

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

FORM S-1

Registration Statement Under The Securities Act of 1933

CHF SOLUTIONS, INC.

(Exact name of Registrant as specified in its charter)

Delaware

(State or other jurisdiction
of incorporation or organization)

3841

(Primary Standard Industrial
Classification Code Number)

22-2919486

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

**12988 Valley View Road
Eden Prairie, Minnesota 55344
(952) 345-4200**

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

**John Erb
Chief Executive Officer
CHF Solutions, Inc.
12988 Valley View Road
Eden Prairie, Minnesota 55344
(952) 345-4200**

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

COPIES TO:

**Phillip D. Torrence, Esq.
Meredith Ervine, Esq.
Honigman Miller Schwartz and Cohn LLP
350 East Michigan Avenue, Suite 300
Kalamazoo, MI 49007
Tel: (269) 337-7700
Fax: (269) 337-7703**

**Michael F. Nertney
Ellenoff Grossman & Schole LLP
1345 Avenue of the Americas
New York, NY 10105-0302
Tel: (212) 370-1300
Fax: (212) 401-4741**

Approximate date of commencement of proposed sale to the public: From time to time after this Registration Statement becomes effective.

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

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. (333-221010)

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

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

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

Large accelerated filer

Accelerated filer

Non-accelerated filer

Smaller reporting company

(Do not check if a
smaller reporting company)

Emerging growth company

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

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

CALCULATION OF REGISTRATION FEE

| Title of Each Class of Securities to be Registered(1) | Proposed Maximum Aggregate Offering Price(2) | Amount of Registration Fee(3) |
|---|---|--------------------------------------|
| Series F Convertible Preferred Stock | \$ 3,000,000 | \$ 373.50 |
| Common Stock issuable upon conversion of Series F Convertible Preferred Stock | \$ | \$ |
| Warrants to purchase common stock | \$ | \$ |
| Common Stock issuable on exercise of Warrants | \$ 6,000,000 | \$ 747.00 |
| Total | \$ 9,000,000 | \$ 1,120.50(3) |

- (1) Represents only the additional number of shares of common stock, shares of common stock issuable upon exercise of the common warrants, and pre-funded warrants being registered and includes shares of common stock issuable upon exercise of the underwriters' option to purchase additional shares of common stock and/or common warrants. Does not include the securities that the Registrant previously registered on the Registration Statement on Form S-1, as amended (Reg. No. 333-221010). Pursuant to Rule 416 of the Securities Act of 1933, as amended (the "Act"), the securities registered also include such indeterminate amounts and numbers of shares of common stock issuable to cover additional securities that may be offered or issued to prevent dilution resulting from stock splits, stock dividends or similar transactions.
- (2) Estimated solely for the purpose of computing the registration fee pursuant to Rule 457(o) under the Act.
- (3) The Registrant previously registered an aggregate of \$48,000,000 worth of its common stock, common warrants and pre-funded warrants on a Registration Statement on Form S-1, as amended (Reg. No. 333-221010) for which filing fees of \$5,976.00 were paid.

The Registration Statement shall become effective upon filing with the Securities and Exchange Commission in accordance with Rule 462(b) under the Securities Act of 1933, as amended.



EXPLANATORY NOTE

This registration statement is being filed with respect to the registration of additional shares of Series F Convertible Preferred Stock, Common Stock issuable upon conversion of Series F Convertible Preferred Stock, Warrants to purchase common stock and Common Stock issuable on exercise of Warrants of CHF Solutions, Inc., a Delaware corporation, pursuant to Rule 462(b) under the Securities Act of 1933, as amended. The contents of the registration statement on Form S-1 (333-221010), initially filed by CHF Solutions, Inc. with the Securities and Exchange Commission (the "Commission") on October 18, 2017, as amended by Pre-Effective Amendment No. 1, as filed with the Commission on November 6, 2017, Pre-Effective Amendment No. 2, as filed with the Commission on November 13, 2017, Pre-Effective Amendment No. 3, as filed with the Commission on November 17, 2017, and Pre-Effective Amendment No. 4, as filed with the Commission on November 20, 2017, including all exhibits thereto, are incorporated herein by reference.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the registrant has duly caused this registration statement to be signed on its behalf by the undersigned, thereunto duly authorized in the City of Eden Prairie, State of Minnesota, on this 21st day of November, 2017.

CHF SOLUTIONS, INC.

