

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

**SCHEDULE 14A**  
**(Rule 14a-101)**

**INFORMATION REQUIRED IN PROXY STATEMENT**  
**SCHEDULE 14A INFORMATION**

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

Filed by Registrant ☒ x

Filed by a Party other than the Registrant ☐ o

Check the appropriate box:

☐ o Preliminary Proxy Statement

☐ o Confidential, for Use of the Commission Only (as permitted by Rule 14a-6(e)(2))

☒ x Definitive Proxy Statement

☐ o Definitive Additional Materials

☐ o Soliciting Material Pursuant to §240.14a-11(c) or §240.1a-12

**SENESCO TECHNOLOGIES, INC.**  
**(Name of Registrant as Specified In Its Charter)**

\_\_\_\_\_  
**(Name of Person(s) Filing Proxy Statement if other than the Registrant)**

Payment of Filing Fee (Check the appropriate box):

☒ x No fee required.

☐ o Fee computed on table below per Exchange Act Rules 14a-6(i)(1) and 0-11.

1) Title of each class of securities to which transaction applies:

\_\_\_\_\_  
2) Aggregate number of securities to which transaction applies:

\_\_\_\_\_  
3) Per unit price or other underlying value of transaction computed pursuant to Exchange Act Rule 0-11 (Set forth the amount on which the filing fee is calculated and state how it was determined):

\_\_\_\_\_  
4) Proposed maximum aggregate value of transaction:

\_\_\_\_\_  
5) Total fee paid:

☐ o Fee paid previously with preliminary materials.

☐ o 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.

1) Amount Previously Paid:

\_\_\_\_\_  
2) Form, Schedule or Registration Statement No.:

\_\_\_\_\_  
3) Filing Party:

\_\_\_\_\_  
4) Date Filed:

\_\_\_\_\_

**SENESCO TECHNOLOGIES, INC.**  
**303 George Street, Suite 420**  
**New Brunswick, New Jersey 08901**

To Our Stockholders:

You are cordially invited to attend the 2009 Special Meeting of Stockholders of Senesco Technologies, Inc. at 11:00 A.M., local time, on September 22, 2009, at the offices of Morgan, Lewis & Bockius LLP at 101 Park Avenue, New York, New York 10178.

The Notice of Meeting and Proxy Statement on the following pages describe the matters to be presented at the meeting.

It is important that your shares be represented at this meeting to assure the presence of a quorum. Whether or not you plan to attend the meeting, we hope that you will have your stock represented by voting *as soon as possible*, by signing, dating and returning your proxy card in the enclosed envelope, which requires no postage if mailed in the United States. Your stock will be voted in accordance with the instructions you have given in your proxy.

Thank you for your continued support.

Sincerely,

/s/ Harlan W. Waksal, M.D.

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Harlan W. Waksal, M.D.

*Chairman of the Board*

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SENESCO TECHNOLOGIES, INC.  
303 George Street, Suite 420  
New Brunswick, New Jersey 08901

NOTICE OF SPECIAL MEETING OF STOCKHOLDERS  
To Be Held September 22, 2009

The Special Meeting of Stockholders (the "Meeting") of Senesco Technologies, Inc., a Delaware corporation (the "Company"), will be held at the offices of Morgan, Lewis & Bockius LLP at 101 Park Avenue, New York, New York 10178 on September 22, 2009, at 11:00 A.M., local time, for the following purposes:

- (1) To approve an amendment to the Company's Certificate of Incorporation to increase the total number of authorized shares of common stock, \$0.01 par value per share, of the Company from 100,000,000 to 120,000,000.
- (2) To approve, for purposes of section 713 of the NYSE Amex Company Guide, the issuance of our shares of common stock and warrants (and the shares of common stock issuable upon exercise of the warrants), which in the aggregate exceed 20% of our currently outstanding shares of common stock, pursuant to the terms and conditions of the Securities Purchase Agreement, dated as of July 9, 2009, between Partlet Holdings Limited and us, the Securities Purchase Agreement, dated as of July 29, 2009, between each of Robert Forbes, Timothy Forbes, Harlan W. Waksal, M.D., Rudolf Stalder, Christopher Forbes, David Rector, John N. Braca, Jack Van Hulst, Warren Isabelle and the Thomas C. Quick Charitable Foundation and us and the Securities Purchase Agreement, dated as of July 29, 2009, between Cato Holding Company and us.
- (3) To approve, for purposes of section 711 of the NYSE Amex Company Guide, the issuance of our shares of common stock and warrants (and the shares of common stock issuable upon exercise of the warrants) pursuant to the terms and conditions of the Securities Purchase Agreement, dated as of July 29, 2009, to certain of our insiders and affiliates.
- (4) To transact such other business as may properly come before the Meeting or any adjournment or adjournments thereof.

