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

SCHEDULE 14A INFORMATION

Proxy Statement pursuant to Section 14(a) of the Securities Exchange Act of 1934

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Check the appropriate box:

- " Preliminary Proxy Statement
- Confidential, for Use of the Commission Only (as permitted by Rule 14a-6(e)(2))
- " Definitive Proxy Statement
- b Definitive Additional Materials
- " Soliciting Material pursuant to §240.14a-12

InfuSystem Holdings, Inc.

(Name of Registrant as Specified in its Charter)

(Name of Person(s) Filing Proxy Statement, if other than Registrant)

Payment of Filing Fee (Check the appropriate box):

- b No fee required.
- Fee computed on table below per Exchange Act Rules 14a-6(i)(1) and 0-11.
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- " Fee paid previously with preliminary materials.
- " Check box if any part of the fee is offset as provided by Exchange Act Rule 0-11(a)(2) and identify the filing for which the offsetting fee was paid previously. Identify the previous filing by registration statement number or the Form or Schedule and the date of its filing.
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(2) Form, Schedule or Registration Statement No.:

FOR IMMEDIATE RELEASE

INFUSYTEM FILES DEFINITIVE REVOCATION SOLICITATION STATEMENT WITH THE SEC

INFUSYSTEM URGES STOCKHOLDERS TO REJECT ATTEMPTS BY THE KLEINHEINZ DISSIDENT GROUP TO TAKE CONTROL OF THE COMPANY

InfuSystem has the Right Plan in Place to Deliver Long-Term Value to Stockholders

The InfuSystem Board and Management Team are Efficiently Executing on the Company's Strategic Plan

The InfuSystem Board Unanimously Recommends All InfuSystem Stockholders Discard Dissident's White Agent Designation Card and Execute a BLUE Revocation Card Today

MADISON HEIGHTS, Mich., Feb. 6, 2012 — InfuSystem Holdings, Inc. (NYSE Amex: INFU), the leading national provider of infusion pumps and related services, today filed a definitive revocation solicitation statement with the Securities and Exchange Commission (the "SEC") seeking revocations from stockholders in response to the solicitation of agent designations from Kleinheinz Capital Partners, Meson Capital Partners, Boston Avenue Capital and certain affiliates (the "Kleinheinz Dissident Group") to call a special meeting for the purpose of replacing the Company's entire Board of Directors. The InfuSystem Board unanimously recommends that stockholders reject the Kleinheinz Dissident Group's efforts to take control of the Company by disregarding the Kleinheinz Dissident Group's agent designation card and solicitation materials.

In connection with the solicitation of revocations, InfuSystem is mailing the letter included below to its stockholders:

Dear Fellow InfuSystem Stockholder:

Kleinheinz Capital Partners, Meson Capital Partners, Boston Avenue Capital and certain affiliates of those entities (the "Kleinheinz Dissident Group"), a group of stockholders that collectively owns 11.4% of the InfuSystem outstanding shares, is asking your approval to call a special meeting to replace all seven members of InfuSystem's Board of Directors with its own handpicked nominees.

DO NOT ALLOW THE KLEINHEINZ DISSIDENT GROUP TO TAKE CONTROL OF YOUR BOARD AND YOUR COMPANY

DO NOT DESIGNATE THE KLEINHEINZ DISSIDENT GROUP AS AGENT FOR YOUR SHARES — DO NOT SIGN THEIR WHITE AGENT DESIGNATION CARD

The InfuSystem Board of Directors strongly believes that InfuSystem has the right Board and management team in place and that convening a special meeting at this time is not in the best interests of the Company or our stockholders. The InfuSystem Board values input from our stockholders and is fully committed to obtaining stockholder input regarding the composition of the Board. However, the Board does not believe that a special meeting serves the interests of our stockholders.

