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

FORM S-8

REGISTRATION STATEMENT
UNDER THE SECURITIES ACT OF 1933

ENER-CORE, INC.

(Exact Name of Registrant as Specified in its Charter)

Delaware

(State or Other Jurisdiction of
Incorporation or Organization)

46-0525350

(I.R.S. Employer
Identification No.)

**9400 Toledo Way
Irvine, California 92618**

(Address of Principal Executive Offices, including Zip Code)

**Ener-Core, Inc.
2015 Omnibus Incentive Plan**
(Full Title of the Plan)

**Alain J. Castro
Chief Executive Officer
9400 Toledo Way
Irvine, California 92618
(949) 616-3300**

(Name, Address and Telephone Number, Including Area Code, of Agent for Service)

**Copies to:
Shoshannah D. Katz
Matthew A. Susson
K&L Gates LLP
1 Park Plaza, Twelfth Floor
Irvine, CA 92614
(949) 253-0900**

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

Large accelerated filer

Accelerated filer

Non-accelerated filer (Do not check if a smaller reporting company)

Smaller reporting company

CALCULATION OF REGISTRATION FEE

| Title of Securities To Be Registered | Amount To Be Registered(1) | Proposed Maximum Offering Price Per Share(2) | Proposed Maximum Aggregate Offering Price(2) | Amount of Registration Fee |
|--|----------------------------------|--|--|----------------------------------|
| Common Stock, par value \$0.0001 per share, issuable under the Ener-Core, Inc. 2015 Omnibus Incentive Plan | 902,464(3) | \$ 1.95 | \$ 1,759,805 | \$ 204 |

- (1) Pursuant to Rule 416(a) under the Securities Act of 1933, as amended (the "Securities Act"), this registration statement on Form S-8 (the "Registration Statement") also covers such additional shares of Common Stock, par value \$0.0001 per share (the "Common Stock"), of Ener-Core, Inc. (the "Registrant") that may become issuable under the Ener-Core, Inc. 2015 Omnibus Incentive Plan (the "2015 Plan") by reason of certain corporate transactions or events, including any stock dividend, stock split, recapitalization or any other similar transaction effected without the receipt of consideration which results in an increase in the number of the Registrant's outstanding shares of Common Stock.
- (2) Estimated solely for the purpose of calculating the registration fee pursuant to Rules 457(c) and 457(h) under the Securities Act, based on the average of the high and low prices of the Common Stock as reported on the OTCQB Marketplace on February 10, 2017, a date within 5 business days prior to the date of filing of this Registration Statement.
- (3) Consists of the 600,000 shares of Common Stock reserved for issuance pursuant to the 2015 Plan, 78,941 shares of Common Stock subject to awards originally issued under the Ener-Core, Inc. 2013 Equity Incentive Award Plan (the "2013 Plan") prior to August 28, 2015 that have subsequently ceased to be subject to such awards (other than by reason of settlement of the awards in shares), which shares automatically became available for issuance under the 2015 Plan pursuant to the terms thereof, and 229,523 shares of Common Stock subject to outstanding awards originally issued under the 2013 Plan prior to August 28, 2015 that remain subject to such awards, which shares may, in the future, become available for issuance under the 2015 Plan pursuant to the terms thereof, less 6,000 shares of Common Stock underlying an option previously issued under the 2015 Plan in reliance on the exemption set forth in Section 4(a)(2) under the Securities Act and Regulation D promulgated thereunder.

PART I

INFORMATION REQUIRED IN THE SECTION 10(a) PROSPECTUS

Item 1. Plan Information

The Registrant is filing this Registration Statement in order to register 902,464 shares of Common Stock, which consists of the 600,000 shares of Common Stock reserved for issuance pursuant to the Ener-Core, Inc. 2015 Omnibus Incentive Plan (the "2015 Plan"), 78,941 shares of Common Stock subject to awards originally issued under the Ener-Core, Inc. 2013 Equity Incentive Award Plan (the "2013 Plan") prior to August 28, 2015 that have subsequently ceased to be subject to such awards (other than by reason of settlement of the awards in shares), which shares automatically became available for issuance under the 2015 Plan pursuant to the terms thereof, and 229,523 shares of Common Stock subject to outstanding awards originally issued under the 2013 Plan prior to August 28, 2015 that remain subject to such awards, which shares may, in the future, become available for issuance under the 2015 Plan pursuant to the terms thereof, less 6,000 shares of Common Stock underlying an option previously issued under the 2015 Plan in reliance on the exemption set forth in Section 4(a) (2) under the Securities Act and Regulation D promulgated thereunder.

