

VEECO INSTRUMENTS INC
 Form 424B2
 October 29, 2009

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CALCULATION OF REGISTRATION FEE

| Title of each class of securities to be registered | Amount to be registered | Proposed maximum offering price per unit | Proposed maximum aggregate offering price | Amount of registration fee |
|---|--------------------------------|---|--|-----------------------------------|
| Common Stock, par value \$0.01 per share (1) | 5,750,000(2) | \$23.75 | \$136,562,500 | \$7,621(3) |

(1) Includes preferred share purchase rights. Prior to the occurrence of certain events, the preferred share purchase rights will not be exercisable or evidenced separately from the common stock.

(2) The securities registered herein are offered pursuant to an automatic shelf registration statement. Includes shares of common stock that may be purchased by the underwriters pursuant to their option to purchase additional shares.

(3) The filing fee is calculated in accordance with Rule 457(r).

PROSPECTUS SUPPLEMENT

(To Prospectus dated October 26, 2009)

5,000,000 Shares
Veeco Instruments Inc.
Common Stock
\$23.75 per share

We are offering 5,000,000 shares of our common stock to be sold in this offering. We will receive all of the net proceeds from the sale of such common stock. We have granted the underwriters an option to purchase up to 750,000 additional shares to cover over-allotments.

Our common stock is traded on The NASDAQ Global Select Market and is quoted under the symbol "VECO." The last reported sale price of our common stock on The NASDAQ Global Select Market on October 28, 2009 was \$24.22 per share.

Investing in our common stock involves risks. See "Risk Factors" beginning on page S-3.

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

| | Per Share | Total |
|--|------------------|----------------|
| Public offering price | \$ 23.75 | \$ 118,750,000 |
| Underwriting discounts and commissions | \$ 1.06875 | \$ 5,343,750 |
| Proceeds to us, before expenses | \$ 22.68125 | \$ 113,406,250 |

The underwriters expect to deliver the shares to purchasers on or about November 3, 2009 through the book-entry facilities of The Depository Trust Company.

Joint Book-Running Managers

Citi

J.P. Morgan

Co-Managers

Canaccord Adams

Piper Jaffray

October 28, 2009

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ABOUT THIS PROSPECTUS SUPPLEMENT

This prospectus supplement is a supplement to the accompanying base prospectus that is also a part of this document. This prospectus supplement and the accompanying base prospectus are part of a "shelf" registration statement that we filed with the Securities and Exchange Commission, or the SEC. By using a shelf registration statement, we may sell any of the securities described in the base prospectus from time to time in one or more offerings. In this prospectus supplement, we provide you with specific information about the terms of this offering. Both this prospectus supplement and the accompanying base prospectus include important information about us, our common stock and other information you should know before investing in our common stock.

It is important for you to read and consider all of the information contained in this prospectus supplement and the accompanying base prospectus in making your investment decision. You also should read and consider the information in the documents we have referred you to in "Where You Can Find More Information" on page S-16 of this prospectus supplement and page 8 of the accompanying base prospectus.

You should rely only on the information contained in or incorporated by reference in this prospectus supplement and the accompanying base prospectus. We have not, and the underwriters have not, authorized any other person to provide you with different information. If anyone provides you with different or inconsistent information, you should not rely on it. We are not, and the underwriters are not, making an offer to sell the shares of common stock in any jurisdiction where the offer or sale is not permitted. You should assume that the information appearing in this prospectus supplement, the accompanying base prospectus and the documents incorporated by reference herein and therein is accurate only as of their respective dates. Our business, financial condition, results of operations and prospects may have changed since those dates.

We include cross-references in this prospectus supplement and the accompanying base prospectus to captions in these materials where you can find additional related discussions. The table of contents in this prospectus supplement provides the pages on which these captions are located.

Unless the context requires otherwise, references to "Veeco," "the Company," "we," "our" or "us" in this prospectus supplement refer to Veeco Instruments Inc., a Delaware corporation.

FORWARD-LOOKING STATEMENTS

We have included or incorporated by reference in this prospectus supplement and the accompanying base prospectus statements that may constitute "forward-looking statements" within the meaning of Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934. You may find these statements by looking for words such as "plan," "believe," "expect," "intend," "anticipate," "estimate," "project," "potential," "possible," or other similar expressions, or future or conditional verbs such as "will," "should," "would," and "could."

All forward-looking statements, by their nature, are subject to risks and uncertainties. Our actual results may differ materially from those set forth in our forward-looking statements. Discussions containing these forward-looking statements may be found, among other places, in Items 1, 1A, 3, 7 and 7A in our annual report on Form 10-K for the year ended December 31, 2008, which is incorporated in this prospectus supplement by reference, and in our most recent quarterly reports on Form 10-Q for the quarters ended March 31, 2009, June 30, 2009 and September 30, 2009, which are incorporated by reference in this prospectus supplement, as well as any modifications or revisions to risk factors contained in our subsequent filings with the SEC. See "Where You Can Find More Information" below for information about how to obtain a copy of our annual and quarterly reports.

You should not place undue reliance on any forward-looking statements, which speak only as of the dates they are made.

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All subsequent written and oral forward-looking statements attributable to us or any person on our behalf are expressly qualified in their entirety by the cautionary statements contained or referred to in this section. Except to the extent required by applicable law or regulation, we undertake no obligation to update these forward-looking statements to reflect events or circumstances after the date of this prospectus supplement or to reflect the occurrence of unanticipated events.

SUMMARY

The following summary should be read together with the information contained in other parts of this prospectus supplement and in the accompanying base prospectus. This summary highlights selected information from this prospectus supplement and the accompanying base prospectus to help you understand the offering of the shares of common stock. You should read this prospectus supplement and the accompanying base prospectus, including the documents we incorporate by reference, carefully before making an investment decision. You should pay special attention to the "Risk Factors" section beginning on page S-3 of this prospectus supplement and the "Risk Factors" in our Annual Report on Form 10-K for the year ended December 31, 2008, and in our Quarterly Reports on Form 10-Q for the quarters ended March 31, 2009, June 30, 2009 and September 30, 2009 to determine whether an investment in our common stock is appropriate for you.

Veeco Instruments Inc.

We design, manufacture, market, and service enabling solutions for customers in the high-brightness light emitting diode ("HB-LED"), solar, data storage, scientific research, semiconductor, and industrial markets. We have leading technology positions in our three segments: Light Emitting Diode ("LED") & Solar Process Equipment, Data Storage Process Equipment, and Metrology.

In our LED & Solar segment, we design and manufacture metal organic chemical vapor deposition ("MOCVD") systems, molecular beam epitaxy ("MBE") systems and sources, and other types of deposition systems such as web and glass coaters, which we sell primarily to manufacturers of HB-LEDs and solar panels, as well as to scientific research customers.

In our Data Storage segment, we design and manufacture ion beam etch, ion beam deposition, diamond-like carbon, physical vapor deposition, and dicing and slicing products primarily used to create thin film magnetic heads ("TFMHs") that read and write data on hard disk drives.

In our Metrology segment, we design and manufacture atomic force microscopes ("AFMs"), scanning probe microscopes ("SPMs"), stylus profilers, and optical interferometers used to provide critical surface measurements in research and production environments. This broad line of products is used in universities, research facilities and scientific centers worldwide. In production environments such as semiconductor, data storage and other industries, our metrology instruments enable customers to monitor their products throughout the manufacturing process to improve yields, reduce costs, and improve product quality.

