MKSI." On August 23, 2022, the closing sale price of the common stock on Nasdaq was \$105.94 per share. You are urged to obtain current market quotations for the common stock.

Investing in our common stock involves a high degree of risk. See "[Risk Factors](#)" beginning on page 5 and the risks discussed in the documents we file with the U.S. Securities and Exchange Commission and that are incorporated by reference herein.

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 August 24, 2022.

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ABOUT THIS PROSPECTUS

You should rely only on the information contained or incorporated by reference in this prospectus. We have not, and the selling stockholders have not, authorized anyone to provide you with information different from that contained or incorporated by reference in this prospectus. We take no responsibility for, and can provide no assurance as to the reliability of, any other information that others may give. The selling stockholders are offering to sell, and seeking offers to buy, shares of our common stock only in jurisdictions where offers and sales are permitted. You should assume that the information contained in this prospectus is accurate only as of the date on the front cover of this prospectus, regardless of the time of delivery of this prospectus or of any sale of common stock. Our business, financial condition, results of operations and prospects may have changed since such date.

Unless the context otherwise indicates, references in this prospectus to the “Registrant” refer to MKS Instruments, Inc. and references in this prospectus to “we,” “our” and “us” and “MKS” refer, collectively, to MKS Instruments, Inc., a Massachusetts corporation, and its subsidiaries.

We own or have rights to, or have applied for, trademarks, service marks and trade names that we use in connection with the operation of our business, including our corporate name, logos and website names. Other trademarks, service marks and trade names appearing in this prospectus are the property of their respective owners. Solely for convenience, some of the trademarks, service marks and trade names referred to in this prospectus are listed without the ® and ™ symbols, but we will assert, to the fullest extent under applicable law, our rights to our trademarks, service marks and trade names.

CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus includes and incorporates forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, or the Securities Act, and Section 21E of the Securities Exchange Act of 1934, as amended, or the Exchange Act, regarding the future financial performance, business prospects and growth of MKS. These statements are only predictions based on current assumptions and expectations. Any statements that are not statements of historical fact (including statements containing the words “will,” “projects,” “intends,” “believes,” “plans,” “anticipates,” “expects,” “estimates,” “forecasts,” “continues” and similar expressions) should be considered to be forward-looking statements. Actual events or results may differ materially from those in the forward-looking statements included or incorporated herein.

Among the important factors that could cause actual events to differ materially from those in the forward-looking statements that we make are the need to generate sufficient cash flows to service and repay the substantial indebtedness MKS has incurred in connection with its acquisition of Atotech Limited, or Atotech, the terms of MKS’ existing term loans under which MKS incurred such debt, MKS’ entry into Atotech’s chemicals technology business, in which MKS does not have experience and which may expose it to significant additional liabilities, the risk of litigation relating to the Atotech acquisition, the risk that disruption from the Atotech acquisition materially and adversely affects the respective businesses and operations of MKS and Atotech, the ability of MKS to realize the anticipated synergies, cost savings and other benefits of the Atotech acquisition, competition from larger, more advanced or more established companies in MKS’ and Atotech’s respective markets, the ability of MKS to successfully grow its business and the businesses of Atotech, Photon Control Inc., which it acquired in July 2021, and Electro Scientific Industries, Inc., which it acquired in February 2019 and financial risks associated with those and potential future acquisitions, including goodwill and intangible asset impairments, potential adverse reactions or changes to business relationships resulting from the completion of the Atotech acquisition, manufacturing and sourcing risks, including those associated with limited and sole source suppliers and the impact and duration of supply chain disruptions and component shortages, and changes in global demand and the impact of the COVID-19 pandemic with respect to such disruptions, shortages and increases, conditions affecting the markets in which MKS and Atotech operate, including the fluctuations in capital spending in the semiconductor industry and other advanced manufacturing markets, and fluctuations in sales to MKS’ and Atotech’s major customers or disruptions or delays from third-party service providers upon which our operations may rely, the ability to anticipate and meet customer demand, the challenges, risks and costs involved with integrating or transitioning local and international operations of the companies we have acquired, risks associated with the attraction and retention of key personnel, risks associated with doing business internationally, including trade compliance, regulatory restrictions on our products or components and unfavorable currency exchange and tax rate fluctuations, which risks become more significant as we grow our business internationally and in China specifically, potential fluctuations in quarterly results, dependence on new product development, rapid technological and market change, acquisition strategy, volatility of stock price, risks associated with chemical manufacturing and environmental regulation compliance, risks related to our products resulting from defects, which would increase our costs and seriously harm our business, financial condition, operating results and customer relationships, financial and legal risk management, risks related to cybersecurity and data privacy threats and the challenges associated with intellectual property protection, and other important factors in the cautionary statements included or incorporated in this prospectus, particularly under the heading “Risk Factors.” Our forward-looking statements do not reflect the potential impact of any future acquisitions, mergers, dispositions, joint ventures or investments we may make. Any such forward-looking statements represent management’s views as of the date of the document in which such forward-looking statement is contained. MKS is under no obligation to, and expressly disclaims any obligation to, update or alter these forward-looking statements, whether as a result of new information, future events or otherwise, even if subsequent events cause our views to change.