The special meeting has been demanded by a group of dissident stockholders who have not articulated any plans or proposals for InfuSystem or provided any information as to what actions they might undertake if they were to seize control of InfuSystem. Furthermore, the entire InfuSystem Board will be up for election later this year at our 2012 annual meeting of stockholders to be held in the spring, which makes the need for a special meeting completely unnecessary.

INFUSYSTEM HAS THE RIGHT PLAN IN PLACE TO DELIVER LONG-TERM VALUE TO STOCKHOLDERS

Over the past several years, the InfuSystem Board and management team have worked diligently to develop a strategic plan that positions the Company for continued success. We remain committed to the Company's core vision of becoming a significant leader in the infusion and pre-owned medical equipment markets, increasing revenue, maintaining attractive EBITDA margins, generating substantial free cash flow and improving the Company's overall financial profile.

The Company's Board, management team and employees have built InfuSystem into a market leading full-service infusion provider with a favorable reimbursement position with more than 200 managed care contracts covering approximately 200 million individuals.

Given InfuSystem's leading market position and the increasing demand for health care services and infusion therapy, we believe InfuSystem has a clear action plan and is well positioned for growth through multiple strategic and organic opportunities.

THE BOARD AND MANAGEMENT TEAM ARE SUCCESSFULLY EXECUTING ON THE STRATEGIC PLAN

InfuSystem has a clear action plan in place to continue to capitalize on the significant growth opportunities available and drive enhanced stockholder returns, and the Board believes it has the right management team to execute the plan. The Company's key executives have only been in their positions for short periods of time. Sean McDevitt has been Chief Executive Officer since September 2009, and the current Chief Financial Officer and head of sales have held their positions only since late 2010. In contrast, we believe that electing the Kleinheinz Dissident Group's nominees could interrupt the ongoing implementation of the Company's strategic plan and negatively impact stockholder value.

InfuSystem's core ambulatory infusion pump business provides a complete solution to doctors and patients, and has a strong presence with the largest payors and cancer treatment centers. In addition, the Company has maintained a disciplined approach to acquisitions, completing the purchase of Star Infusion and Compression Therapies, LLC in 2011 to complement the June 2010 acquisition of First Biomedical, Inc. These acquisitions have further diversified revenue streams while maintaining attractive EBITDA margins.

InfuSystem has achieved 17 consecutive quarters of year-over-year revenue growth. From the 12 months ended December 31, 2008 to the 12 months ended December 31, 2011, the Company increased revenues by 54%, while maintaining attractive EBITDA margins. As a sign of its growth, the Company successfully transitioned from the OTC Bulletin Board to a national exchange, the NYSE Amex, in early 2011.

InfuSystem has a strong nationwide presence that we believe we can leverage to further expand our footprint through strategic acquisitions. We are focused on targeted, accretive acquisitions of complementary businesses. Additionally, our ability to offer biomedical repair and service nationwide, as well as lease or sell a portfolio of large volume pumps, provides considerable retail opportunities. The Company expects to take advantage of these opportunities in order to grow organic revenues.

INFUSYSTEM HAS A STRONG, EXPERIENCED, INDEPENDENT AND MOTIVATED BOARD THAT IS COMMITTED TO ENHANCING STOCKHOLDER VALUE

We believe that we have the right Board and management team in place to execute on our strategic plan. Your Board is composed of seasoned executives, six of whom are independent, and all of whom are actively engaged and keenly aware of their duties to create value for all stockholders. In addition, the current members of the Board are also incentivized to pursue a strategy that will enhance stockholder value due to the fact that they own approximately 17.3% of the Company's outstanding shares, as compared to the Kleinheinz Dissident Group, which owns only approximately 11.4% of the Company's outstanding shares of Common Stock. For the past four years, no member of the Company's Board of Directors has sold any shares of InfuSystem's Common Stock.