Veeco was organized as a Delaware corporation in 1989. Our headquarters are located at Terminal Drive, Plainview, New York 11803, and our telephone number is (516) 677-0200. Our website is www.veeco.com. The information on our Internet site is not incorporated by reference into this prospectus supplement or the accompanying base prospectus.

THE OFFERING

| | |
|---|---|
| Issuer | Veeco Instruments Inc. |
| Common stock we are offering | 5,000,000 shares, or 5,750,000 shares if the underwriters' overallotment option is exercised in full |
| Common stock outstanding prior to completion of the offering | 32,777,024 shares(1) |
| Common stock outstanding after the offering | 37,777,024 shares, or 38,527,024 if the underwriters' overallotment option is exercised in full(1) |
| NASDAQ Global Select Market symbol | VECO |
| Use of Proceeds | We plan to use the net proceeds from this offering of our common stock (approximately \$113.1 million, or \$130.1 million if the overallotment option is fully exercised, after giving effect to discounts, commissions and offering expenses, based on the public offering price of \$23.75 per share) for working capital and general corporate purposes, including potential acquisitions. While we regularly evaluate acquisition opportunities for complementary businesses, products and technologies, as of the date hereof we have no contract or arrangement with respect to any material acquisition. We may also use the net proceeds to purchase or redeem all or a portion of our 4.125% convertible subordinated notes due 2012. Pending these uses, we expect to invest the net proceeds in investment-grade, interest-bearing securities. |
| Risk Factors | See the section entitled "Risk Factors" in this prospectus supplement for a discussion of important factors you should consider carefully in deciding whether to invest in our common stock. |
| Transfer Agent | American Stock Transfer & Trust Company |

(1) Based on the number of shares of common stock outstanding as of October 20, 2009. Excludes 5,073,711 shares of our common stock that are subject to outstanding but unexercised options to purchase shares of common stock or to granted but unvested restricted stock units and 563,569 shares of our common stock that are reserved for issuance under our equity compensation plans but not subject to any outstanding equity grants, and 5,350,934 shares of our common stock that are reserved for issuance upon conversion of our 4.125% convertible subordinated notes due 2012.

RISK FACTORS

Investing in our common stock involves risks, including the risks described below that are specific to our common stock and those that could affect us and our business. You should not purchase shares of our common stock unless you understand these investment risks. Please be aware that other risks may prove to be important in the future. New risks may emerge at any time and we cannot predict such risks or estimate the extent to which they may affect our financial performance. Before purchasing any shares of our common stock, you should carefully consider the following discussion of risks and the other information in this prospectus supplement and the accompanying base prospectus, and carefully read the risks described in the documents incorporated by reference in this prospectus supplement and the accompanying base prospectus, including those set forth under the caption "Risk Factors" in our Annual Report on Form 10-K for the year ended December 31, 2008 and in our Quarterly Report on Form 10-Q for the quarter ended June 30, 2009. The risks and uncertainties described below are not the only risks and uncertainties we face. Additional risks and uncertainties not presently known to us or that we currently deem immaterial may also impair our business operations. If any of the following risks actually occur, our business, financial condition and results of operations would suffer. In that event, the trading price of our common stock could decline, and you may lose all or part of your investment in our common stock. The risks discussed below also include forward-looking statements and our actual results may differ substantially from those discussed in these forward-looking statements. Please also refer to the section in this prospectus supplement entitled "Forward-Looking Statements."

Risks related to our common stock and this offering

The price of our common stock may be volatile and could decline significantly, which may make it difficult for you to resell the common stock when you want or at prices you find attractive.

The stock market in general, and the market for technology stocks in particular, has experienced volatility that has often been unrelated to the operating performance of companies. If these market or industry-based fluctuations continue, the trading price of our common stock could decline significantly independent of our actual operating performance, and you could lose all or a substantial part of your investment. The market price of our common stock could fluctuate significantly in response to several factors, including among others:

general stock market conditions and uncertainty, such as those occasioned by the global liquidity crisis, negative financial news, and the failure of several large financial institutions;

receipt of substantial orders or cancellations for our products;

actual or anticipated variations in our results of operations;

announcements of financial developments or technological innovations;

our failure to meet the performance estimates of investment research analysts or prior guidance we have provided;

changes in recommendations and/or financial estimates by investment research analysts;

strategic transactions by us or our competitors, such as acquisitions, divestitures or spin-offs; and

the occurrence of major catastrophic events.

Significant price fluctuations have occurred with respect to the publicly traded securities of the Company and technology companies generally. In recent years, the global equity markets have experienced substantial price and volume fluctuations. In the fourth quarter of 2008, the volatility in capital markets reached extreme levels. This volatility has had a significant impact on the market price of securities issued by many companies including us and the companies in our industry. The price of our common stock could fluctuate based upon factors that have little or nothing to do with our

company, and these fluctuations could materially reduce our stock price and your ability to sell your shares. Between January 1, 2008 and October 23, 2009, the price of our common stock has fluctuated from a high of \$27.24 per share to a low of \$3.22 per share. In the past, securities class action litigation often has been brought against a company following periods of volatility in the market price of its securities. If similar litigation were pursued against us, it could result in substantial costs and a diversion of management's attention and resources, which could materially adversely affect our results of operations, financial condition and liquidity.

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

We are not restricted from issuing additional shares of our common stock or preferred stock, including any securities that are convertible into or exchangeable for, or that represent the right to receive, our common stock or preferred stock or any substantially similar securities. The market price of our common stock could decline as a result of sales of a large number of shares of our common stock in the market after this offering or the perception that such sales could occur.

We and our executive officers have agreed, subject to certain exceptions, for a period of 90 days from the date of this prospectus supplement, that we and they will not, without the prior written consent of the representatives on behalf of the underwriters, directly or indirectly, offer to sell, sell or otherwise dispose of any shares of our common stock.

We have adopted certain measures that may have anti-takeover effects which may make an acquisition of us by another company more difficult.

We have adopted, and may in the future adopt, certain measures that may have the effect of delaying, deferring or preventing a takeover or other change in control of us that a holder of our common stock might not consider in its best interest. These measures include:

"blank check" preferred stock,

a classified board of directors,

a shareholder rights plan or "poison pill," and

certain certificate of incorporation and bylaw provisions.

Our board of directors has the authority to issue up to 500,000 shares of preferred stock and to fix the rights (including voting rights), preferences and privileges of these shares ("blank check" preferred). Such preferred stock may have rights, including economic rights, senior to our common stock. As a result, the issuance of the preferred stock could have a material adverse effect on the price of our common stock and could make it more difficult for a third party to acquire a majority of our outstanding common stock.

Our board of directors is divided into three classes with each class serving a staggered three-year term. The existence of a classified board will make it more difficult for our shareholders to change the composition (and therefore the policies) of our board of directors in a relatively short period of time.

We have adopted a shareholder rights plan, under which we have granted to our shareholders rights to purchase shares of junior participating preferred stock. This plan or "poison pill" could discourage a takeover that is not approved by our board of directors but which a shareholder might consider in its best interest, thereby adversely affecting our stock price.

We have adopted certain certificate of incorporation and bylaw provisions which may have anti-takeover effects. These include: (a) requiring certain actions to be taken at a meeting of shareholders rather than by written consent, (b) requiring a super-majority of shareholders to approve

certain amendments to our bylaws, (c) limiting the maximum number of directors, and (d) providing that directors may be removed only for "cause." These measures and those described above may have the effect of delaying, deferring or preventing a takeover or other change in control of us that a holder of our common stock might consider in its best interest.