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A statement contained in a document incorporated by reference into this prospectus shall be deemed to be modified or superseded for purposes of this prospectus to the extent that a statement contained in this prospectus, any prospectus supplement or in any other subsequently filed document which is also incorporated in this prospectus modifies or replaces such statement. Any statements so modified or superseded shall not be deemed, except as so modified or superseded, to constitute a part of this prospectus.

PROSPECTUS SUMMARY

This summary highlights important features of this offering and the information included or incorporated by reference in this prospectus. This summary does not contain all of the information that you should consider before investing in our common stock. You should read the entire prospectus carefully, especially the risks of investing in our common stock discussed under “Risk Factors.”

MKS Instruments, Inc.

MKS Instruments, Inc. enables technologies that transform our world. We deliver foundational technology solutions to leading edge semiconductor manufacturing, advanced electronics and specialty industrial applications. We apply our broad science and engineering capabilities to create instruments, subsystems, systems, process control solutions and specialty chemicals technology that improve process performance, optimize productivity and enable unique innovations for many of the world’s leading technology and industrial companies. Our solutions are critical to addressing the challenges of miniaturization and complexity in advanced device manufacturing by enabling increased power, speed and feature enhancement for optimized connectivity. Our solutions are also critical to addressing ever-increasing performance requirements across a wide array of specialty industrial applications.

Corporate Information

MKS Instruments, Inc.’s principal executive offices are located at 2 Tech Drive, Suite 201, Andover, Massachusetts, 01810, our telephone number at that address is (978) 645-5500 and our website address is <http://www.mks.com>. Our website address is included in this prospectus only as an inactive textual reference.

The Offering

Common Stock offered by selling stockholders	8,482,732 shares
Use of proceeds	MKS Instruments, Inc. will not receive any proceeds from the sale of shares in this offering
Nasdaq Global Select Market symbol	“MKSI”

RISK FACTORS

Investing in our common stock involves a high degree of risk. You should consider carefully the risks and uncertainties described under the section captioned “Risk Factors” contained in our most recent Annual Report on Form 10-K and in subsequent Quarterly Reports on Form 10-Q, and in other filings we make with the Securities and Exchange Commission, or the SEC, from time to time, including without limitation the Current Report on Form 8-K filed with the SEC on August 17, 2022, which are incorporated by reference herein in their entirety, together with other information in this prospectus and the information and documents incorporated by reference in this prospectus.