The document(s) containing the information specified in Item 1 will be sent or given to participants in the Plan as specified by Rule 428(b)(1) of the Securities Act of 1933, as amended (the "Securities Act"). Such documents are not being filed with the U.S. Securities and Exchange Commission (the "Commission") either as part of this Registration Statement or as prospectuses or prospectus supplements pursuant to Rule 424 of the Securities Act. These documents and the documents incorporated by reference in Item 3 of Part II of this Registration Statement, taken together, constitute a prospectus that meets the requirements of Section 10(a) of the Securities Act (the "Prospectus").

Item 2. Registrant Information and Employee Plan Annual Information.

Any of the documents incorporated by reference in Item 3 of Part II of this Registration Statement are also incorporated by reference in the Prospectus and are available, without charge, upon written or oral request.

Such other documents required to be delivered to employees pursuant to Rule 428(b) of the Securities Act shall also be available, without charge, upon written or oral request directed to: Ener-Core, Inc., Attention: Chief Financial Officer, 9400 Toledo Way, Irvine, California 92618; telephone number: (949) 616-3300.

PART II

INFORMATION REQUIRED IN THE REGISTRATION STATEMENT

Item 3. Incorporation of Documents by Reference.

The following documents filed by the Registrant with the Commission are incorporated by reference herein:

- the Registrant's Annual Report on Form 10-K for the year ended December 31, 2015, filed with the Commission on April 14, 2016;
- the Registrant's Quarterly Reports on Form 10-Q for the quarters ended March 31, 2016, June 30, 2016 and September 30, 2016, filed with the Commission on May 16, 2016, August 18, 2016 and November 21, 2016, respectively;
- the Registrant's Current Reports on Form 8-K, filed with the Commission on January 4, 2016, March 4, 2016, April 5, 2016, April 12, 2016, June 10, 2016 (other than the portions of this document furnished but deemed not to have been filed), July 6, 2016, August 30, 2016, September 2, 2016, September 30, 2016, October 14, 2016 (other than the portions of this document furnished but deemed not to have been filed), October 24, 2016, November 25, 2016, December 2, 2016, December 8, 2016 (other than the portions of this document furnished but deemed not to have been filed), December 14, 2016 and February 6, 2017; and
- the description of the Registrant's Common Stock contained in the Registrant's registration statement on Form S-1 (File No. 333-215562), filed with the Commission on January 17, 2017 to register such securities under the Securities Exchange Act of 1934, as amended (the "Exchange Act"), including all amendments and reports for the purpose of updating such description.

All reports and definitive proxy or information statements filed pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act, after the date of this Registration Statement and prior to the filing of a post-effective amendment which indicates that all securities offered hereby have been sold or which deregisters all securities then remaining unsold, shall be deemed to be incorporated by reference into this Registration Statement and to be a part hereof from the date of filing of such documents. Unless expressly incorporated into this Registration Statement, a report furnished but not filed on Form 8-K under the Exchange Act shall not be incorporated by reference into this Registration Statement. Any statement contained herein or in a document incorporated or deemed to be incorporated by reference herein shall be deemed to be modified or superseded for purposes of this Registration Statement to the extent that a statement contained in any subsequently filed document which also is deemed to be incorporated by reference herein modifies or supersedes such statement. Any such statement so modified or superseded shall not be deemed, except as so modified or superseded, to constitute a part of this Registration Statement.

Item 4. Description of Securities.

Not applicable.

Item 5. Interests of Named Experts and Counsel.

Not applicable.

Item 6. Indemnification of Directors and Officers.