In addition, we are subject to the provisions of Section 203 of the General Corporation Law of the State of Delaware, which prohibits a Delaware corporation from engaging in any business combination, including mergers and asset sales, with an interested stockholder (generally, a 15% or greater stockholder) for a period of three years after the date of the transaction in which the person became an interested stockholder, unless the business combination is approved in a prescribed manner. The operation of Section 203 may have anti-takeover effects, which could delay, defer or prevent a takeover attempt that a holder of our common stock might consider in its best interest.

Management will have broad discretion as to the use of the proceeds from this offering, and we may not use the proceeds effectively.

We currently anticipate using the net proceeds from this offering for working capital and general corporate purposes, including potential acquisitions.

We may also use a portion of the net proceeds to invest in businesses, products and technologies that are complementary to our own, although we have no current plans, commitments or agreements with respect to any acquisitions as of the date of this prospectus supplement. We may also use the net proceeds to purchase or redeem all or a portion of our 4.125% convertible subordinated notes due 2012. Our management has broad discretion over how these proceeds are used and could spend the proceeds in ways with which you may not agree.

The issuance of common stock in this offering is expected to impact our earnings on a per share basis.

Our earnings guidance for the fourth quarter of 2009, which constitutes forward-looking information, was estimated on the basis of available operational, financial and competitive information and reflects management's current expectations. See "Forward-Looking Statements" in this prospectus supplement. Our previously announced earnings guidance did not take into account the dilution resulting from this offering. As a result, the market price of our common stock could be materially and adversely affected.

USE OF PROCEEDS

We plan to use the net proceeds from this offering of our common stock (approximately \$113.1 million, or \$130.1 million if the overallotment option is fully exercised, after giving effect to discounts, commissions and offering expenses, based on the public offering price of \$23.75 per share) for working capital and general corporate purposes, including potential acquisitions. While we regularly evaluate acquisition opportunities for complementary businesses, products and technologies, as of the date hereof we have no contract or arrangement with respect to any material acquisition. We may also use the net proceeds to purchase or redeem all or a portion of our 4.125% convertible subordinated notes due 2012. Pending these uses, we expect to invest the net proceeds in investment-grade, interest-bearing securities.

An increase in the number of shares offered by us in this offering will not change our anticipated use of proceeds from this offering.

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CAPITALIZATION

The following table sets forth out consolidated capitalization as of September 30, 2009 on:

an actual basis; and

an as adjusted basis to give effect to the sale of the shares of common stock offered hereby (assuming no exercise of the underwriters' over-allotment option for this offering) and the application of the net proceeds therefrom as described under "Use of Proceeds".

The information presented in the table below should be read in conjunction with "Use of Proceeds" included elsewhere in this prospectus supplement as well as our Consolidated Financial Statements and notes thereto incorporated in this prospectus supplement by reference. See "Incorporation of Certain Documents by Reference" in this prospectus supplement.

| | As of September 30, 2009 | |
|--|--|----------------|
| | Actual (Unaudited in 000's, except share data) | As adjusted |
| Cash and Cash Equivalents | \$ 109,441 | \$ 222,547 |
| Long-Term Debt, including current portion | \$ 100,494 | \$ 100,494 |
| Shareholders' Equity: | | |
| Preferred Stock; \$0.01 par value; 500,000 shares authorized; no shares issued and outstanding | | |
| Common Stock; \$0.01 par value; 60,000,000 shares authorized; 32,688,539 shares issued and outstanding, actual; 37,688,539 shares issued and outstanding, as adjusted | 319 | 369 |
| Additional Paid-In Capital | 433,683 | 546,739 |
| Accumulated Deficit | (243,069) | (243,069) |
| Accumulated Other Comprehensive Income | 7,187 | 7,187 |
| Total Shareholders' Equity | 198,120 | 311,226 |
| Total Capitalization | \$ 298,614 | \$ 411,720 |

PRICE RANGE OF OUR COMMON STOCK

Our common stock is traded on The NASDAQ Global Select Market and is quoted under the symbol "VECO." The following table sets forth, for the fiscal quarters indicated, the high and low closing prices of our common stock on The NASDAQ Global Select Market.

| | High | Low |
|---|-------------|------------|
| 2009 | | |
| Fourth quarter (through October 28, 2009) | \$ 26.24 | \$ 21.90 |
| Third quarter | 23.49 | 11.36 |
| Second quarter | 12.99 | 6.19 |
| First quarter | 7.16 | 3.96 |
| 2008 | | |
| Fourth quarter | \$ 14.81 | \$ 3.83 |
| Third quarter | 18.11 | 14.42 |
| Second quarter | 19.71 | 16.63 |
| First quarter | 17.96 | 12.39 |

The last reported sale price of our common stock on The NASDAQ Global Select Market on October 28, 2009 was \$24.22 per share. As of October 20, 2009, there were approximately 388 holders of record of our common stock.

DIVIDEND POLICY

We have not paid dividends on our common stock. We intend to retain future earnings for the development of our business and, therefore, do not anticipate that the board of directors will declare or pay any dividends on the common stock in the foreseeable future. In addition, certain provisions of our credit facility limit our ability to pay dividends. The board of directors will determine future dividend policy based on our consolidated results of operations, financial condition, capital requirements and other circumstances.

U.S. FEDERAL AND ESTATE INCOME TAX CONSIDERATIONS FOR NON-U.S. HOLDERS

The following is a summary of certain material U.S. federal income tax and estate tax considerations of the acquisition, ownership, and disposition of our common stock to Non-U.S. Holders (as defined below). The following discussion is not exhaustive of all possible tax considerations. This summary is based upon the Internal Revenue Code of 1986, as amended (the "Code"), regulations promulgated under the Code by the U.S. Treasury Department (including proposed and temporary regulations), rulings, current administrative interpretations and official pronouncements of the Internal Revenue Service (the "IRS"), and judicial decisions, all as currently in effect and all of which are subject to differing interpretations or to change, possibly with retroactive effect. We have not sought any ruling from the IRS with respect to statements made and conclusions reached in the following summary, and no assurance can be given that the IRS would not assert, or that a court would not sustain, a position contrary to any of the tax consequences described below.

This summary is for general information only, and does not purport to discuss all aspects of U.S. federal income taxation that may be important to a particular holder in light of its investment or tax circumstances or to holders subject to special tax rules, such as: partnerships, subchapter S corporations, or other pass-through entities, banks, financial institutions, tax-exempt entities, insurance companies, regulated investment companies, real estate investment trusts, trusts and estates, dealers in securities or currencies, traders in securities that have elected to use the mark-to-market method of accounting for their securities, persons holding the common stock as part of an integrated investment, including a "straddle," "hedge," "constructive sale," or "conversion transaction," and persons subject to the alternative minimum tax provisions of the Code. This summary does not include any description of the tax laws of any state or local governments, or of any foreign government, that may be applicable to a particular holder.

This summary is directed solely to Non-U.S. Holders that, except as otherwise specifically noted, will purchase the common stock offered in this prospectus upon original issuance and will hold such securities as capital assets within the meaning of Section 1221 of the Code, which generally means as property held for investment.

You should consult your own tax advisor concerning the U.S. federal income and estate tax consequences to you of acquiring, owning, and disposing of these securities, as well as any tax consequences arising under the laws of any state, local, foreign, or other tax jurisdiction and the possible effects of changes in U.S. federal or other tax laws.