The holders of common stock (the "Stockholders") of record at the close of business on August 7, 2009 (the "Record Date"), are entitled to notice of and to vote at the Meeting, or any adjournment or adjournments thereof. A complete list of such Stockholders will be open to the examination of any Stockholder at the Company's principal executive offices at 303 George Street, Suite 420, New Brunswick, New Jersey 08901 for a period of ten (10) days prior to the Meeting and at the New York offices of Morgan, Lewis & Bockius on the day of the Meeting. The Meeting may be adjourned from time to time without notice other than by announcement at the Meeting; *provided, however*, if the adjournment is for more than thirty (30) days after the date of the Meeting, or if after the adjournment a new Record Date is fixed for the adjourned meeting, a notice of the adjourned meeting is required to be given to each Stockholder.

**Important Notice Regarding the Availability of Proxy Materials  
for the Special Meeting of Stockholders on September 22, 2009**

Our proxy statement is attached. Financial and other information concerning our company is incorporated herein by reference and contained in our Annual Report for the year ended June 30, 2008 and our Quarterly Report for the quarter ended March 31, 2009, which are being mailed with this proxy statement. Pursuant to new rules promulgated by the SEC, we have elected to provide access to our proxy materials both by sending you this full set of proxy materials, including a proxy card, and by notifying you of the availability of our proxy materials on the Internet. This proxy statement is available on our website at [www.senesco.com/invest.htm](http://www.senesco.com/invest.htm).

**IT IS IMPORTANT THAT YOUR SHARES BE REPRESENTED REGARDLESS OF THE NUMBER OF SHARES YOU MAY HOLD. WHETHER OR NOT YOU PLAN TO ATTEND THE MEETING IN PERSON, PLEASE COMPLETE, DATE, SIGN AND RETURN THE ENCLOSED PROXY CARD PROMPTLY IN THE ENCLOSED RETURN ENVELOPE. THE PROMPT RETURN OF PROXIES WILL ENSURE A QUORUM AND SAVE THE COMPANY THE EXPENSE OF FURTHER SOLICITATION. EACH PROXY GRANTED MAY BE REVOKED BY THE STOCKHOLDER APPOINTING SUCH PROXY AT ANY TIME BEFORE IT IS VOTED. IF YOU RECEIVE MORE THAN ONE PROXY CARD BECAUSE YOUR SHARES ARE REGISTERED IN DIFFERENT NAMES OR ADDRESSES, EACH PROXY SHOULD BE SIGNED AND RETURNED TO ENSURE THAT ALL OF YOUR SHARES WILL BE VOTED.**

By Order of the Board of Directors

/s/ Sascha P. Fedyszyn

Sascha P. Fedyszyn  
Secretary

New Brunswick, New Jersey  
August 10, 2009

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**SENESCO TECHNOLOGIES, INC.**  
**303 George Street, Suite 420**  
**New Brunswick, New Jersey 08901**

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**PROXY STATEMENT**

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This proxy statement is furnished in connection with the solicitation by the board of directors, or the board, of Senesco Technologies, Inc., a Delaware corporation, referred to herein as Senesco, we, us or our, of proxies to be voted at a special meeting of stockholders to be held on September 22, 2009, referred to herein as the Meeting, at the offices of Morgan Lewis & Bockius, LLP at 101 Park Avenue, New York, NY 10178, at 11:00 A.M., local time, and at any adjournment or adjournments thereof. The holders of record of our common stock, \$0.01 par value per share, also referred to herein as common stock, as of the close of business on August 7, 2009, also referred to herein as the Record Date, will be entitled to notice of and to vote at the Meeting and any adjournment or adjournments thereof. As of the Record Date, there were 21,939,339 shares of our common stock issued and outstanding and entitled to vote. Each share of our common stock is entitled to one vote on any matter presented at the Meeting.