By: /s/ JOHN L. ERB

John L. Erb

Chief Executive Officer and Chairman of the Board

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 as of the dates indicated.

| Signature | Title | Date |
|---|---|-------------------|
| <u>/s/ JOHN L. ERB</u> John L. Erb | Principal Executive Officer and Chairman of the Board | November 21, 2017 |
| <u>/s/ CLAUDIA DRAYTON</u> Claudia Drayton | Principal Financial Officer and Principal Accounting Officer | November 21, 2017 |
| <u>*</u> Steve Brandt | Director | November 21, 2017 |
| <u>*</u> Matthew Likens | Director | November 21, 2017 |
| <u>*</u> Jon W. Salvesson | Director | November 21, 2017 |
| <u>*</u> Gregory Waller | Director | November 21, 2017 |
| <u>*</u> Warren Watson | Director | November 21, 2017 |

* By: /s/ JOHN L. ERB
John L. Erb
Attorney-in-fact

EXHIBIT INDEX

| Exhibit Number | Description |
|---------------------------|---|
| 5.1* | Opinion of Honigman Miller Schwartz and Cohn LLP. |
| 23.1* | Consent of Independent Registered Public Accounting Firm. |
| 23.2* | Consent of Honigman Miller Schwartz and Cohn LLP (included in Exhibit 5.1). |
| 24.1** | Power of Attorney (incorporated by reference to Exhibit 24.1 to the Form S-1 Registration Statement (Registration No. 333-221010), filed by CHF Solutions, Inc. on October 18, 2017). |

* Filed herewith.

** Previously filed.

HONIGMAN

Honigman Miller Schwartz and Cohn LLP
Attorneys and Counselors

(269) 337-7700
Fax: (269) 337-7701

November 21, 2017

CHF Solutions, Inc.
12988 Valley View Road
Eden Prairie, Minnesota 55344

Re: Registration Statement on Form S-1

Ladies and Gentlemen:

We have acted as counsel to CHF Solutions, Inc., a Delaware corporation (the “**Company**”), in connection with the preparation and filing with the Securities and Exchange Commission (the “**Commission**”) of a Registration Statement on Form S-1 (such registration statement as amended or supplemented from time to time, the “**Additional Registration Statement**”), pursuant to Rule 462(b) promulgated under the Securities Act of 1933, as amended (the “**Securities Act**”) relating to the offer and sale by the Company of approximately \$9,000,000 in the aggregate of the Company’s common stock, par value \$0.0001 per share (the “**Common Stock**”) issuable upon the exercise or conversion of: (i) warrants to purchase 223 shares of Common Stock (“**Additional Series 1 Warrants**”) for each share of Additional Preferred Stock (as defined below) sold and warrants to purchase 223 shares of Common Stock (“**Additional Series 2 Warrants**” and together with the Additional Series 1 Warrants, the “**Additional Warrants**”) for each share of Additional Preferred Stock sold, such Additional Warrants representing the right to purchase in the aggregate 1,338,000 shares (the “**Additional Warrant Shares**”) of Common Stock, and (ii) 3,000 shares of the Company’s Series F Convertible Preferred Stock, par value \$0.0001 per share (the “**Additional Preferred Stock**”), such Additional Preferred Stock to be convertible into 669,000 shares of Common Stock, issuable pursuant to the Additional Registration Statement. The Additional Registration Statement incorporates the Registration Statement on Form S-1 (File No. 333-221010) (the “**Original Registration Statement**”) originally filed with the Commission on October 18, 2017, as amended, and the related prospectus included therein (the “**Prospectus**”). All of the Additional Warrants and the Additional Preferred Stock are to be sold by the Company as described in the Original Registration Statement and the Prospectus and pursuant to the underwriting agreement referred to in the Original Registration Statement (the “**Underwriting Agreement**”).

Pursuant to the Certificate of Designation (the “**Certificate of Designation**”) establishing the powers, designations, preferences and rights of the Additional Preferred Stock, which will be filed in connection with the offering contemplated by the Original Registration Statement and the Company’s Fourth Amended and Restated Certificate of Incorporation, as amended (the “**Certificate of Incorporation**”), the shares of the Additional Preferred Stock will be convertible into shares of Common Stock. We have assumed that the sale of the Additional Preferred Stock and Additional Warrants to the underwriter by the Company will be authorized, and at a price established, by the Board of Directors of the Company or a duly-formed Pricing Committee thereof in accordance with the Delaware General Corporation Law. We have also assumed that, at the time of exercise of the Additional Warrants or conversion of the Additional Preferred Stock, a sufficient number of shares of Common Stock will be authorized and available for issuance and that the consideration for the issuance and sale of the Common Stock in connection with such exercise or conversion is in an amount that is not less than the par value of the Common Stock.

For the purpose of rendering the opinions herein, we examined originals or copies of such documents as we deemed relevant. In conducting our examination, we assumed, without investigation, the genuineness of all signatures, the correctness of all certificates, the authenticity of all documents submitted to us as originals, the conformity to original documents of all documents submitted as certified or photostatic copies, the authenticity of the originals of such copies, the accuracy and completeness of all records made available to us by the Company and the due authorization, execution, delivery, and/or filing of all documents where due authorization, execution, delivery and/or filing are a prerequisite to the effectiveness thereof. As to certain factual matters, we have relied upon a certificate of officers of the Company and have not independently sought to verify such matters.