The risks described in our most recent Annual Report on Form 10-K and in any subsequent Quarterly Reports on Form 10-Q, and in other filings we make with the SEC incorporated by reference herein, including without limitation the Current Report on Form 8-K filed with the SEC on August 17, 2022, are not the only ones facing our Company. Additional risks and uncertainties may also impair our business operations. If any of the risks described in our most recent Annual Report on Form 10-K, our subsequent Quarterly Reports on Form 10-Q, and the other filings incorporated by reference herein, including without limitation the Current Report on Form 8-K filed with the SEC on August 17, 2022, occurs, our business, financial condition, results of operations, cash flows and future growth prospects could be harmed. In these circumstances, the market price of our common stock could decline, and you may lose all or part of your investment. If any of these risks actually occurs, our business, financial condition, results of operations or cash flow could suffer materially.

USE OF PROCEEDS

All of the shares of our common stock being offered hereby are being sold by the selling stockholders identified in this prospectus. We are not selling any securities under this prospectus and we will not receive any proceeds from the sale of shares by the selling stockholders.

The selling stockholders will pay any underwriting discounts and commissions and expenses incurred by the selling stockholders for brokerage, accounting, tax or legal services or any other expenses incurred by the selling stockholders in disposing of the shares. We will bear all other costs, fees and expenses incurred in effecting the registration of the shares covered by this prospectus, including, without limitation, all registration and filing fees, printing fees, Nasdaq listing fees and fees and expenses of our counsel and our accountants.

SELLING STOCKHOLDERS

We issued the shares of common stock covered by this prospectus in connection with the consummation of our acquisition of Atotech on August 17, 2022. The following table sets forth, to our knowledge, certain information about the selling stockholders as of August 23, 2022.

Beneficial ownership is determined in accordance with the rules of the SEC and includes voting or investment power with respect to shares. Unless otherwise indicated below, to our knowledge, all persons named in the table have sole voting and investment power with respect to their shares of common stock, except to the extent authority is shared by spouses under applicable law. The inclusion of any shares in this table does not constitute an admission of beneficial ownership for the person named below.

<u>Name of Selling Stockholder</u>	<u>Shares of Common Stock Beneficially Owned Prior to Offering</u>		<u>Number of Shares of Common Stock Being Offered</u>	<u>Shares of Common Stock to be Beneficially Owned After Offering(1)</u>	
	<u>Number</u>	<u>Percentage</u>		<u>Number</u>	<u>Percentage</u>
Carlyle Partners VI Cayman Holdings, L.P.(2)	5,180,030	7.8%	5,180,030	—	—
CEP IV Participations, S.à r.l. SICAR(2)	2,259,743	3.4%	2,259,743	—	—
Gamma Holding Company Limited(2)	1,042,959	1.6%	1,042,959	—	—

- (1) We do not know when or in what amounts the selling stockholders may offer shares for sale. The selling stockholders might not sell any or all of the shares offered by this prospectus. Because the selling stockholders may offer all or some of the shares pursuant to this offering, and because there are currently no agreements, arrangements or understandings with respect to the sale of any of the shares, we cannot estimate the number of the shares that will be held by the selling stockholders after completion of the offering. However, for purposes of this table, we have assumed that, after completion of the offering, none of the shares covered by this prospectus will be held by the selling stockholders.
- (2) The Carlyle Group Inc., which is a publicly traded entity listed on NASDAQ, is the sole member of Carlyle Holdings II GP L.L.C., which is the managing member of Carlyle Holdings II L.L.C., which, with respect to the securities reported herein, is the managing member of CG Subsidiary Holdings L.L.C., which is the general partner of TC Group Cayman Investment Holdings, L.P., which is the general partner of TC Group Cayman Investment Holdings Sub L.P., which is the sole shareholder TC Group VI Cayman, L.L.C., which is the general partner of TC Group VI Cayman, L.P., which is the general partner of Carlyle Partners VI Cayman Holdings, L.P.