If proxies in the accompanying form are properly voted and received, the shares of our common stock represented thereby will be voted in the manner specified therein. If not otherwise specified, the shares of our common stock represented by the proxies will be voted: (1) FOR a proposal to amend Senesco's Certificate of Incorporation to increase the total authorized shares of common stock, \$0.01 par value per share, of Senesco from 100,000,000 to 120,000,000; (2) FOR a proposal to approve, for purposes of section 713 of the NYSE Amex Company Guide, the issuance of shares of our common stock and warrants (and the shares of common stock issuable upon exercise of the warrants), which in the aggregate exceed 20% of our currently outstanding shares of common stock, pursuant to the terms and conditions of the Securities Purchase Agreement, dated as of July 9, 2009, between Partlet Holdings Limited and us the Securities Purchase Agreement, dated as of July 29, 2009, between each of Robert Forbes, Timothy Forbes, Harlan W. Waksal, M.D., Rudolf Stalder, Christopher Forbes, David Rector, John N. Braca, Jack Van Hulst, Warren Isabelle and the Thomas C. Quick Charitable Foundation (which is an affiliate of our board member Thomas C. Quick), and us, and the Securities Purchase Agreement, dated as of July 29, 2009, between Cato Holding Company and us; (3) FOR a proposal to approve, for purposes of section 711 of the NYSE Amex Company Guide, the issuance of our shares of common stock and warrants (and the shares of common stock issuable upon exercise of the warrants) pursuant to the terms and conditions of the Securities Purchase Agreement, dated as of July 29, 2009, to certain of our insiders and affiliates and (4) in the discretion of the persons named in the enclosed form of proxy, on any other proposals which may properly come before the meeting or any adjournment or adjournments thereof. Any stockholder who has submitted a proxy may revoke it at any time before it is voted, by written notice addressed to and received by our Corporate Secretary, by submitting a duly executed proxy bearing a later date or by electing to vote in person at the meeting. The mere presence at the meeting of the person appointing a proxy does not, however, revoke the appointment.

The presence, in person or by proxy, of holders of shares of our common stock having a majority of the votes entitled to be cast at the meeting shall constitute a quorum. If such a quorum is present, Proposal 1 requires the affirmative vote of our stockholders possessing a majority of the shares of our common stock issued and outstanding as of the record date, and Proposals 2 and 3 require the affirmative vote of our stockholders representing a majority of the votes cast by holders of shares present, or represented by proxy, and entitled to vote thereon.

Abstentions are included in the shares present at the meeting for purposes of determining whether a quorum is present, and are counted as a vote against for purposes of determining whether any of the foregoing proposals are approved. A broker non-vote is when shares are represented at the meeting by a proxy specifically conferring only limited authority to vote on certain matters and no authority to vote on other matters. Brokers may vote on Proposal 1, and, therefore, broker non-votes are included in the determination of the number of shares represented at the meeting for purposes of determining whether a quorum is present. A broker non-vote will have the same effect as a vote against Proposal 1. Brokers may not vote on Proposals 2 and 3 and, therefore, broker non-votes will not have an effect on those proposals.

On or about August 10, 2009, this proxy statement, together with the related proxy card, is being mailed to our stockholders of record as of the record date.

Solicitation of proxies may be made by directors and officers of Senesco by mail, telephone, facsimile transmission or other electronic media and in person for which they will receive no additional compensation. The entire cost of soliciting proxies will be borne by us.

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## SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT

Our common stock is the only class of stock entitled to vote at the Meeting. Only our stockholders of record as of the close of business on the Record Date are entitled to receive notice of and to vote at the Meeting. As of the Record Date, there were 242 holders of record of our common stock, and we had outstanding 21,939,339 shares of our common stock and each outstanding share is entitled to one (1) vote at the Meeting. The following table sets forth certain information, as of the Record Date, with respect to holdings of our common stock by (i) each person known by us to be the beneficial owner of more than 5% of the total number of shares of our common stock outstanding as of such date; (ii) each of our directors and our named executive officers; and (iii) all of our directors and our current executive officers as a group.