Section 145 of the Delaware General Corporation Law (the "DGCL") permits a corporation to indemnify any person who is or has been a director, officer, employee or agent of the corporation or who is or has been serving as director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise at the request of the corporation, against expenses (including, but not limited to, attorneys' fees and disbursements and amounts paid in settlement or in satisfaction of judgments or as fines or penalties) actually and reasonably incurred in connection with any such action, suit or proceeding, whether civil, criminal, administrative or investigative, in which he/she may be involved by reason of the fact that he/she served or is serving in these capacities, if he/she acted in good faith and in a manner he/she reasonably believed to be in or not opposed to the best interest of the corporation and, with respect to any criminal action or proceeding, had no cause to believe his/her conduct was unlawful. In the case of an action, suit or proceeding made or brought by or in the right of the corporation to procure a judgment in its favor, the corporation shall not indemnify such person in respect of any claim, issue or matter as to which such person has been adjudged to be liable to the corporation, except for such expenses as the court may allow. Any such person who has been wholly successful on the merits or otherwise with respect to any such action, suit or proceeding or with respect to any such claim, issue or matter therein, shall be indemnified against all expenses actually and reasonably incurred in connection therewith. Expenses (including attorneys' fees) incurred by an officer or director in defending any civil, criminal, administrative, or investigative action, suit, or proceeding may be advanced by the corporation upon receipt of an undertaking by such person to repay such amount if it is ultimately determined that such person is not entitled to indemnification by the corporation under Section 145 of the DGCL.

Section 102(b)(7) of the DGCL provides that a corporation may eliminate or limit the personal liability of a director to the corporation or its stockholders for monetary damages for breach of fiduciary duty as a director, provided that such provision shall not eliminate or limit the liability of a director (i) for any breach of the director's duty of loyalty to the corporation or its stockholders, (ii) for acts or omissions not in good faith or which involve intentional misconduct or a knowing violation of law, (iii) under Section 174 of the DGCL, or (iv) for any transaction from which the director derived an improper personal benefit. No such provision shall eliminate or limit the liability of a director for any act or omission occurring prior to the date when such provision becomes effective. We have entered into indemnification agreements with each of our directors which may, in some cases, be broader than the specific indemnification provisions contained under Delaware law. We also expect to maintain standard insurance policies that provide coverage (1) to our directors and officers against loss arising from claims made by reason of breach of duty or other wrongful act and (2) to us with respect to indemnification payments we may make to such officers and directors.

The Registrant's Amended and Restated Bylaws, as amended on September 3, 2015 (the "Bylaws"), and Amended and Restated Certificate of Incorporation, as amended on September 3, 2015, authorize the indemnification of directors and officers to the fullest extent permitted by the DGCL; *provided, however*, that, except as provided in Section 9.2 of the Bylaws with respect to any action, suit or proceeding, whether civil, criminal, administrative or investigative (hereinafter a "Proceeding") to enforce rights to indemnification, the Registrant shall indemnify any officer or director in connection with a Proceeding (or part thereof) initiated by such officer or director *only if* such Proceeding (or part thereof) was authorized by the board of directors of the Registrant to the fullest extent permitted by law. The Registrant is not required to indemnify or advance expenses in connection with any action, suit, proceeding, claim, or counterclaim initiated by the Registrant or on behalf of the Registrant.

Item 7. Exemption from Registration Claimed.

Not applicable.

Item 8. Exhibits.

| Exhibit Number | Description of Exhibit | Form | Incorporated by Reference | | | Filed Herewith |
|----------------|---|---------|---------------------------|-------------|---------|----------------|
| | | | File No. | Filing Date | Exhibit | |
| 4.1 | Ener-Core, Inc. 2015 Omnibus Incentive Plan | DEF 14A | 000-55400 | 7/15/2015 | App. A | |
| 5.1 | Opinion of K&L Gates LLP | | | | | X |
| 23.1 | Consent of K&L Gates LLP (included in Exhibit 5.1) | | | | | X |
| 23.2 | Consent of SingerLewak LLP, Independent Registered Public Accounting Firm | | | | | X |
| 24.1 | Power of Attorney (included on signature page) | | | | | X |

Item 9. Undertakings.

