

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

**SCHEDULE 13D  
Under the Securities Exchange Act of 1934**

**InfuSystem Holdings, Inc.**

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(Name of Issuer)

**Common Stock, par value \$0.0001 per share**

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(Title of Class of Securities)

**411357106**

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(CUSIP Number)

**Simon M. Lorne, Esq.  
Millennium Management LLC  
666 Fifth Avenue, 8th Floor  
New York, New York 10103  
(212) 841-4100**

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(Name, Address and Telephone Number of Person Authorized to Receive Notices and Communications)

**October 25, 2007**

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(Date of event which requires filing of this statement)

If the filing person has previously filed a statement on Schedule 13G to report the acquisition that is the subject of this Schedule 13D, and is filing this schedule because § 240.13d-1(e), 240.13d-1(f) or 240.13d-1(g) check the following box  .

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**SCHEDULE 13D**

**CUSIP No.** 411357106

|   |  |  |
|---|--|--|
| <b>1</b>  | NAMES OF REPORTING PERSONS.<br>I.R.S. IDENTIFICATION NOS. OF ABOVE PERSONS (ENTITIES ONLY).<br><br>Millenco LLC<br>13-3532932      |  |
| <b>2</b>  | CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP<br>(a) <input type="radio"/><br>(b) <input checked="" type="radio"/>              |  |
| <b>3</b>  | SEC USE ONLY   |  |
| <b>4</b>  | SOURCE OF FUNDS<br><br>WC, OO  |  |
| <b>5</b>  | CHECK BOX IF DISCLOSURE OF LEGAL PROCEEDINGS IS REQUIRED PURSUANT TO ITEMS 2(d) OR 2(e)<br><br><input checked="" type="checkbox"/> |  |
| <b>6</b>  | CITIZENSHIP OR PLACE OF ORGANIZATION<br><br>Delaware   |  |
| NUMBER OF<br>SHARES<br>BENEFICIALLY<br>OWNED BY<br>EACH<br>REPORTING<br>PERSON WITH | <b>7</b>   | SOLE VOTING POWER<br><br>-0-                           |
|   | <b>8</b>   | SHARED VOTING POWER<br><br>1,501,395 (See Item 6)      |
|   | <b>9</b>   | SOLE DISPOSITIVE POWER<br><br>-0-                      |
|   | <b>10</b>  | SHARED DISPOSITIVE POWER<br><br>1,501,395 (See Item 6) |
| <b>11</b>   | AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON<br><br>1,501,395 (See Item 6)   |  |
| <b>12</b>   | CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (11) EXCLUDES CERTAIN SHARES<br><br><input type="radio"/>                                 |  |
| <b>13</b>   | PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (11)<br><br>8.2%   |  |
| <b>14</b>   | TYPE OF REPORTING PERSON<br><br>OO, BD   |  |

**SCHEDULE 13D**

**CUSIP No.** 411357106

|   |  |  |           |  |
|---|--|--|-----------|--|
| <b>1</b>  | NAMES OF REPORTING PERSONS.<br>I.R.S. IDENTIFICATION NOS. OF ABOVE PERSONS (ENTITIES ONLY).<br><br>Millennium Management LLC<br>13-3804139 |  |           |  |
| <b>2</b>  | CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP<br>(a) <input type="radio"/><br>(b) <input type="radio"/>                                 |  |           |  |
| <b>3</b>  | SEC USE ONLY   |  |           |  |
| <b>4</b>  | SOURCE OF FUNDS<br><br>WC, OO  |  |           |  |
| <b>5</b>  | CHECK BOX IF DISCLOSURE OF LEGAL PROCEEDINGS IS REQUIRED PURSUANT TO ITEMS 2(d) OR 2(e)<br><br><input type="radio"/>                       |  |           |  |
| <b>6</b>  | CITIZENSHIP OR PLACE OF ORGANIZATION<br><br>Delaware   |  |           |  |
| NUMBER OF<br>SHARES<br>BENEFICIALLY<br>OWNED BY<br>EACH<br>REPORTING<br>PERSON WITH |  |  | <b>7</b>  | SOLE VOTING POWER<br><br>-0-                           |
|   |  |  | <b>8</b>  | SHARED VOTING POWER<br><br>1,501,395 (See Item 6)      |
|   |  |  | <b>9</b>  | SOLE DISPOSITIVE POWER<br><br>-0-                      |
|   |  |  | <b>10</b> | SHARED DISPOSITIVE POWER<br><br>1,501,395 (See Item 6) |
| <b>11</b>   | AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON<br><br>1,501,395 (See Item 6)   |  |           |  |
| <b>12</b>   | CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (11) EXCLUDES CERTAIN SHARES<br><input type="radio"/>   |  |           |  |
| <b>13</b>   | PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (11)<br><br>8.2%   |  |           |  |
| <b>14</b>   | TYPE OF REPORTING PERSON<br><br>OO   |  |           |  |