For purposes of discussion in this prospectus supplement, you are a "Non-U.S. Holder" if you are an individual, corporation, estate or trust that is not a "United States person" within the meaning of Section 7701(a)(30) of the Code and Treasury regulations promulgated thereunder, and not an entity treated as a partnership as discussed below. For purposes of this discussion, a "United States person" is an individual, corporation, estate or trust that is:

a citizen of the United States or an individual who is a "resident" of the United States within the meaning of Section 7701(b) of the Code;

a corporation (including an entity treated as a corporation for U.S. federal income tax purposes) created or organized in or under the laws of the United States or of any state of the United States or the District of Columbia;

an estate the income of which is subject to U.S. federal income taxation regardless of its source; or

any trust (x) if a court within the United States is able to exercise primary supervision over the administration of the trust and one or more United States persons have the authority to control all substantial decisions of the trust or (y) if it has elected to be treated as a United States person.

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If an entity or arrangement treated as a partnership for U.S. federal income tax purposes holds the common stock offered in this prospectus, the U.S. federal income tax treatment of a partner generally will depend upon the status of the partner and the activities of the partnership and accordingly, this summary does not apply to partnerships holding our common stock. A partner of a partnership holding the common stock should consult its own tax advisor regarding the U.S. federal income tax consequences to the partner of the acquisition, ownership, and disposition by the partnership of the common stock.

Distributions on Common Stock

Distributions on our common stock made to Non-U.S. Holders out of our current or accumulated earnings and profits, as determined for U.S. federal income tax purposes, generally will be subject to U.S. federal income and withholding tax at a rate of 30% (or lower rate under an applicable treaty, if any), unless such distributions are effectively connected with the conduct by the Non-U.S. Holder of a trade or business within the United States or (if certain tax treaties apply) a permanent establishment maintained in the United States. Payments subject to withholding of U.S. federal income tax may nevertheless be exempt from withholding (or subject to withholding at a reduced rate) if the Non-U.S. Holder provides us with a properly executed IRS Form W-8BEN (or successor form) claiming an exemption from, or reduction in, withholding under the benefit of a tax treaty, or IRS Form W-8ECI (or other applicable form) stating that a dividend paid on our shares is not subject to withholding tax because it is effectively connected with the conduct of a trade or business within the United States, as discussed below.

To claim benefits under an income tax treaty, a Non-U.S. Holder must certify to us or our agent, under penalties of perjury, that it is not a United States person and provide its name and address (which certification may generally be made on an IRS Form W-8BEN, or a successor form), obtain a taxpayer identification number, and certify as to its eligibility for such benefits under the appropriate treaty's limitation on benefits article. In addition, special rules may apply to claims for treaty benefits made by Non-U.S. Holders that are entities rather than individuals. A Non-U.S. Holder that is eligible for a reduced rate of U.S. federal withholding tax under an income tax treaty may obtain a refund of any excess amounts withheld by timely filing an appropriate claim for refund with the IRS.

Sale, Exchange, or other Taxable Disposition

A Non-U.S. Holder generally will not be subject to U.S. federal income or withholding tax on any capital gain realized on the sale, exchange, or other taxable disposition of our common stock, provided that: (a) the gain is not effectively connected with the conduct of a trade or business within the United States, or is attributable to a permanent establishment maintained in the United States if certain tax treaties apply, (b) in the case of a Non-U.S. Holder that is an individual, the Non-U.S. Holder is not present in the United States for 183 days or more in the taxable year of the sale, exchange, or other disposition of the shares, and (c) we are not nor have we been a "United States real property holding corporation" for U.S. federal income tax purposes. An individual Non-U.S. Holder who is present in the United States for 183 days or more in the taxable year of sale, exchange, or other disposition of our common stock, and if certain other conditions are met, will be subject to U.S. federal income tax at a rate of 30% on the gains realized on the sale, exchange, or other disposition of such shares.

We would not be treated as a "United States real property holding corporation" if less than 50% of our assets throughout a prescribed testing period consist of "U.S. real property interests" within the meaning of the Code, excluding, for this purpose, interests in real property solely in a capacity as a creditor. Even if we are treated as a "United States real property holding corporation," a Non-U.S. Holder's sale of our common stock nonetheless generally will not be subject to U.S. federal income or withholding tax, provided that (a) our stock owned is of a class that is "regularly traded," as defined by applicable Treasury regulations, on an established securities market, and (b) the selling Non-U.S.

Holder did not beneficially own, actually or constructively, more than 5% of our outstanding stock of that class at any time during the five-year period ending on the date of such sale.

If we are or have been a "United States real property holding corporation" for U.S. federal income tax purposes and a Non-U.S. Holder held, directly or indirectly, at any time during the five-year period ending on the date of such holder's sale of our common stock, more than 5% of the class of stock, and the Non-U.S. Holder was not eligible for any tax treaty exemption, any gain on the sale of our common stock would be treated as effectively connected with a trade or business within the United States, the treatment of which is described below, and the purchaser of the stock could be required to withhold 10% of the purchase price and remit such amount to the IRS.

We believe that we are not currently, and do not anticipate becoming, a "United States real property holding corporation" for U.S. federal income tax purposes.

Income Effectively Connected with a Trade or Business within the United States

If a Non-U.S. Holder of our common stock is engaged in the conduct of a trade or business within the United States and if dividends on the shares, or gain realized on the sale, exchange, or other disposition of the shares, are effectively connected with the conduct of such trade or business (and, if certain tax treaties apply, such dividends or gain are attributable to a permanent establishment maintained by the Non-U.S. Holder in the United States), the Non-U.S. Holder, although exempt from U.S. federal withholding tax (provided that the certification requirements discussed above are satisfied), generally will be subject to U.S. federal income tax on such dividends or gain on a net income basis at the same graduated U.S. federal income tax rates applicable to United States persons. In addition, if such Non-U.S. Holder is a foreign corporation, it may also be subject to a branch profits tax equal to 30% (or such lower rate provided by an applicable U.S. income tax treaty) of a portion of its earnings and profits for the taxable year that are effectively connected with its conduct of a trade or business in the United States, subject to certain adjustments.

Backup Withholding and Information Reporting

In general, in the case of a United States person, other than certain exempt holders, we and other payors are required to report to the IRS all payments of dividends on our common stock. In addition, we and other payors generally are required to report to the IRS any payment of proceeds of the sale of common stock. Additionally, backup withholding generally will apply to any dividend payment and to proceeds received on a sale or exchange if a United States person fails to provide an accurate taxpayer identification number and certify that the taxpayer identification number is correct, the United States person is notified by the IRS that it has failed to report all dividends required to be shown on its U.S. federal income tax returns, or the United States person does not certify that it has not underreported its interest and dividend income. If applicable, backup withholding will be imposed at a rate of 28%. This rate is scheduled to increase to 31% after 2010.

We must report annually to the IRS and to each Non-U.S. Holder the amount of dividends paid to, and the tax withheld with respect to, each Non-U.S. Holder. These reporting requirements apply regardless of whether withholding was reduced or eliminated by an applicable tax treaty. Copies of this information reporting may also be made available under the provisions of a specific tax treaty or agreement with the tax authorities in the country in which the Non-U.S. Holder resides or is established.

In the case of a Non-U.S. Holder, backup withholding will not apply to payments made if the Non-U.S. Holder provides the required certification that it is not a United States person, as described above, or the Non-U.S. Holder otherwise establishes an exemption, provided that the payor or withholding agent does not have actual knowledge that the holder is a United States person, or that the conditions of any exemption are not satisfied.