Name and Address of Beneficial Owner <sup>(1)</sup>	Amount and Nature of Beneficial Ownership <sup>(2)</sup>	Percent of Class <sup>(3)</sup>
<b>(i) Certain Beneficial Owners:</b>		
Stanford Venture Capital Holdings, Inc. C/O Baker Botts L.L.P. 2001 Ross Avenue Dallas, TX 75201	13,258,359 <sup>(4)</sup>	40.5%
Partlet Holdings Limited International House, 1st Floor 41, The Parade St. Helier, JERSEY, Channel Islands	2,055,555 <sup>(5)</sup>	9.1%
<b>(ii) Directors, Named Executives and Chief Executive Officer:</b>		
Harlan W. Waksal, M.D.	26,584 <sup>(6)</sup>	*
Rudolf Stalder.	988,754 <sup>(7)</sup>	4.4%
Bruce C. Galton.	756,563 <sup>(8)</sup>	3.4%
John E. Thompson, Ph.D.	844,676 <sup>(9)</sup>	3.8%
Christopher Forbes	2,866,587 <sup>(10)</sup>	12.6%
Thomas C. Quick	810,124 <sup>(11)</sup>	3.6%
David Rector	295,207 <sup>(12)</sup>	1.3%
Jack Van Hulst	129,956 <sup>(13)</sup>	*
John N. Braca	278,407 <sup>(14)</sup>	1.3%
Warren Isabelle	-	*
Sascha P. Fedyszyn	248,560 <sup>(15)</sup>	1.1%
Joel P. Brooks	181,775 <sup>(16)</sup>	*
Richard Dondero	131,924 <sup>(17)</sup>	*
<b>(iii) All Directors and current executive officers as a group (13 persons)</b>	<b>7,559,117<sup>(18)</sup></b>	<b>29.1%</b>

\* Less than 1%

(1) Unless otherwise provided, all addresses should be care of Senesco Technologies, Inc., 303 George Street, Suite 420, New Brunswick, New Jersey 08901.

(2) Except as otherwise indicated, all shares of common stock are beneficially owned and sole investment and voting power is held by the persons named.

(3) Applicable percentage of ownership is based on 21,939,339 shares of our common stock outstanding as of the Record Date, plus any common stock equivalents and options or warrants held by such holder which are presently or will become exercisable within sixty (60) days after the Record Date.

- (4) Includes 5,882,353 shares of common stock issuable upon conversion of secured convertible debentures and 4,916,668 shares of common stock issuable pursuant to presently exercisable warrants issued to Stanford Venture Capital Holdings, Inc. and 1,714,287 shares of common stock transferred from Stanford Venture Capital Holdings, Inc. to Stanford International Bank Limited.
  - (5) Excludes 1,952,778 shares underlying warrants which become exercisable more than sixty (60) days after the Record Date.
  - (6) Includes 26,584 shares of common stock issuable pursuant to presently exercisable options.
  - (7) Includes 756,983 shares of common stock issuable pursuant to presently exercisable warrants and options. Excludes 40,000 shares underlying warrants which become exercisable more than sixty (60) days after the Record Date.
  - (8) Includes 658,113 shares of common stock issuable pursuant to presently exercisable options. Excludes 191,000 shares of common stock underlying RSU's which become vested upon the achievement of certain performance milestones.
  - (9) Represents 572,000 shares of common stock held by 2091794 Ontario Ltd. and 272,676 shares of common stock issuable pursuant to presently exercisable options issued to John E. Thompson, Ph.D. Excludes 298,000 shares of common stock underlying options which become exercisable upon the achievement of certain performance milestones.
  - (10) Includes 772,566 shares of common stock issuable pursuant to presently exercisable warrants and options. Excludes 25,000 shares underlying warrants which become exercisable more than sixty (60) days after the Record Date.
  - (11) Represents 264,901 shares of common stock and 132,450 shares of common stock issuable pursuant to warrants issued to Thomas C. Quick Charitable Foundation. Represents 139,734 shares of common stock and 273,039 shares of common stock issuable pursuant to presently exercisable options or issued to Thomas C. Quick. Excludes 20,000 shares underlying warrants which become exercisable more than sixty (60) days after the Record Date.
  - (12) Includes 274,207 shares of common stock issuable pursuant to presently exercisable warrants and options. Excludes 35,000 shares underlying warrants which become exercisable more than sixty (60) days after the Record Date.
  - (13) Includes 129,956 shares of common stock issuable pursuant to presently exercisable options. Excludes 20,000 shares underlying warrants which become exercisable more than sixty (60) days after the Record Date.
  - (14) Includes 244,207 shares of common stock issuable pursuant to presently exercisable warrants and options. Excludes 35,000 shares underlying warrants which become exercisable more than sixty (60) days after the Record Date.
  - (15) Includes 185,000 shares of common stock issuable pursuant to presently exercisable options. Excludes 92,000 shares of common stock underlying RSU's which become vested upon the achievement of certain performance milestones.
  - (16) Includes 157,500 shares of common stock issuable pursuant to presently exercisable options. Excludes 78,000 shares of common stock underlying RSU's which become vested upon the achievement of certain performance milestones.
  - (17) Represents 131,924 shares of common stock issuable pursuant to presently exercisable options. Excludes 380,000 shares of common stock underlying options which become exercisable upon the achievement of certain performance milestones.
  - (18) See Notes 6 through 17.
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## BACKGROUND INFORMATION