**SCHEDULE 13D**

**CUSIP No.** 411357106

|   |  |  |
|---|--|--|
| <b>1</b>  | NAMES OF REPORTING PERSONS.<br>I.R.S. IDENTIFICATION NOS. OF ABOVE PERSONS (ENTITIES ONLY).<br><br>Israel A. Englander |  |
| <b>2</b>  | CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP<br>(a) <input type="radio"/><br>(b) <input type="radio"/>             |  |
| <b>3</b>  | SEC USE ONLY   |  |
| <b>4</b>  | SOURCE OF FUNDS<br><br>WC, OO  |  |
| <b>5</b>  | CHECK BOX IF DISCLOSURE OF LEGAL PROCEEDINGS IS REQUIRED PURSUANT TO ITEMS 2(d) OR 2(e)<br><br><input type="radio"/>   |  |
| <b>6</b>  | CITIZENSHIP OR PLACE OF ORGANIZATION<br><br>United States  |  |
| NUMBER OF<br>SHARES<br>BENEFICIALLY<br>OWNED BY<br>EACH<br>REPORTING<br>PERSON WITH | <b>7</b>   | SOLE VOTING POWER<br><br>-0-                           |
|   | <b>8</b>   | SHARED VOTING POWER<br><br>1,501,395 (See Item 6)      |
|   | <b>9</b>   | SOLE DISPOSITIVE POWER<br><br>-0-                      |
|   | <b>10</b>  | SHARED DISPOSITIVE POWER<br><br>1,501,395 (See Item 6) |
| <b>11</b>   | AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON<br><br>1,501,395 (See Item 6)                             |  |
| <b>12</b>   | CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (11) EXCLUDES CERTAIN SHARES<br><input type="radio"/>                         |  |
| <b>13</b>   | PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (11)<br><br>8.2%   |  |
| <b>14</b>   | TYPE OF REPORTING PERSON<br><br>IN   |  |

## Explanatory Note

### Item 1. Security and Issuer.

The name of the issuer is InfuSystem Holdings, Inc., a Delaware corporation (the "Issuer"). The address of the Issuer's offices is 350 Madison Avenue, New York, New York 10017. This Schedule 13D relates to the Issuer's common stock, par value \$0.0001 per share (the "Common Stock"). The Reporting Persons hold warrants to purchase the Issuer's Common Stock ("Warrant").

### Item 2. Identity and Background.

(a)-(c), (f). This statement is being filed by Millenco LLC, a Delaware limited liability company (formerly Millenco, L.P., a Delaware limited partnership) ("Millenco"). Millenco is a broker-dealer and a member of the American Stock Exchange and the NASDAQ. Millennium Management LLC, a Delaware limited liability company ("Millennium Management"), is the manager of Millenco, and consequently may be deemed to have voting control and investment discretion over securities owned by Millenco. Israel A. Englander ("Mr. Englander") is the managing member of Millennium Management. As a result, Mr. Englander may be deemed to be the beneficial owner of any shares deemed to be beneficially owned by Millennium Management. The foregoing should not be construed in and of itself as an admission by Millennium Management or Mr. Englander as to beneficial ownership of the shares owned by Millenco.

The business address for Millenco, Millennium Management and Mr. Englander is c/o Millennium Management LLC, 666 Fifth Avenue, New York, New York 10103. Mr. Englander is a United States citizen.

Note: Integrated Holding Group LP, a Delaware limited partnership ("Integrated Holding Group"), is a non-managing member of Millenco. As a non-managing member, Integrated Holding Group has no voting control or investment discretion over Millenco or its securities positions.

(d) During the last five years, none of the Reporting Persons has been convicted in a criminal proceeding (excluding traffic violations or similar misdemeanors).