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In addition, payments of the proceeds from the sale of our common stock to or through a foreign office of a broker or the foreign office of a custodian, nominee, or other dealer acting on behalf of a holder generally will not be subject to information reporting or backup withholding. However, if the broker, custodian, nominee, or other dealer is, for U.S. federal income tax purposes, a United States person, the government of the United States or the government of any state or political subdivision of any state, or any agency or instrumentality of any of these governmental units, a controlled foreign corporation, a foreign partnership that is either engaged in the conduct of a trade or business within the United States or whose United States partners in the aggregate hold more than 50% of the income or capital interest in the partnership, a foreign person 50% or more of whose gross income for a certain period is effectively connected with a trade or business within the United States, or a United States branch of a foreign bank or insurance company, information reporting (but not backup withholding) generally will be required with respect to payments made to a holder unless the broker, custodian, nominee, or other dealer has documentation of the holder's foreign status and the broker, custodian, nominee, or other dealer does not have actual knowledge, or reason to know, that you are a United States person.

Payment of the proceeds from a sale of our common stock to or through the United States office of a broker is subject to information reporting and backup withholding, unless the holder certifies that it is not a United States person status or otherwise establishes an exemption from information reporting and backup withholding.

Any amounts withheld under the backup withholding rules will be allowed as a refund or a credit against a holder's U.S. federal income tax liability provided the required information is timely furnished to the IRS.

U.S. Federal Estate Tax

Our common stock held by an individual Non-U.S. Holder at the time of death generally will be included in such holder's gross estate for U.S. federal estate tax purposes, unless an applicable estate tax treaty provides otherwise.

UNDERWRITING

Citigroup Global Markets Inc. and J.P. Morgan Securities Inc. are acting as joint book-running managers of the offering and as representatives of the underwriters named below. Subject to the terms and conditions stated in the underwriting agreement dated the date of this prospectus supplement, each underwriter named below has severally agreed to purchase, and we have agreed to sell to that underwriter, the number of shares set forth opposite the underwriter's name.

| Underwriter | Number of Shares |
|-------------------------------|---------------------|
| Citigroup Global Markets Inc. | 1,750,000 |
| J.P. Morgan Securities Inc. | 1,750,000 |
| Canaccord Adams Inc. | 750,000 |
| Piper Jaffray & Co. | 750,000 |
| Total | 5,000,000 |

The underwriting agreement provides that the obligations of the underwriters to purchase the shares included in this offering are subject to approval of legal matters by counsel and to other conditions. The underwriters are obligated to purchase all the shares (other than those covered by the over-allotment option described below) if they purchase any of the shares.

Shares sold by the underwriters to the public will initially be offered at the initial public offering price set forth on the cover of this prospectus supplement. Any shares sold by the underwriters to securities dealers may be sold at a discount from the initial public offering price not to exceed \$0.64125 per share. If all the shares are not sold at the initial offering price, the underwriters may change the offering price and the other selling terms.

If the underwriters sell more shares than the total number set forth in the table above, we have granted to the underwriters an option, exercisable for 30 days from the date of this prospectus supplement, to purchase up to 750,000 additional shares at the public offering price less the underwriting discount. The underwriters may exercise the option solely for the purpose of covering over-allotments, if any, in connection with this offering. To the extent the option is exercised, each underwriter must purchase a number of additional shares approximately proportionate to that underwriter's initial purchase commitment. Any shares issued or sold under the option will be issued and sold on the same terms and conditions as the other shares that are the subject of this offering.

We and our officers and directors have agreed that, for a period of 90 days from the date of this prospectus supplement, we and they will not, without the prior written consent of Citigroup Global Markets Inc. and J.P. Morgan Securities Inc., dispose of or hedge any shares or any securities convertible into or exchangeable for our common stock. Citigroup Global Markets Inc. and J.P. Morgan Securities Inc. in their sole discretion may release any of the securities subject to these lock-up agreements at any time without notice.

The shares are listed on the Nasdaq Global Select Market under the symbol "VECO."

The following table shows the underwriting discounts and commissions that we are to pay to the underwriters in connection with this offering. These amounts are shown assuming both no exercise and full exercise of the underwriters' over-allotment option.

| | Paid by Veeco Instruments Inc. | |
|-----------|-----------------------------------|---------------|
| | No Exercise | Full Exercise |
| Per share | \$ 1.06875 | \$ 1.06875 |
| Total | \$ 5,343,750 | \$ 6,145,312 |

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We estimate that our portion of the total expenses, but excluding the underwriting discounts and commissions, of this offering will be \$300,000.

In connection with the offering, the underwriters may purchase and sell shares in the open market. Purchases and sales in the open market may include short sales, purchases to cover short positions, which may include purchases pursuant to the over-allotment option, and stabilizing purchases.

Short sales involve secondary market sales by the underwriters of a greater number of shares than they are required to purchase in the offering.

"Covered" short sales are sales of shares in an amount up to the number of shares represented by the underwriters' over-allotment option.

"Naked" short sales are sales of shares in an amount in excess of the number of shares represented by the underwriters' over-allotment option.

Covering transactions involve purchases of shares either pursuant to the over-allotment option or in the open market after the distribution has been completed in order to cover short positions.

To close a naked short position, the underwriters must purchase shares in the open market after the distribution has been completed. A naked short position is more likely to be created if the underwriters are concerned that there may be downward pressure on the price of the shares in the open market after pricing that could adversely affect investors who purchase in the offering.

To close a covered short position, the underwriters must purchase shares in the open market after the distribution has been completed or must exercise the over-allotment option. In determining the source of shares to close the covered short position, the underwriters will consider, among other things, the price of shares available for purchase in the open market as compared to the price at which they may purchase shares through the over-allotment option.

Stabilizing transactions involve bids to purchase shares so long as the stabilizing bids do not exceed a specified maximum.

Purchases to cover short positions and stabilizing purchases, as well as other purchases by the underwriters for their own accounts, may have the effect of preventing or retarding a decline in the market price of the shares. They may also cause the price of the shares to be higher than the price that would otherwise exist in the open market in the absence of these transactions. The underwriters may conduct these transactions on the Nasdaq Global Market, in the over-the-counter market or otherwise. If the underwriters commence any of these transactions, they may discontinue them at any time.

In addition, in connection with this offering, some of the underwriters (and selling group members) may engage in passive market making transactions in the shares on the Nasdaq Global Market, prior to the pricing and completion of the offering. Passive market making consists of displaying bids on the Nasdaq Global Market no higher than the bid prices of independent market makers and making purchases at prices no higher than those independent bids and effected in response to order flow. Net purchases by a passive market maker on each day are limited to a specified percentage of the passive market maker's average daily trading volume in the shares during a specified period and must be discontinued when that limit is reached. Passive market making may cause the price of the shares to be higher than the price that otherwise would exist in the open market in the absence of those transactions. If the underwriters commence passive market making transactions, they may discontinue them at any time.

The underwriters may, from time to time, engage in transactions with and perform services for us in the ordinary course of their business for which they may receive customary fees and reimbursement of expenses.

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We have agreed to indemnify the underwriters against certain liabilities, including liabilities under the Securities Act, or to contribute to payments the underwriters may be required to make because of any of those liabilities.

Notice to Prospective Investors in the European Economic Area

In relation to each member state of the European Economic Area that has implemented the Prospectus Directive (each, a relevant member state), with effect from and including the date on which the Prospectus Directive is implemented in that relevant member state (the relevant implementation date), an offer of shares described in this prospectus supplement may not be made to the public in that relevant member state prior to the publication of a prospectus in relation to the shares that has been approved by the competent authority in that relevant member state or, where appropriate, approved in another relevant member state and notified to the competent authority in that relevant member state, all in accordance with the Prospectus Directive, except that, with effect from and including the relevant implementation date, an offer of securities may be offered to the public in that relevant member state at any time:

to any legal entity that is authorized or regulated to operate in the financial markets or, if not so authorized or regulated, whose corporate purpose is solely to invest in securities;

to any legal entity that has two or more of (1) an average of at least 250 employees during the last financial year; (2) a total balance sheet of more than €43,000,000 and (3) an annual net turnover of more than €50,000,000, as shown in its last annual or consolidated accounts;

to fewer than 100 natural or legal persons (other than qualified investors as defined below) subject to obtaining the prior consent of the representatives for any such offer; or

in any other circumstances that do not require the publication of a prospectus pursuant to Article 3 of the Prospectus Directive.