TC Group Cayman Investment Holdings Sub L.P. is also the sole shareholder of CEP IV Managing GP Holdings, Ltd. and the sole member of CAP IV, L.L.C. CEP IV Managing GP Holdings, Ltd. is the general partner of CEP IV Managing GP, L.P., which is the managing general partner of Carlyle Europe Partners IV, L.P., which is the majority shareholder of CEP IV Participations, S.à r.l. SICAR. CAP IV, L.L.C. is the general partner of CAP IV General Partner, L.P., which is the general partner of Carlyle Asia Partners IV, L.P., which is the majority shareholder of Gamma Holding Company Limited.

Voting and investment determinations with respect to the shares held by Carlyle Partners VI Cayman Holdings, L.P. are made by an investment committee of TC Group VI Cayman, L.P., which is comprised of Peter Clare, William Conway, Jr., Daniel D’Aniello, David Rubenstein, Kevin Gasque, Allan Holt, Sandra Horbach, Brian Bernasek and Marco De Benedetti as a non-voting observer.

Voting and investment determinations with respect to the shares held by CEP IV Participations, S.à r.l. SICAR are made by the board of CEP IV Participations, S.à r.l. SICAR following recommendations by the investment committee of CEP IV Managing GP, L.P. The Board of the SICAR is comprised of Estelle Beyl-Vodouhé, William Cagney, Guy Harles, Andrew Howlett-Bolton and Richard Wallace. The investment committee of CEP IV Managing GP, L.P. is comprised of Daniel D’Aniello, William Conway, Jr., David Rubenstein, Peter Clare, and Kevin Gasque.

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Voting and investment determinations with respect to the shares held by Gamma Holding Company Limited are made by an investment committee of CAP IV General Partner, L.P. The investment committee of CAP IV General Partner, L.P. is comprised of Daniel D'Aniello, William Conway, Jr., David Rubenstein, Kevin Gasque, and Peter Clare.

Accordingly, each of the entities and individuals mentioned above may be deemed to share beneficial ownership of the securities held of record by Carlyle Partners VI Cayman Holdings, L.P., CEP IV Participations, S.à r.l. SICAR and Gamma Holding Company Limited. Each of them disclaims any such beneficial ownership.

The address for CEP IV Participations S.à r.l., SICAR is 2, avenue Charles de Gaulle, 4th floor, L-1653 Luxembourg, Grand Duchy of Luxembourg. The address for each of the other entities and individuals named in this footnote is c/o The Carlyle Group, 1001 Pennsylvania Ave. NW, Suite 220 South, Washington, D.C. 20004-2505.

Except as described below, none of the selling stockholders has held any position or office with, or has otherwise had a material relationship with, us or any of our predecessors or affiliates within the past three years.

On July 1, 2021, we entered into an implementation agreement to acquire Atotech, which was amended in October 2021 and further amended in April 2022 (as amended, the Implementation Agreement). Pursuant to the Implementation Agreement, we paid \$16.20 per share in cash and 0.0552 of a share of our common stock for each outstanding common share of Atotech, for total cash and stock consideration of \$4.4 billion. The Atotech acquisition closed on August 17, 2022.

Pursuant to the Implementation Agreement, on August 17, 2022, we entered into an Investor Rights Agreement with the selling stockholders to grant the selling stockholders certain registration rights with respect to the shares of MKS stock they received upon consummation of the acquisition. Under the Investor Rights Agreement, we granted to the selling stockholders the right to demand that we file a registration statement for all or a portion of their common stock. In addition, the selling stockholders are entitled to request that their shares be covered by a registration statement that we are otherwise filing with respect to our common stock. These registration rights are subject to conditions and limitations, including the right of the underwriters of an offering to limit the number of shares included in certain registrations. Under the Investor Rights Agreement, we have also agreed to indemnify the selling stockholders against certain liabilities relating to the selling of the common stock, including liabilities arising under the Securities Act, and to pay the costs and fees of registering the shares of common stock; however, the selling stockholders will pay any brokerage commissions, discounts or other expenses relating to the sale of shares of common stock.