(e) On December 1, 2005, Millennium Management and Mr. Englander, together with Millennium Partners, L.P. ("Millennium Partners") and certain related persons and entities, entered into settlements with the Securities and Exchange Commission ("SEC") and the Attorney General of the State of New York (the "NYAG") relating to allegations that Millennium Partners had engaged in a pattern of deceptive "market timing" of mutual fund shares in years prior to 2004 and, in the case of the settlement with the NYAG only, had failed to take adequate steps to prevent a trader from engaging in mutual fund "late trading" in violation of firm policy. The parties neither admitted nor denied the allegations or findings (except as to jurisdiction) but consented to the entry of findings. The SEC proceedings are In the Matter of Millennium Partners, L.P., et al. Securities Act Release No. 8639 (December 1, 2005), available at [www.sec.gov](http://www.sec.gov). Contemporaneously, the NYAG issued an Assurance of Discontinuance relating to the claims and findings of that office.

Neither the Reporting Persons nor any other party admitted or denied any of the allegations or findings in these matters. The remedies included disgorgement by the entities of approximately \$148 million of mutual fund trading profits, civil penalties aggregating approximately \$32.15 million (with approximately \$30 million being paid by Mr. Englander), an administrative order to cease and desist from violations of the antifraud provisions of the Securities Act of 1933 and the Securities Exchange Act of 1934 (the "Exchange Act"), and prophylactic relief.

### Item 3. Source and Amount of Funds or Other Consideration.

The amount of funds used to purchase the 1,501,395 Warrants owned by Millenco in the transactions giving rise to this Schedule 13D was approximately \$436,800, calculated on an average cost basis (excluding brokerage commissions) by account. In some cases, the consideration paid for the Warrants is based on estimates by the Reporting Persons (e.g., when such Common Stock and Warrants were purchased as part of a unit, consisting of one share of Common Stock and two Warrants ("Unit"), the Unit's constituent parts became separately traded and when a Reporting Person sold such Common Stock and such retained Warrants needed to be valued). Millenco effects purchases of securities primarily through margin accounts maintained for it with prime brokers, which may extend margin credit to Millenco as and when required to open or carry positions in the margin accounts, subject to applicable Federal margin regulations, stock exchange rules and the prime broker's credit policies. In such instances, the positions held in the margin accounts are pledged as collateral security for the repayment of debit balances in the accounts.

### Item 4. Purpose of Transaction.

The Reporting Persons are engaged in the investment business. In pursuing this business, the Reporting Persons analyze the operations, capital structure and markets of companies, including the Issuer, on a continuous basis, through analysis of documentation and discussions with knowledgeable industry and market observers and with representatives of such companies (often at the invitation of management). From time to time, one or more of the Reporting Persons may hold

discussions with third parties or with management of such companies in which the Reporting Persons may suggest or take a position with respect to potential changes in the operations, management or capital structure of such companies as a means of enhancing shareholder value. Such suggestions or positions may relate to one or more of the transactions specified in clauses (a) through (j) of Item 4 of Schedule 13D of the Exchange Act, including, without limitation, such matters as disposing of or selling all or a portion of the company or acquiring another company or business, changing operating or marketing strategies, adopting or not adopting certain types of anti-takeover measures and restructuring the Issuer's capitalization or dividend policy.

The Reporting Persons employ the services of a number of portfolio managers, each of whom independently employs a separate and distinct trading strategy. A portion of the securities of the Issuer held by the Reporting Persons are held in accounts of the Reporting Persons managed by portfolio managers who engage in event-, risk- or merger-arbitrage or fundamental strategies.

Except as set forth above, the Reporting Persons do not have any present plans or proposals that relate to or would result in any of the actions required to be described in Item 4 of Schedule 13D. Each of the Reporting Persons may, at any time, review or reconsider its position with respect to the Issuer and formulate plans or proposals with respect to any of such matters, but has no present intention of doing so.