The Board and management team are committed to ensuring that they have the right plan and governance structure in place to deliver the most value to stockholders. The Board and management team, with the assistance of independent financial advisors, regularly undertake a thorough review of strategic alternatives. The Company and its Board of Directors are also members in Corporate Board Member, a NYSE Euronext company, which provides ongoing education focused on the corporate governance responsibilities of a public company director. While the Board believes that the Company has the correct strategic plan and leadership in place, it remains open to all ideas designed to enhance stockholder value. Conversely, the Kleinheinz Dissident Group has refused to share with the Company any ideas that it may have for enhancing stockholder value despite several requests, instead opting to engage in a campaign that will only serve to inflict significant costs on the Company and its stockholders.

THE KLEINHEINZ DISSIDENT GROUP HAS FAILED TO ARTICULATE ANY PLAN FOR THE COMPANY AND IS ATTEMPTING TO TAKE CONTROL OF THE COMPANY WITHOUT PAYING FOR IT

The Kleinheinz Dissident Group is asking you to cede full control of your Board to a group of stockholders owning only 11.4% of the Company's shares without paying any customary control premium, based on nothing more than a generic promise to "implement significant changes for the benefit of all Company stockholders."

To date, the Kleinheinz Dissident Group has not articulated any plans or proposals to create value for InfuSystem stockholders, nor has the Kleinheinz Dissident Group even indicated that it has any such plans or proposals. The Kleinheinz Dissident Group's solicitation statement provides no information as to what actions the Kleinheinz Dissident Group might undertake to improve stockholder value if it were to gain control of the Board. Rather than engage with the Company constructively, the Kleinheinz Dissident Group has made baseless allegations that the Board is "actively impeding improvements" without offering any examples of such behavior or any indication of what these improvements may be.

Importantly, the Kleinheinz Dissident Group has not disclosed any plans for addressing the adverse consequences to the Company that would result immediately upon the Kleinheinz Dissident Group achieving its goal of replacing the entire Board. In particular:

- InfuSystem's business depends upon its management's deep knowledge of the industry, its relationships with third-party payors and the relationships between its sales forces and its customers. InfuSystem may have difficulty retaining key employees if the Kleinheinz Dissident Group is successful in replacing the entire Board.
- An event of default would occur under the Company's Credit Agreement, dated as of June 15, 2010, if the Kleinheinz Dissident Group is successful in replacing the entire Board. This event of default would give the lenders thereunder the right to declare the outstanding principal and accrued interest due and payable. As of September 30, 2011, the outstanding principal plus accrued interest under the Credit Agreement was \$25.1 million. The Kleinheinz Dissident Group has categorically stated in their solicitation statement that it believes that the lenders would be unlikely to exercise this right, but admits that this assertion is not informed by any discussions with the Company's lenders.

THE KLEINHEINZ DISSIDENT GROUP'S NOMINEES ARE NOT RIGHT FOR INFUSYSTEM'S STOCKHOLDERS

Before you entrust your investment to the Kleinheinz Dissident Group, carefully consider the experience and track record of its representatives. The Company believes that the Kleinheinz Dissident Group's nominees would fail to enhance the composition of your Board, as five of the seven nominees have no meaningful experience in the healthcare industry. Furthermore, the members of the Kleinheinz Dissident Group have not demonstrated a track record as activist investors who have successfully taken over a company and delivered greater value to stockholders.

We strongly believe that the Company and all of our stockholders are best served by a Board that continues to be composed of directors with deep experience and expertise in the healthcare industry.

THE KLEINHEINZ DISSIDENT GROUP SOLICITATION IS COSTLY AND UNJUSTIFIED

Rather than submit nominees for consideration at the Company's annual meeting to be held in the spring, the Kleinheinz Dissident Group has instead chosen to engage the Company in a costly and disruptive campaign to call a special meeting to replace the Company's directors. The Company's bylaws allow stockholders to nominate director candidates between January 28, 2012 and February 27, 2012 to be voted on at the Company's annual meeting to be held in the spring. Therefore, even if the Kleinheinz Dissident Group is successful, the special meeting at most would establish the composition of the Company's Board during a short period of only several weeks prior to the Company's 2012 annual meeting, at which each of the Board seats will be up for election anyway.