(a) The undersigned Registrant hereby undertakes:

(1) To file, during any period in which offers or sales are being made, a post-effective amendment to this Registration Statement:

(i) To include any prospectus required by Section 10(a)(3) of the Securities Act;

(ii) To reflect in the prospectus any facts or events arising after the effective date of the Registration Statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in the Registration Statement; notwithstanding the foregoing, any increase or decrease in volume of securities offered (if the total dollar value of securities offered would not exceed that which was registered) and any deviation from the low or high end of the estimated maximum offering range may be reflected in the form of prospectus filed with the Commission pursuant to Rule 424(b) of the Securities Act if, in the aggregate, the changes in volume and price represent no more than 20 percent change in the maximum aggregate offering price set forth in the "Calculation of Registration Fee" table in the effective registration statement; and

(iii) To include any material information with respect to the plan of distribution not previously disclosed in the Registration Statement or any material change to such information in the Registration Statement; *provided, however*, that paragraphs (a)(1)(i) and (a)(1)(ii) of this section do not apply if the information required to be included in a post-effective amendment by those paragraphs is contained in periodic reports filed with or furnished to the Commission by the Registrant pursuant to Sections 13 or 15(d) of the Exchange Act that are incorporated by reference in the Registration Statement.

(2) That, for the purpose of determining any liability under the Securities Act, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

(3) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.

(b) The undersigned Registrant hereby undertakes that, for purposes of determining any liability under the Securities Act, each filing of the Registrant's annual report pursuant to Section 13(a) or Section 15(d) of the Exchange Act (and, where applicable, each filing of an employee benefit plan's annual report pursuant to Section 15(d) of the Exchange Act) that is incorporated by reference in the Registration Statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

(c) Insofar as indemnification for liabilities arising under the Securities Act may be permitted to directors, officers and controlling persons of the Registrant pursuant to the foregoing provisions, or otherwise, the Registrant has been advised that in the opinion of the Commission such indemnification is against public policy as expressed in the Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the Registrant of expenses incurred or paid by a director, officer or controlling person of the Registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the Registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Securities Act and will be governed by the final adjudication of such issue.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, as amended, the Registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-8 and has duly caused this Registration Statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Irvine, State of California, on the 16th day of February, 2017.

ENER-CORE, INC.

By: /s/ Alain J. Castro
Alain J. Castro
Chief Executive Officer

POWER OF ATTORNEY

Each person whose signature appears below constitutes and appoints Alain J. Castro and Domonic J. Carney his true and lawful attorney-in-fact and agent, with full power of substitution and resubstitution, for him and in his name, place or stead, in any and all capacities, to sign any and all amendments (including post-effective amendments) to this Registration Statement, and to file the same, with all exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorney-in-fact and agent, full power and authority to do and perform each and every act and thing requisite and necessary to be done in connection therewith, as fully to all intents and purposes as he might or could do in person, hereby ratifying and confirming all that said attorney-in-fact and agent, or his substitute, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act of 1933, as amended, this Registration Statement has been signed by the following persons in the capacities and on the dates indicated.

| <u>Signature</u> | <u>Title</u> | <u>Date</u> |
|---|--|-------------------|
| <u>/s/ Alain J. Castro</u> Alain J. Castro | Chief Executive Officer and Director (Principal Executive Officer) | February 16, 2017 |
| <u>/s/ Domonic J. Carney</u> Domonic J. Carney | Chief Financial Officer (Principal Financial Officer and Principal Accounting Officer) | February 16, 2017 |
| <u>/s/ Michael J. Hammons</u> Michael J. Hammons | Chairman and Director | February 16, 2017 |
| <u>/s/ Bennet P. Tchaikovsky</u> Bennet P. Tchaikovsky | Director | February 16, 2017 |
| <u>/s/ Jeffrey Horn</u> Jeffrey Horn | Director | February 16, 2017 |
| <u>/s/ Ian C. Copeland</u> Ian C. Copeland | Director | February 16, 2017 |
| <u>/s/ Stephen Markscheid</u> Stephen Markscheid | Director | February 16, 2017 |

K&L GATES**K&L GATES LLP**
1 PARK PLAZA
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IRVINE, CA 92614
T +1 949 253 0900 F +1 949 253 0902 klgates.com

February 15, 2017

Ener-Core, Inc.
9400 Toledo Way
Irvine, California 92618

Ladies and Gentlemen:

We have acted as counsel to Ener-Core, Inc., a Delaware corporation (the "Company"), in connection with the preparation of a Registration Statement on Form S-8 (the "Registration Statement"), filed by the Company with the Securities and Exchange Commission (the "Commission") pursuant to the Securities Act of 1933, as amended (the "Securities Act"), registering 902,464 shares (the "Shares") of the Company's common stock, par value \$0.0001 per share (the "Common Stock"), issuable under the Ener-Core, Inc. 2015 Omnibus Incentive Plan (the "2015 Plan"). This opinion letter is being furnished to you in accordance with the requirements of Item 601(b)(5) of Regulation S-K.