#### **Item 5. Interest in Securities of the Issuer.**

(a) As of the date hereof, Millenco holds 1,501,395 Warrants to purchase the Issuer's Common Stock. Each Warrant, which became exercisable upon the Issuer's completion of its acquisition of InFuSystem, Inc. on October 25, 2007, entitles the holder to purchase one share of the Issuer's Common Stock at an exercise price of \$5.00 per share. Each Warrant expires on April 11, 2011, or earlier upon redemption. Thus, Millenco may be deemed to be the beneficial owner of 1,501,395 shares of Common Stock, which represents approximately 8.2% of the outstanding shares of Common Stock. The calculation of the foregoing percentage is on the basis of 16,734,295 shares of the Issuer's Common Stock outstanding following the Issuer's completion of its acquisition of InFuSystem, Inc. and the completion of related transactions, as reported by the Issuer in its Form 8-K, dated October 31, 2007.

Millennium Management, as the manager of Millenco, may also be deemed to beneficially own the above-described shares of Common Stock beneficially owned by Millenco.

Mr. Englander, as the managing member of Millennium Management, may also be deemed to beneficially own the above-described shares of Common Stock beneficially owned by Millenco.

Accordingly, as of the date of this filing, Mr. Englander and Millennium Management may be deemed to be beneficial owners of 1,501,395 shares of Common Stock. The foregoing should not be construed in and of itself as an admission by Millennium Management or Mr. Englander as to beneficial ownership of the shares held by Millenco.

(b) Millenco may be deemed to hold shared power to vote and to dispose of the 1,501,395 shares of Common Stock described in (a) above. Mr. Englander and Millennium Management may be deemed to hold shared power to vote and to dispose of the 1,501,395 shares of Common Stock described in (a) above. The foregoing should not be construed in and of itself as an admission by Mr. Englander or Millennium Management as to beneficial ownership of the shares held by Millenco.

(c) Transactions in the Issuer's Common Stock and Warrants during the past 60 days: Schedule A annexed hereto lists all transactions in the Issuer's Common Stock and Warrants during the past 60 days by the Reporting Persons. As noted in Schedule A, some shares of the Issuer's Common Stock were purchased and sold by Catapult Partners, Ltd., an affiliate of the Reporting Persons. All of the remaining transactions were in the Issuer's Warrants and were effected by Millenco in the open market.

(d) No person other than the Reporting Persons is known to have the right to receive, or the power to direct the receipt of, dividends from, or proceeds from the sale of, the shares of Common Stock reported in this Statement.

#### **Item 6. Contracts, Arrangements, Understandings or Relationships with Respect to Securities of the Issuer.**

In connection with arrangements with Millenco's prime brokers, such prime brokers are permitted to lend securities in Millenco's accounts to the extent permitted by debit balances in such account. Millenco generally will not have any knowledge of the specific loans made by such prime brokers. In addition, in the ordinary course of business, Millenco (or its prime brokers), may borrow securities to satisfy delivery obligations arising from short sales and may lend securities to third parties and such loans generally may be recalled upon demand. However, it should be noted that shares lent by Millenco or its prime brokers may not be able to be recalled in advance of an applicable record date and thus, such loaned shares may not be able to be voted by Millenco.

There are no other contracts, arrangements, understandings or relationships among the Reporting Persons, or between the Reporting Persons and any other person, with respect to the securities of the Issuer.

**Item 7. Material to Be Filed as Exhibits.**

Exhibit I: Joint Filing Agreement, dated as of November 1, 2007, by and among Millenco LLC, Millennium Management LLC and Israel A. Englander.

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**SIGNATURE**

After reasonable inquiry and to the best of my knowledge and belief, I certify that the information set forth in this statement is true, complete and correct.

Dated: November 1, 2007

MILLESCO LLC

By: /s/ Mark Meskin

Name: Mark Meskin

Title: Chief Executive Officer

MILLENNIUM MANAGEMENT LLC

By: /s/David Nolan

Name: David Nolan

Title: Co-President

/s/ Israel A. Englander by David Nolan  
pursuant to Power of Attorney filed with  
the SEC on June 6, 2005

Israel A. Englander

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**EXHIBIT I**

**JOINT FILING AGREEMENT**

This will confirm the agreement by and among the undersigned that the Schedule 13D filed with the Securities and Exchange Commission on or about the date hereof with respect to the beneficial ownership by the undersigned of the Common Stock, par value \$0.0001 per share of InfuSystem Holdings, Inc., a Delaware corporation, is being filed, and all amendments thereto will be filed, on behalf of each of the persons and entities named below in accordance with Rule 13d-1(k) under the Securities Exchange Act of 1934, as amended. This Agreement may be executed in two or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