### Background of the Transaction

As disclosed in our filings with the Securities and Exchange Commission, since consummating our last financing with certain investors in the fourth quarter of 2007 and first quarter of 2008, we have been seeking additional sources of capital in order to fund our operations and research and development projects. While we have been utilizing funds raised in this previous financing to fund our operations, since the winter of 2009 through the present time, our board and management have been focusing their efforts on ascertaining sources of financing.

In January 2009, our board engaged in formal internal discussions as to the best course of action which would present the most opportunity for us to ascertain funding. Our board, along with our management, at that time, attempted to reach out to several of our current investors as well as engage in discussions with several investment banks in the hopes that the then current investors and/or the investment banks could provide us with funding, or at least sources through which we could raise funds.

In addition, during our second quarter of 2009, from January through March, our management attended various investor conferences and engaged in one-on-one discussions with investors in the hopes that such investors would be interested in getting to better know and understand our operations. The members of our board also reached out to various contacts that they had around the country in an attempt to ascertain if such contacts, or any who they knew of, had an interest in investing in us.

Further, during this time, management and the board also engaged in informal discussions on a routine basis regarding our financial position. While the company remained focused on moving towards our proposed clinical trial, the board and management were well aware that such trials would not succeed, or even occur, if we were unable to secure additional funding.

At a meeting of our board, on March 23, 2009, we formally retained two investment banks to assist us in consummating a financing. Formal engagement letters were signed with each of the banks. Over the course of the next two months, we worked closely with such banks, and continued to pursue additional contacts. An extensive search was undertaken, including a significant effort on the part of the retained investment banks, however, unfortunately, due partly to the deteriorating equity market conditions and the demise of Stanford Venture Capital Holdings, Inc. no viable sources of funding were ascertained during that time.

At a board meeting, which was held on June 23, 2009, after believing that all opportunities had been exhausted, we learned that Partlet Holdings Limited was potentially interested in engaging in a small financing with us. During the days that ensued, certain members of our board had one-on-one conversations with their friends and family in the hopes that such friends and family would consider investing in us.

Finally, at a board meeting which was held on June 25, 2009, management presented the board with certain terms that they had negotiated with Partlet Holdings Limited. Certain members of the board, at that time, believing that all current alternatives had been exhausted, also informed the board that certain members of their family desired to invest in the financing. Finally, several members of the board, understanding that the funds from Partlet Holdings Limited as well as the funds committed by friends and family, were insufficient for us to sufficiently progress our proposed clinical trial, determined to invest in us. Accordingly, on that date, management and certain members of the board approved the transactions with each of Partlet (as defined below) and the Remaining Investors (as defined below) subject to the negotiation of definitive agreements. The terms of such financing had been previously heavily negotiated with each investor over the course of several of the following weeks and management and the board agreed at such meeting, that the terms of such deal, were the best that could be ascertained. In addition, the Audit Committee of the board approved any related party transaction.