You have requested our opinion as to the matters set forth below in connection with the Registration Statement. For purposes of rendering our opinion, we have examined: (i) the Registration Statement, (ii) the Certificate of Incorporation of the Company, (iii) the Bylaws of the Company, (iv) certain resolutions of the Board of Directors of the Company (the "Board") and such other records of corporate actions of the Company relating to the Registration Statement and the authorization for issuance and sale of the Shares, and matters in connection therewith, (v) the 2015 Plan and the forms of award agreements approved by the Board for use thereunder, and (vi) a certificate of an officer of the Company, dated as of the date hereof (the "Fact Certificate"). We have also made such other investigation as we have deemed appropriate. We have examined and relied upon certificates of public officials and, as to certain matters of fact that are material to our opinion, we have also relied on the Fact Certificate.

In rendering our opinion, we have made the assumptions that are customary in opinion letters of this kind, including that: (i) each document submitted to us is accurate and complete; (ii) each document submitted to us as an original is authentic; (iii) each document submitted to us as a copy conforms to an authentic original; (iv) all signatures on original documents are genuine; (v) all documents were duly executed and delivered where due execution and delivery are prerequisites to the effectiveness thereof; and (vi) the Company is and shall remain at all times a corporation duly incorporated, validly existing and in good standing under the laws of the State of Delaware. We have further assumed the legal capacity of natural persons and we have assumed that each party to the documents we have examined or relied on has the legal capacity or authority and has satisfied all legal requirements that are applicable to that party to the extent necessary to make such documents enforceable against that party. We have not verified any of those assumptions.

In rendering our opinion below, we also have assumed that: (i) the Company will have sufficiently authorized and unissued shares of Common Stock at the time of each issuance of a Share under the 2015 Plan; (ii) the Shares will be evidenced by appropriate certificates, duly executed and delivered, or the Board will adopt a resolution providing that all Shares shall be uncertificated in accordance with Section 158 of the Delaware General Corporation Law (the "DGCL") prior to their issuance; (iii) the issuance of each Share will be duly noted in the Company's stock ledger upon issuance; and (iv) the Company will receive consideration for each Share at least equal to the par value of each share of Common Stock, in the amount required by the 2015 Plan and approved by the Board pursuant to a resolution authorizing the issuance of such Share adopted at a meeting or by unanimous consent to action without meeting in accordance with the DGCL.

The opinion expressed below is limited to the DGCL.

Based upon and subject to the foregoing, it is our opinion that the Shares have been duly authorized for issuance by the Company and, when, and if, issued and sold in accordance with the terms of the 2015 Plan and any underlying award agreements, will be validly issued, fully paid and nonassessable. This opinion is expressed as of the date hereof and we disclaim any undertaking to advise you of any subsequent changes in the facts stated or assumed herein or of any subsequent changes in applicable laws.

We hereby consent to the filing of this opinion letter as an exhibit to the Registration Statement. In giving our consent, we do not hereby admit that we are in the category of persons whose consent is required under Section 7 of the Securities Act or the rules and regulations thereunder.

Yours truly,

/s/ K&L Gates LLP

K&L Gates LLP

Consent of Independent Registered Public Accounting Firm

We consent to the incorporation by reference in this Registration Statement on Form S-8 of Ener-Core, Inc. (the "Company") of our report dated April 14, 2016, relating to the consolidated financial statements (which report expresses an unqualified opinion and includes an emphasis paragraph relating to the Company's ability to continue as a going concern), appearing in the Annual Report on Form 10-K of Ener-Core, Inc. for the year ended December 31, 2015.

Los Angeles, California
February 15, 2017