In connection with the Implementation Agreement, the selling stockholders entered into a lock-up agreement, or the Lock-Up Agreement, with us, pursuant to which the selling stockholders have agreed not to sell, hypothecate, pledge or otherwise dispose of a percentage of the shares of MKS stock they received upon consummation of the acquisition for a phased period ending October 16, 2022. Pursuant to the terms of the Lock-Up Agreement, 80% of such shares will be subject to the lock-up until September 16, 2022 and 60% of such shares will be subject to the lock-up until October 16, 2022.

In connection with the entry into the Implementation Agreement, we received a deed of irrevocable undertaking, or the Irrevocable Undertaking, from the selling stockholders pursuant to which they agreed to vote or procure votes in favor of the scheme of arrangement contemplated by the Implementation Agreement at the court-approved shareholder meeting and the resolution to be proposed at the general meeting of Atotech. The general meeting of Atotech occurred on November 3, 2021 and the Atotech shareholders, including the selling stockholders, voted in favor of the scheme of arrangement.

PLAN OF DISTRIBUTION

The shares covered by this prospectus may be offered and sold from time to time by the selling stockholders. The term “selling stockholders” includes donees, pledgees, assignees, distributees, transferees or other successors-in-interest selling shares received after the date of this prospectus from the selling stockholders as a gift, pledge, partnership distribution or other transfer. The selling stockholders will act independently of us in making decisions with respect to the timing, manner and size of each sale. Such sales may be made on one or more exchanges in any market or trading facility on which the shares are traded, or in the over-the-counter market or otherwise, at fixed prices, at prices and under terms then-prevailing or at prices related to the then-current market price, at varying prices determined at the time of sale or in negotiated transactions.

The selling stockholders may sell their shares by one or more of, or a combination of, the following methods:

- one or more underwritten offerings;
- purchases by a broker-dealer as principal and resale by such broker-dealer for its own account pursuant to this prospectus;
- ordinary brokerage transactions and transactions in which the broker solicits purchasers;
- block trades in which the broker-dealer so engaged will attempt to sell the shares as agent but may position and resell a portion of the block as principal to facilitate the transaction;
- over-the-counter distributions in accordance with the rules of Nasdaq;
- in privately negotiated transactions;
- an exchange distribution in accordance with the rules of Nasdaq;
- distributions to their members, partners or shareholders;
- short sales effected after the date of the registration statement of which this prospectus is a part is declared effective by the SEC;
- through the writing or settlement of options or other hedging transactions, whether through an options exchange or otherwise;
- in market transactions, including transactions on a national securities exchange or quotations service or over-the-counter market;
- directly to one or more purchasers;
- through agents;
- broker-dealers may agree with the selling stockholders to sell a specified number of such shares at a stipulated price per share; and
- a combination of any such methods of sale.

The selling stockholders also may in the future resell a portion of the shares in open market transactions in reliance upon Rule 144 under the Securities Act, provided that they meet the criteria and conform to the requirements of that rule, or pursuant to other available exemptions from the registration requirements of the Securities Act.

To the extent required, this prospectus may be amended or supplemented from time to time to describe a specific plan of distribution.

In connection with distributions of the shares or otherwise, the selling stockholders may enter into hedging transactions with broker-dealers or other financial institutions. In connection with such transactions, broker-

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dealers or other financial institutions may engage in short sales of the common stock in the course of hedging the positions they assume with selling stockholders. The selling stockholders may also sell the common stock short and redeliver the shares to close out such short positions, or loan or pledge shares to broker-dealers that in turn may sell such shares. The selling stockholders may also enter into option or other transactions with broker-dealers or other financial institutions or the creation of one or more derivative securities which require the delivery to such broker-dealer or other financial institution of shares 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).

The selling stockholders may also pledge or grant a security interest in shares to a broker-dealer, other financial institution or other person, and, upon a default, such pledgee or secured parties may effect sales of the pledged shares pursuant to this prospectus (as supplemented or amended to reflect such transaction). The selling stockholders also may transfer shares in other circumstances, in which case the transferees, pledgees or other successors in interest will be the selling beneficial owners for purposes of this prospectus (as supplemented or amended to reflect such transaction).