Dated: November 1, 2007

MILLENCO LLC

By: /s/ Mark Meskin

Name: Mark Meskin

Title: Chief Executive Officer

MILLENNIUM MANAGEMENT LLC

By: /s/David Nolan

Name: David Nolan

Title: Co-President

/s/ Israel A. Englander by David Nolan  
pursuant to Power of Attorney filed with  
the SEC on June 6, 2005

Israel A. Englander

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## Schedule A

Transactions in the Issuer's Common Stock and Warrants during the past 60 days:

| Date of Transaction | Class of Securities | Quantity Purchased (Sold) | Price Per Share \$ |
|---------------------|---------------------|---------------------------|--------------------|
| 9/5/2007 (1)        | Common Stock        | 10,500                    | 5.69               |
| 9/7/2007 (1)        | Common Stock        | -500                      | 5.69               |
| 9/12/2007 (1)       | Common Stock        | -10,000                   | 5.65               |
| 9/13/2007           | Warrant             | 100,000                   | 0.3                |
| 9/13/2007           | Warrant             | -80,000                   | 0.3525             |
| 9/13/2007           | Warrant             | -75,000                   | 0.3367             |
| 9/14/2007           | Warrant             | -100,000                  | 0.35               |
| 9/17/2007           | Warrant             | -100,000                  | 0.35               |
| 9/19/2007           | Warrant             | -120,000                  | 0.35               |
| 9/20/2007           | Warrant             | -134,500                  | 0.35               |
| 9/25/2007           | Warrant             | 140,000                   | 0.2796             |
| 9/26/2007           | Warrant             | 5,000                     | 0.27               |
| 9/27/2007           | Warrant             | 60,000                    | 0.2583             |
| 10/4/2007           | Warrant             | 15,000                    | 0.1967             |
| 10/15/2007          | Warrant             | 35,000                    | 0.32               |
| 10/16/2007          | Warrant             | 100,000                   | 0.3463             |
| 10/17/2007          | Warrant             | 200,000                   | 0.3374             |
| 10/18/2007          | Warrant             | 40,000                    | 0.38               |
| 10/18/2007          | Warrant             | 100,000                   | 0.38               |
| 10/18/2007          | Warrant             | 250,000                   | 0.37               |
| 10/19/2007          | Warrant             | 17,500                    | 0.36               |
| 10/24/2007          | Warrant             | -400,000                  | 0.3994             |
| 10/24/2007          | Warrant             | -14,000                   | 0.395              |
| 10/24/2007          | Warrant             | -7,500                    | 0.395              |
| 10/24/2007          | Warrant             | -5,000                    | 0.395              |
| 10/24/2007          | Warrant             | -5,000                    | 0.4                |
| 10/24/2007          | Warrant             | -4,000                    | 0.395              |
| 10/24/2007          | Warrant             | -4,000                    | 0.395              |
| 10/24/2007          | Warrant             | -2,400                    | 0.4                |
| 10/24/2007          | Warrant             | -1,000                    | 0.395              |
| 10/24/2007          | Warrant             | -1,000                    | 0.395              |
| 10/24/2007          | Warrant             | -1,000                    | 0.395              |
| 10/24/2007          | Warrant             | -1,000                    | 0.395              |
| 10/24/2007          | Warrant             | -1,000                    | 0.395              |
| 10/25/2007          | Warrant             | -404,500                  | 0.4223             |
| 10/26/2007          | Warrant             | -60,000                   | 0.5                |
| 10/26/2007          | Warrant             | -7,500                    | 0.5                |
| 10/26/2007          | Warrant             | -5,000                    | 0.5                |
| 10/26/2007          | Warrant             | -5,000                    | 0.5                |
| 10/26/2007          | Warrant             | -5,000                    | 0.5                |
| 10/26/2007          | Warrant             | -2,500                    | 0.5                |
| 10/26/2007          | Warrant             | -2,500                    | 0.5                |

|            |         |          |     |
|------------|---------|----------|-----|
| 10/29/2007 | Warrant | -166,070 | 0.5 |
| 10/30/2007 | Warrant | -17,160  | 0.5 |

Notes:

(1) Purchase or sale of Common Stock by Catapult Partners, Ltd., an affiliate of the Reporting Persons. All of the remaining transactions above were in the Issuer's Warrants and were effected by Millenco LLC in the open market.