Each purchaser of shares described in this prospectus supplement located within a relevant member state will be deemed to have represented, acknowledged and agreed that it is a "qualified investor" within the meaning of Article 2(1)(e) of the Prospectus Directive.

For purposes of this provision, the expression an "offer to the public" in any relevant member state means the communication in any form and by any means of sufficient information on the terms of the offer and the securities to be offered so as to enable an investor to decide to purchase or subscribe the securities, as the expression may be varied in that member state by any measure implementing the Prospectus Directive in that member state, and the expression "Prospectus Directive" means Directive 2003/71/EC and includes any relevant implementing measure in each relevant member state.

The sellers of the shares have not authorized and do not authorize the making of any offer of shares through any financial intermediary on their behalf, other than offers made by the underwriters with a view to the final placement of the shares as contemplated in this prospectus supplement. Accordingly, no purchaser of the shares, other than the underwriters, is authorized to make any further offer of the shares on behalf of the sellers or the underwriters.

Notice to Prospective Investors in the United Kingdom

This prospectus supplement and the accompanying base prospectus are only being distributed to, and is only directed at, persons in the United Kingdom that are qualified investors within the meaning of Article 2(1)(e) of the Prospectus Directive that are also (i) investment professionals falling within Article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005 (the "Order") or (ii) high net worth entities, and other persons to whom it may lawfully be communicated, falling within Article 49(2)(a) to (d) of the Order (each such person being referred to as a "relevant person"). This prospectus supplement and its contents are confidential and should not be distributed, published or reproduced (in whole or in part) or disclosed by recipients to any other persons in the United Kingdom. Any person in the United Kingdom that is not a relevant person should not act or rely on this document or any of its contents.

LEGAL MATTERS

Morrison & Foerster LLP, McLean, Virginia, will pass upon the validity of the common stock offered hereby on our behalf. The underwriters have been represented in connection with this offering by Cravath, Swaine & Moore LLP, New York, New York.

EXPERTS

The consolidated financial statements of Veeco Instruments Inc. appearing in Veeco Instruments Inc.'s Current Report on Form 8-K filed on October 26, 2009 (including the schedule appearing therein), and the effectiveness of Veeco Instruments Inc.'s internal control over financial reporting as of December 31, 2008, have been audited by Ernst & Young LLP, independent registered public accounting firm, as set forth in their reports thereon included therein, and incorporated herein by reference. Such financial statements are, and audited financial statements to be included in subsequently filed documents will be, incorporated herein in reliance upon the reports of Ernst & Young LLP pertaining to such financial statements and the effectiveness of our internal control over financial reporting as of the respective dates (to the extent covered by consents filed with the Securities and Exchange Commission) given on the authority of such firm as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

We file annual, quarterly, and special reports, proxy statements, and other information with the SEC. You may read and copy any document that we file with the SEC at the Public Reference Room of the SEC at 100 F Street, N.E., Room 1580, Washington, D.C. 20549. You may obtain information on the operation of the Public Reference Room by calling the SEC at 1-800-SEC-0330. You also may inspect our filings over the Internet at the SEC's website, *www.sec.gov*. The reports and other information we file with the SEC also are available through our website, *www.veeco.com*. We have included the SEC's web address and our web address as inactive textual references only. Except as specifically incorporated by reference into this prospectus supplement, information on those websites is not part of this prospectus supplement.

We previously filed a registration statement and related exhibits on Form S-3 with the SEC on October 26, 2009 under the Securities Act of 1933. The registration statement contains additional information about us and our securities. You may inspect the registration statement and its exhibits without charge at the SEC's public reference room referred to above and obtain copies, at prescribed rates, from the SEC.

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INCORPORATION OF CERTAIN DOCUMENT BY REFERENCE

The SEC allows us to incorporate by reference the information we file with it. This means that:

incorporated documents are considered part of this prospectus supplement;

we can disclose important information to you by referring you to those documents; and

information that we file with the SEC automatically will update and supersede this incorporated information and information in this prospectus supplement.

We incorporate by reference the documents listed below which were filed with the SEC under the Securities Exchange Act of 1934:

our annual report on Form 10-K for the year ended December 31, 2008;

our proxy statement on Schedule 14A filed on March 3, 2009;

our quarterly reports on Form 10-Q for the quarterly periods ended March 31, 2009, June 30, 2009 and September 30, 2009;

our current reports on Form 8-K filed on June 24, 2009, August 25, 2009 and October 26, 2009 (in each case, other than information that is furnished but deemed not to have been filed and the exhibits filed on such form that relate to such portions);

the description of our common stock contained in our Registration Statement on Form 8-A filed on November 18, 1994, and any amendments or reports filed for the purpose of updating such description; and

the description of the rights attached to our common stock contained in our Registration Statement on Form 8-A filed on March 15, 2001, and any amendments or reports filed for the purpose of updating such description.

We also incorporate by reference reports that we will file under Sections 13(a), 13(c), 14, and 15(d) of the Securities Exchange Act of 1934 prior to the termination of the offering, but not any information that we may furnish but that is not deemed to be filed.

You should assume that the information appearing in this prospectus is accurate only as of the date of this prospectus supplement. Our business, financial position, and results of operations may have changed since that date.

You may request a copy of any filings referred to above (excluding exhibits that are not specifically incorporated by reference), at no cost, by contacting us at the following address:

Veeco Instruments Inc.
Gregory A. Robbins
Senior Vice President, General Counsel and Secretary
Terminal Drive
Plainview, New York 11803
(516) 677-0200

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PROSPECTUS

VEECO INSTRUMENTS INC.

Common Stock

Veeco Instruments Inc. from time to time may offer to sell common stock. Our common stock is listed on The NASDAQ Global Select Market under the symbol "VECO." On October 23, 2009, the last reported sales price of our common stock was \$25.56 per share.

This prospectus describes the general terms of our common stock and the general manner in which we will offer our common stock. When we sell these securities, we will prepare a prospectus supplement describing the offering and the specific terms of the securities. You should read this prospectus and that prospectus supplement carefully before you invest.

We may offer and sell shares of common stock to or through one or more underwriters, dealers and agents, or directly to purchasers, on a continuous or delayed basis. If any agents or underwriters are involved in the sale of any of the common stock offered by this prospectus, their names, and any applicable purchase price, fee, commission or discount arrangement between or among them, will be set forth, or will be calculable from the information set forth, in the applicable prospectus supplement. The supplements to this prospectus will provide the specific terms of the plan of distribution. The net proceeds we expect to receive from sales by us will be set forth in the applicable prospectus supplement.

Investing in our common stock involves certain risks. You should review carefully the risks and uncertainties described under the heading "Risk Factors" on page 3 and those contained in the applicable prospectus supplement and in any related free writing prospectuses that we have authorized for use in connection with a specific offering and in our Securities and Exchange Commission filings that are incorporated by reference into this prospectus.

The address of our principal executive offices is Terminal Drive, Plainview, New York 11803, and our telephone number at our principal executive offices is (516) 677-0200.

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. Any representation to the contrary is a criminal offense.