Additionally, the Kleinheinz Dissident Group has stated in their solicitation statement that, if they are successful, they will seek reimbursement from the Company for all costs related to their solicitation. The Kleinheinz Dissident Group has not explained why it feels the cost it has and will continue to inflict upon InfuSystem and its stockholders by pursuing a special meeting is justified.

PROTECT YOUR INVESTMENT: SUPPORT YOUR BOARD'S EFFORTS TO ENHANCE STOCKHOLDER VALUE

The InfuSystem Board has unanimously determined that the Kleinheinz Dissident Group's solicitation is contrary to the best interests of the Company and all InfuSystem stockholders. The Board unanimously opposes the solicitation of agent designations by the Kleinheinz Dissident Group. Accordingly, the Board strongly recommends that you protect the value of your investment — DO NOT SIGN any WHITE Agent Designation card sent to you by the Kleinheinz Dissident Group.

Whether or not you have previously executed a WHITE Agent Designation card and regardless of the number of shares you own, the Board urges you to show your support for the Board by signing, dating and delivering the enclosed BLUE Revocation Card, as promptly as possible, by mail (using the enclosed postage-paid envelope) to:



199 Water Street, 26th Floor New York, NY 10038-3560 Banks and Brokers Call (212) 440-9800 All Others Call Toll-Free (800) 891-3214

If your shares of Common Stock are held of record by a bank, bank nominee, brokerage firm or other institution, only that bank, bank nominee, brokerage firm or other institution can execute your BLUE Revocation Card, and you should, accordingly, call the bank, bank nominee, brokerage firm or other institution with your instructions to execute your BLUE Revocation Card. If you require assistance with this process, please call Georgeson, at (212) 440-9800 (banks and brokers) or toll-free at (800) 891-3214 (all others).

Whether or not you have previously executed a WHITE agent designation card and regardless of the number of shares you own, the InfuSystem Board urges you to sign, date and deliver the enclosed BLUE revocation card as soon as possible. Please act today. Your Board greatly appreciates your continued support.

Yours sincerely,

Sean McDevitt

Chairman and Chief Executive Officer

About InfuSystem Holdings, Inc.

InfuSystem Holdings, Inc. is the leading provider of infusion pumps and related services to hospitals, oncology practices and other alternate site healthcare providers. Headquartered in Madison Heights, Michigan, the company delivers local, field-based customer support, and also operates Centers of Excellence in Michigan, Kansas, California, and Ontario, Canada. The company's stock is traded on the NYSE Amex under the symbol INFU.

Forward-Looking Statements

Except for the historical information contained herein, the matters discussed in this press release are forward-looking statements that involve risks and uncertainties that could cause actual results to differ materially from those predicted by such forward-looking statements. These risks and uncertainties include general economic conditions, as well as other risks, detailed from time to time in the company's publicly filed documents.

Additional Information and Where to Find It

In connection with the solicitation of agent designation revocations, InfuSystem Holdings, Inc. has filed a definitive proxy statement with the Securities and Exchange Commission (the "SEC"). STOCKHOLDERS ARE URGED TO READ THE DEFINITIVE PROXY STATEMENT AND OTHER RELEVANT MATERIALS WHEN THEY BECOME AVAILABLE BECAUSE THEY CONTAIN IMPORTANT INFORMATION. InfuSystem and its directors and executive officers may be deemed to be participants in the solicitation of agent designation revocations. Stockholders may obtain additional information regarding such participants and their interests from the definitive proxy statement and from InfuSystem's periodic reports filed with the SEC. The periodic reports and definitive proxy statement are available, and other relevant documents will be available, at no charge at the web site of the SEC. at www.sec.gov.

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