A selling stockholder that is an entity may elect to make an in-kind distribution of shares to its members, partners or shareholders pursuant to the registration statement of which this prospectus is a part by delivering a prospectus. To the extent that such members, partners or shareholders are not affiliates of ours, such members, partners or shareholders would thereby receive freely tradable shares pursuant to the distribution through a registration statement.

In effecting sales, broker-dealers or agents engaged by the selling stockholders may arrange for other broker-dealers to participate. Broker-dealers or agents may receive commissions, discounts or concessions from the selling stockholders in amounts to be negotiated immediately prior to the sale. The aggregate proceeds to the selling stockholders from the sale of shares offered by them will be the purchase price of such shares less discounts or commissions, if any. The selling stockholders reserve the right to accept and, together with their agents from time to time, reject, in whole or in part, any proposed purchase of shares to be made directly or through agents. We will not receive any of the proceeds from any offering by the selling stockholders.

In offering the shares covered by this prospectus, the selling stockholders and any broker-dealers who execute sales for the selling stockholders may be deemed to be “underwriters” within the meaning of the Securities Act in connection with such sales. Any profits realized by the selling stockholders and the compensation of any broker-dealer may be deemed to be underwriting discounts and commissions. If any selling stockholder is an “underwriter” within the meaning of Section 2(a)(11) of the Securities Act, then such selling stockholder will be subject to the prospectus delivery requirements of the Securities Act. Underwriters and their controlling persons, dealers and agents may be entitled, under agreements entered into with us and the selling stockholders, to indemnification against and contribution toward specific civil liabilities, including liabilities under the Securities Act. We may be entitled to indemnification against and contribution toward specific liabilities arising from (i) certain statements or omissions in this prospectus or any supplement to it by the selling stockholders, and (ii) the selling stockholders’ compliance with applicable laws in effecting the sale or disposition of the securities covered by this prospectus.

In order to comply with the securities laws of certain states, if applicable, the shares must be sold in such jurisdictions only through registered or licensed brokers or dealers. In addition, in certain states the shares may not be sold unless they have been registered or qualified for sale in the applicable state or an exemption from the registration or qualification requirement is available and is complied with.

We have advised the selling stockholders that the anti-manipulation rules of Regulation M under the Exchange Act may apply to sales of shares in the market and to the activities of the selling stockholders and their affiliates. In addition, we will make copies of this prospectus available to the selling stockholders for the purpose of satisfying the prospectus delivery requirements of the Securities Act. The selling stockholders may indemnify

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any broker-dealer that participates in transactions involving the sale of the shares against certain liabilities, including liabilities arising under the Securities Act.

At the time a particular offer of shares is made, if required, a prospectus supplement will be distributed that will set forth the number of shares being offered and the terms of the offering, including the name of any underwriter, dealer or agent, the purchase price paid by any underwriter, any discount, commission and other item constituting compensation, any discount, commission or concession allowed or reallocated or paid to any dealer, and the proposed selling price to the public.

We have agreed to indemnify the selling stockholders against certain liabilities, including certain liabilities under the Securities Act.

We have agreed with the selling stockholders to keep the Registration Statement of which this prospectus constitutes a part effective until such time as all of the shares covered by this prospectus have been disposed of pursuant to and in accordance with the Registration Statement.

LEGAL MATTERS

The validity of the shares offered by this prospectus has been passed upon by Wilmer Cutler Pickering Hale and Dorr LLP.

EXPERTS

The financial statements and management's assessment of the effectiveness of internal control over financial reporting (which is included in Management's Report on Internal Control over Financial Reporting) incorporated in this prospectus by reference to the Annual Report on Form 10-K of MKS Instruments, Inc. for the year ended December 31, 2021 have been so incorporated in reliance on the report (which contains a paragraph relating to the effectiveness of internal control over financial reporting due to the exclusion of Photon Control Inc. because it was acquired by the Company in a purchase business combination during 2021) of PricewaterhouseCoopers LLP, an independent registered public accounting firm, given on the authority of said firm as experts in auditing and accounting.