Prospectus dated October 26, 2009

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ABOUT THIS PROSPECTUS

This prospectus is part of an "automatic shelf" registration statement that we filed with the Securities and Exchange Commission, or SEC, as a "well-known seasoned issuer" as defined in Rule 405 under the Securities Act of 1933, as amended, using a "shelf" registration process. By using a shelf registration statement, we may sell common stock from time to time and in one or more offerings as described herein. Each time that we sell securities, we will provide a prospectus supplement to this prospectus that contains specific information about the securities being offered and the specific terms of that offering. The prospectus supplement may also add, update or change information contained in this prospectus. If there is any inconsistency between the information in this prospectus and any prospectus supplement, you should rely on the prospectus supplement. Before purchasing any securities, you should carefully read both this prospectus and any prospectus supplement, together with the additional information described under the heading "Where You Can Find More Information."

The information in this prospectus is not complete and may be changed. You should rely only on the information provided in or incorporated by reference in this prospectus, the accompanying prospectus supplement, or documents to which we otherwise refer you. We are not making an offer of common stock in any jurisdiction where the offer or sale is not permitted. You should assume that the information appearing in this prospectus and the accompanying prospectus supplement or supplements, as well as information we have filed or will file with the SEC and that is incorporated by reference in this prospectus, is accurate as of the date of the applicable document or other date referred to in that document. Our business, financial condition, and results of operations may have changed since that date.

Unless we indicate otherwise or unless the context requires otherwise, all references in this prospectus to "Veeco," "we," "us," "our," or similar references are to Veeco Instruments Inc., including its consolidated subsidiaries.

References in this prospectus to "\$" and "dollars" are to the currency of the United States of America.

ABOUT VEECO INSTRUMENTS INC.

This summary section highlights selected information from this prospectus. This summary does not contain all the information that you should consider before investing in the securities we may offer using this prospectus. To fully understand the securities we may offer, you should read carefully:

this prospectus, which explains the general terms of the securities we may offer;

the applicable prospectus supplement, which explains the specific terms of the particular securities we are offering, and which may update or change the information in this prospectus; and

the documents we refer to in "Incorporation of Certain Documents by Reference" below for information about us, including our financial statements.

Veeco Instruments Inc.

We design, manufacture, market, and service enabling solutions for customers in the high-brightness light emitting diode ("HB-LED"), solar, data storage, scientific research, semiconductor, and industrial markets. We have leading technology positions in our three segments: Light Emitting Diode ("LED") & Solar Process Equipment, Data Storage Process Equipment, and Metrology.

In our LED & Solar segment, we design and manufacture metal organic chemical vapor deposition ("MOCVD") systems, molecular beam epitaxy ("MBE") systems and sources, and other types of

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deposition systems such as web and glass coaters, which we sell primarily to manufacturers of HB-LEDs and solar panels, as well as to scientific research customers.

In our Data Storage segment, we design and manufacture ion beam etch, ion beam deposition, diamond-like carbon, physical vapor deposition, and dicing and slicing products primarily used to create thin film magnetic heads ("TFMHs") that read and write data on hard disk drives.

In our Metrology segment, we design and manufacture atomic force microscopes ("AFMs"), scanning probe microscopes ("SPMs"), stylus profilers, and optical interferometers used to provide critical surface measurements in research and production environments. This broad line of products is used in universities, research facilities and scientific centers worldwide. In production environments such as semiconductor, data storage and other industries, our metrology instruments enable customers to monitor their products throughout the manufacturing process to improve yields, reduce costs, and improve product quality.

Veeco was organized as a Delaware corporation in 1989. Our headquarters are located at Terminal Drive, Plainview, New York 11803, and our telephone number is (516) 677-0200. Our website is www.veeco.com. The information on our Internet site is not incorporated by reference into this prospectus.

The Securities We May Offer

We may offer common stock from time to time. When we use the term "securities" in this prospectus, we mean any of the common stock we may offer with this prospectus.

Listing

Our common stock is traded on The NASDAQ Global Select Market and is quoted under the symbol "VECO."

FORWARD-LOOKING STATEMENTS

We have included or incorporated by reference in this prospectus and the accompanying prospectus supplement statements that may constitute "forward-looking statements" within the meaning of Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934. You may find these statements by looking for words such as "plan," "believe," "expect," "intend," "anticipate," "estimate," "project," "potential," "possible," or other similar expressions, or future or conditional verbs such as "will," "should," "would," and "could."

All forward-looking statements, by their nature, are subject to risks and uncertainties. Our actual results may differ materially from those set forth in our forward-looking statements. Discussions containing these forward-looking statements may be found, among other places, in Items 1, 1A, 3, 7 and 7A in our annual report on Form 10-K for the year ended December 31, 2008, which is incorporated in this prospectus by reference, and in our most recent quarterly reports on Form 10-Q for the quarters ended March 31, 2009, June 30, 2009 and September 30, 2009, which are incorporated in this prospectus by reference, as well as any modifications or revisions to risk factors contained in our subsequent filings with the SEC. See "Where You Can Find More Information" below for information about how to obtain a copy of our annual report.

You should not place undue reliance on any forward-looking statements, which speak only as of the dates they are made.

All subsequent written and oral forward-looking statements attributable to us or any person on our behalf are expressly qualified in their entirety by the cautionary statements contained or referred to in this section. Except to the extent required by applicable law or regulation, we undertake no obligation to update these forward-looking statements to reflect events or circumstances after the date of this prospectus or to reflect the occurrence of unanticipated events.

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RISK FACTORS

Investing in our common stock involves a high degree of risk. You should consider carefully the risk factors identified in the applicable prospectus supplement and in any related free writing prospectuses that we have authorized for use in connection with a specific offering, as well as in our most recent annual and quarterly filings with the SEC, in addition to the other information contained in this prospectus, any applicable prospectus supplement, the documents incorporated by reference herein or therein, and in any free writing prospectuses that we have authorized for use in connection with a specific offering before deciding whether to purchase shares of our common stock. Each of the risk factors could adversely affect our business, operating results and financial condition, as well as adversely affect the value of an investment in our common stock, and you may lose all or part of your investment.

USE OF PROCEEDS

Except as otherwise described in the applicable prospectus supplement, we intend to use the net proceeds from the sales of our common stock for general corporate purposes, including working capital, capital expenditures, acquisitions and other business opportunities. Although we currently have no commitments or agreements to acquire or invest in complementary businesses, technologies or other intellectual property, our management will have broad discretion as to the allocation of the net proceeds received in any offering and may use these proceeds for those purposes in the future.

DESCRIPTION OF COMMON STOCK

The following summary of our common stock is qualified in its entirety by reference to the description of the common stock incorporated by reference in this prospectus.

General

We are authorized to issue 60,000,000 shares of common stock, par value \$0.01 per share, of which approximately 32,777,024 shares were outstanding on October 20, 2009. Our common stock trades on The NASDAQ Global Select Market under the symbol "VECO."

Voting and Other Rights

Holders of our common stock are entitled to one vote per share on all matters to be voted upon by the stockholders. Holders of our common stock are not entitled to cumulate votes for the election of directors. In general, a majority of votes cast on a matter is sufficient to take action upon routine matters; however, the election of directors requires a plurality of votes cast.

In the event of our liquidation, dissolution or winding up, holders of our common stock will be entitled to share ratably in all assets remaining after payment of liabilities, subject to prior distribution rights of any preferred stock then outstanding.

Our common stock does not have any preemptive rights, redemption privileges, sinking fund privileges, or conversion rights and is not subject to further calls or assessments by Veeco. All the outstanding shares of our common stock are validly issued, fully paid, and nonassessable.