Our opinions are limited solely to matters set forth herein. The law covered by the opinions expressed herein is limited to the Delaware General Corporation Law and, as to the enforceability of the Additional Warrants against the Company, the laws of the State of New York. We express no opinion as to whether the laws of any particular jurisdiction are applicable to the subject matter hereof. We are not rendering any opinion as to compliance with any federal or state law, rule or regulation relating to securities, or to the sale or issuance thereof.

Based on our examination of such documents and other matters as we deem relevant, we are of the opinion that:

1. When the Additional Warrants have been duly executed and delivered by the Company against payment of the consideration therefor specified in the Underwriting Agreement, such warrants will constitute binding obligations of the Company, enforceable against the Company in accordance with their terms.
2. When the Certificate of Designation has been properly filed with the Delaware Secretary of State, the Series F Preferred Stock will have been duly authorized and, upon issuance, delivery, and payment therefor pursuant to the terms of the Underwriting Agreement, will be validly issued, fully paid and nonassessable.
3. The shares of Common Stock that are (a) issuable upon the valid exercise of the Additional Warrants in accordance with their terms, including without limitation, payment of the consideration therefor as described therein, and (b) issuable upon the valid conversion of the shares of Additional Preferred Stock in accordance with the Certificate of Designation, in each case, when issued and delivered in accordance with the Company's Amended and Restated Certificate of Incorporation, as amended and supplemented to date by all amendments and certificates of designation thereto, including, without limitation, the payment in full of all applicable consideration therefor, will be validly issued, fully paid and nonassessable.

Our opinions set forth above with respect to the enforceability of the Additional Warrants are subject to the effect of any applicable bankruptcy, insolvency, reorganization, moratorium or similar law relating to or affecting creditors' rights generally (including, without limitation, fraudulent conveyance laws), general principles of equity, including, without limitation, concepts of materiality, reasonableness, good faith and fair dealing and the possible unavailability of specific performance or injunctive relief, regardless of whether considered in a proceeding in equity or at law and limitations regarding the availability of indemnification and contribution where such indemnification or contribution may be limited by applicable law or the application of principles of public policy.

We express no opinion as to the enforceability of (i) provisions that relate to choice of law, forum selection or submission to jurisdiction (including, without limitation, any express or implied waiver of any objection to venue in any court or of any objection that a court is an inconvenient forum) to the extent that the validity, binding effect or enforceability of any such provision is to be determined by any court other than a state court of the State of New York, (ii) waivers by the Company of any statutory or constitutional rights or remedies, (iii) terms which excuse any person or entity from liability for, or require the Company to indemnify such person or entity against, such person's or entity's negligence or willful misconduct, (iv) obligations to pay any prepayment premium, default interest rate, early termination fee or other form of liquidated damages, if the payment of such premium, interest rate, fee or damages may be construed as unreasonable in relation to actual damages or disproportionate to actual damages suffered as a result of such prepayment, default or termination, or (v) provisions providing that the terms of agreement may not be waived or modified except in writing.

We hereby consent to the filing of this opinion as Exhibit 5.1 to the Additional Registration Statement and to the reference to our firm under the caption "Legal Matters" in the Original Registration Statement. In giving such consent, we do not admit that we are within the category of persons whose consent is required by Section 7 of the Securities Act or the rules and regulations promulgated thereunder by the Commission. 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 law.

Very truly yours,

/s/ HONIGMAN MILLER SCHWARTZ AND COHN LLP

PDT/JQW/REW/NHB

350 East Michigan Avenue · Suite 300 · Kalamazoo, Michigan 49007-3800
Detroit · Ann Arbor · Bloomfield Hills · Chicago · Grand Rapids · Kalamazoo · Lansing

Consent of Independent Registered Public Accounting Firm

We consent to the incorporation by reference in the Registration Statement on Form S-1 filed pursuant to Rule 462(b) of the Securities Act of 1933 of the reference to our firm under the caption “Experts” and to the incorporation by reference of our report dated March 8, 2017, with respect to the consolidated financial statements of Sunshine Heart, Inc. (now known as CHF Solutions, Inc.) and Subsidiaries in Amendment No. 3 to Registration Statement (Form S-1 No. 333-221010) and related Prospectus of CHF Solutions, Inc. for the registration of its Series F Convertible Preferred Stock, Common Stock, and Warrants to purchase Common Stock.

/s/ Ernst & Young LLP
Minneapolis, Minnesota
November 21, 2017