The consolidated financial statements of Atotech Limited as of December 31, 2021 and 2020, and for each of the years in the three-year period ended December 31, 2021, have been incorporated by reference herein in reliance on the report of KPMG AG Wirtschaftsprüfungsgesellschaft, independent registered public accounting firm, incorporated by reference herein, and upon the authority of said firm as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

We file annual, quarterly and current reports, proxy statements and other information with the SEC. Our SEC filings are available to the public over the Internet at the SEC's website at <http://www.sec.gov>. Copies of certain information filed by us with the SEC are also available on our website at <http://www.mks.com>. Our website is not a part of this prospectus and is not incorporated by reference in this prospectus.

This prospectus is part of a registration statement we filed with the SEC. This prospectus omits some information contained in the registration statement in accordance with SEC rules and regulations. You should review the information and exhibits in the registration statement for further information about us and our consolidated subsidiaries and the securities we are offering. Statements in this prospectus concerning any document we filed as an exhibit to the registration statement or that we otherwise filed with the SEC are not intended to be comprehensive and are qualified by reference to these filings. You should review the complete document to evaluate these statements.

INCORPORATION OF CERTAIN DOCUMENTS BY REFERENCE

The SEC allows us to incorporate by reference much of the information we file with the SEC, which means that we can disclose important information to you by referring you to those publicly available documents. The information that we incorporate by reference in this prospectus is considered to be part of this prospectus. Because we are incorporating by reference future filings with the SEC, this prospectus is continually updated and those future filings may modify or supersede some of the information included or incorporated in this prospectus. This means that you must look at all of the SEC filings that we incorporate by reference to determine if any of the statements in this prospectus or in any document previously incorporated by reference have been modified or superseded. This prospectus incorporates by reference the documents listed below (File No. 000-23621) and any future filings we make with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act (in each case, other than those documents or the portions of those documents not deemed to be filed) until the offering of the securities under the registration statement is terminated or completed:

- (1) Our Annual Report on [Form 10-K](#) for the year ended December 31, 2021, including the information specifically incorporated by reference into our Annual Report on Form 10-K from our [definitive proxy statement](#) for our 2022 Annual Meeting of Shareholders;
- (2) Our Quarterly Reports on Form 10-Q filed on [May 2, 2022](#) and [August 3, 2022](#);
- (3) Our Current Reports on Form 8-K filed on [February 11, 2022](#), [April 1, 2022](#) (solely with respect to Items 1.01, 1.02 and the portions of Item 9.01 and Exhibits 2.1 and 10.1 thereto related to Item 1.01), [May 11, 2022](#), [July 28, 2022](#) and [August 17, 2022](#) and our Current Reports on Form 8-K/A filed on [August 17, 2022](#) and [August 24, 2022](#);
- (4) The description of our common stock contained in our Registration Statement on [Form 8-A](#) filed on March 2, 1999, as the description therein has been updated and superseded by the description of our capital stock contained in [Exhibit 4.2](#) to our Annual Report on Form 10-K for the fiscal year ended December 31, 2019, as filed with the SEC on February 28, 2020, including any amendments or reports filed for the purpose of updating such description.

A statement contained in a document incorporated by reference into this prospectus shall be deemed to be modified or superseded for purposes of this prospectus to the extent that a statement contained in this prospectus, any prospectus supplement or in any other subsequently filed document which is also incorporated in this prospectus modifies or replaces such statement. Any statements so modified or superseded shall not be deemed, except as so modified or superseded, to constitute a part of this prospectus.

You may request a copy of these documents, which will be provided to you at no cost, by writing or telephoning us using the following contact information:

MKS Instruments, Inc.
2 Tech Drive, Suite 201
Andover, Massachusetts 01810
Attn: Investor Relations
(978) 645-5500

2,000,000 shares

Common stock



J.P. Morgan

June 1, 2023