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

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Anti-Takeover Provisions

Provisions of Delaware law, our amended and restated certificate of incorporation and our fourth amended and restated bylaws may have the effect of delaying, deferring or discouraging another party from acquiring control of us. These provisions include:

"blank check" preferred stock,

a classified board of directors, and

certain certificate of incorporation and bylaw provisions.

Our board of directors has the authority to issue up to 500,000 shares of preferred stock and to fix the rights (including voting rights), preferences and privileges of these shares ("blank check" preferred). Such preferred stock may have rights, including economic rights, senior to our common stock. As a result, the issuance of the preferred stock could have a material adverse effect on the price of our common stock and could make it more difficult for a third party to acquire a majority of our outstanding common stock.

Our board of directors is divided into three classes with each class serving a staggered three-year term. The existence of a classified board will make it more difficult for our shareholders to change the composition (and therefore the policies) of our board of directors in a relatively short period of time.

We have adopted certain certificate of incorporation and bylaw provisions which may have anti-takeover effects. These include: (a) requiring certain actions to be taken at a meeting of shareholders rather than by written consent, (b) requiring a super-majority of shareholders to approve certain amendments to our bylaws, (c) limiting the maximum number of directors, and (d) providing that directors may be removed only for "cause." These measures and those described above may have the effect of delaying, deferring or preventing a takeover or other change in control of Veeco that a holder of our common stock might consider in its best interest.

In addition, we are subject to the provisions of Section 203 of the General Corporation Law of the State of Delaware, which prohibits a Delaware corporation from engaging in any business combination, including mergers and asset sales, with an interested stockholder (generally, a 15% or greater stockholder) for a period of three years after the date of the transaction in which the person became an interested stockholder, unless the business combination is approved in a prescribed manner. The operation of Section 203 may have anti-takeover effects, which could delay, defer or prevent a takeover attempt that a holder of our common stock might consider in its best interest.

Stockholder Rights Plan

In March 2001, we adopted a stockholder rights plan. Under the rights plan, we will issue one right with respect to each share of common stock that is issued prior to the distribution date described below. Except as set forth below, each right, when exercisable, entitles the holder to purchase from us one ten-thousandth of a share of our Series A Junior Participating Preferred Stock at a price of \$200.00, subject to adjustment. The rights are not exercisable until a distribution date. Until a right is exercised, the holder of the right, as such, will have no rights as a stockholder of ours and will not have the right to vote or to receive dividends.

In general, the rights separate from the common stock and a "distribution date" will occur upon the earlier of:

ten days after the public announcement of the acquisition by a person or group of 15% or more of our common stock or

ten days after the commencement of a tender offer or exchange offer that would result in the acquisition of 15% or more of our common stock.

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If a person or group acquires 15% or more of our common stock, all rightholders except the buyer will be entitled to acquire our common stock at a discount and, under certain circumstances, to acquire shares of the acquiring company at a discount. Our board of directors may authorize, under certain circumstances, the exchange of all or part of the then outstanding and exercisable rights for shares of our common stock at a rate of one share of our common stock per right if the buyer has not acquired 50% or more of our common stock.

Our board of directors may authorize the redemption of the rights, at a price of \$0.01 per right, at any time up to ten days after a person or group acquires 15% or more of our common stock. The rights will expire on March 30, 2011.

Dividends

We have not paid dividends on our common stock. We intend to retain future earnings for the development of our business and, therefore, do not anticipate that the board of directors will declare or pay any dividends on the common stock in the foreseeable future. In addition, certain provisions of our credit facility limit our ability to pay dividends. The board of directors will determine future dividend policy based on our consolidated results of operations, financial condition, capital requirements and other circumstances.

LEGAL MATTERS

The legality of the securities being registered will be passed upon for Veeco by Morrison & Foerster LLP, McLean, Virginia. The underwriters or agents will be represented by their own legal counsel.

EXPERTS

The consolidated financial statements of Veeco Instruments Inc. appearing in Veeco Instruments Inc.'s Current Report on Form 8-K filed on October 26, 2009 (including the schedule appearing therein), and the effectiveness of Veeco Instruments Inc.'s internal control over financial reporting as of December 31, 2008, have been audited by Ernst & Young LLP, independent registered public accounting firm, as set forth in their reports thereon included therein, and incorporated herein by reference. Such financial statements are, and audited financial statements to be included in subsequently filed documents will be, incorporated herein in reliance upon the reports of Ernst & Young LLP pertaining to such financial statements and the effectiveness of our internal control over financial reporting as of the respective dates (to the extent covered by consents filed with the Securities and Exchange Commission) given on the authority of such firm as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

We file annual, quarterly, and special reports, proxy statements, and other information with the SEC. You may read and copy any document that we file with the SEC at the Public Reference Room of the SEC at 100 F Street, N.E., Room 1580, Washington, D.C. 20549. You may obtain information on the operation of the Public Reference Room by calling the SEC at 1-800-SEC-0330. You also may inspect our filings over the Internet at the SEC's website, www.sec.gov. The reports and other information we file with the SEC also are available through our website, www.veeco.com. We have included the SEC's web address and our web address as inactive textual references only. Except as specifically incorporated by reference into this prospectus, information on those websites is not part of this prospectus.

We have filed a registration statement, of which this prospectus is a part, covering the securities offered hereby. As allowed by SEC rules, this prospectus does not contain all of the information set forth in the registration statement and the exhibits, financial statements and schedules thereto. We refer you to the registration statement, the exhibits, financial statements and schedules thereto for further information. This prospectus is qualified in its entirety by such other information.

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INCORPORATION OF CERTAIN DOCUMENTS BY REFERENCE

The SEC allows us to incorporate by reference the information we file with it. This means that:

incorporated documents are considered part of this prospectus;

we can disclose important information to you by referring you to those documents; and

information that we file with the SEC automatically will update and supersede this incorporated information and information in this prospectus.

We incorporate by reference the documents listed below which were filed with the SEC under the Securities Exchange Act of 1934:

our annual report on Form 10-K for the year ended December 31, 2008;

our proxy statement on Schedule 14A filed on April 3, 2009;

our quarterly reports on Form 10-Q for the quarterly periods ended March 31, 2009, June 30, 2009 and September 30, 2009;

our current reports on Form 8-K filed on June 24, 2009, August 25, 2009 and October 26, 2009 (in each case, other than information that is furnished but deemed not to have been filed and the exhibits filed on such form that relate to such portions);

the description of our common stock contained in our Registration Statement on Form 8-A filed on November 18, 1994, and any amendments or reports filed for the purpose of updating such description; and

the description of the rights attached to our common stock contained in our Registration Statement on Form 8-A filed on March 15, 2001, and any amendments or reports filed for the purpose of updating such description.

We also incorporate by reference reports that we will file under Sections 13(a), 13(c), 14, and 15(d) of the Securities Exchange Act of 1934 prior to the termination of the offering, but not any information that we may furnish but that is not deemed to be filed.

You should assume that the information appearing in this prospectus is accurate only as of the date of this prospectus. Our business, financial position, and results of operations may have changed since that date.

You may request a copy of any filings referred to above (excluding exhibits that are not specifically incorporated by reference), at no cost, by contacting us at the following address:

Veeco Instruments Inc.
Gregory A. Robbins
Senior Vice President, General Counsel and Secretary
Terminal Drive
Plainview, New York 11803
(516) 677-0200

5,000,000 Shares

Veeco Instruments Inc.

Common Stock

PROSPECTUS SUPPLEMENT
October 28, 2009

Citi

J.P. Morgan

Canaccord Adams

Piper Jaffray