### Description of the Transaction

#### Transaction with Partlet Holdings Limited

As previously disclosed, on July 9, 2009, we entered into a Securities Purchase Agreement, referred to herein as the Partlet Securities Purchase Agreement, with Partlet Holdings Limited, referred to herein as Partlet, which is an accredited investor, pursuant to which we sold an aggregate of 1,111,111 shares, referred to herein as the Shares, of our common stock at \$0.90 per share and each of a Series A warrant, referred to herein as the Partlet Series A Warrant, and a Series B warrant, referred to herein as the Partlet Series B Warrant.

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The Partlet Series A Warrant entitles the holder to purchase 1,000,000 shares of our common stock at \$0.01 per warrant share. The Partlet Series A Warrant has a term of seven years and is exercisable immediately after the date of grant.

The Partlet Series B Warrant entitles the holder to purchase 2,055,555 shares of our common stock at \$0.60 per warrant share. The Partlet Series B Warrant has a term of seven years and is not exercisable until after the six-month anniversary after the date of grant.

On July 9, 2009, we closed on \$950,000 of aggregate proceeds of the private placement and, on that date, issued (i) a total of 1,055,555 Shares (ii) a Partlet Series A Warrant to purchase 950,000 shares of our common stock and (iii) a Partlet Series B Warrant to purchase 1,952,778 shares of our common stock. The remaining \$50,000 in proceeds, referred to herein as the Remaining Partlet Transaction, cannot be closed upon, as described more fully below, until we receive stockholder approval for certain aspects of the transaction.

#### **Transaction with Each of Robert and Timothy Forbes**

As previously disclosed, on July 29, 2009, we entered into a Securities Purchase Agreement, referred to herein as the Forbes Securities Purchase Agreement, with each of Robert Forbes and Timothy Forbes, each of whom is an accredited investor, pursuant to which, subject to stockholder approval, it is anticipated that we will issue and sell an aggregate of 444,444 Shares of our common stock at \$0.90 per share and each of a Series A warrant, referred to herein as the Forbes Series A Warrants, and a Series B warrant, referred to herein as the Forbes Series B Warrants. Each of Robert Forbes and Timothy Forbes are the brothers of Christopher Forbes who is a director of Senesco. Mr. Christopher Forbes will not be deemed to be the beneficial owner of, nor will he have a pecuniary interest in the Shares or Warrants issued to his brothers.

The Forbes Series A Warrants entitle the holders to purchase in the aggregate, up to 400,000 shares of our common stock at \$0.01 per warrant share. The Forbes Series A Warrants have a term of seven years and are exercisable immediately after the date of grant.

The Forbes Series B Warrants entitle the holders to purchase, in the aggregate, up to 405,556 shares of our common stock at \$0.60 per warrant share. The Forbes Series B Warrants have a term of seven years and are not exercisable until after the six-month anniversary after the date of grant.

#### **Transaction with Insiders and Affiliates**

As previously disclosed, on July 29, 2009, we entered into a Securities Purchase Agreement, referred to herein as the Affiliates Securities Purchase Agreement, with each of Harlan W. Waksal, M.D., Rudolf Stalder, Christopher Forbes, David Rector, John N. Braca, Jack Van Hulst, Warren Isabelle and the Thomas C. Quick Charitable Foundation (which is an affiliate of our board member Thomas C. Quick), referred to herein as the Affiliate Investors, each of whom is an accredited investor, pursuant to which, subject to stockholder approval, it is anticipated that we will issue and sell an aggregate of 144,444 Shares of our common stock at \$0.90 per share and each of a Series A warrant, referred to herein as the Affiliates Series A Warrants, and a Series B warrant, referred to herein as the Affiliates Series B Warrants. Each of Harlan W. Waksal, M.D., Rudolf Stalder, Christopher Forbes, David Rector, John N. Braca, Jack Van Hulst and Warren Isabelle serve on our board. The Thomas C. Quick Charitable Foundation is an affiliate of our board member Thomas C. Quick.

The Affiliates Series A Warrants entitle the holders to purchase in the aggregate, up to 130,000 shares of our common stock at \$0.01 per warrant share. The Affiliates Series A Warrants have a term of seven years and are exercisable immediately after the date of grant.

The Affiliates Series B Warrants entitle the holders to purchase, in the aggregate, up to 131,807 shares of the Company's common stock at \$0.60 per warrant share. The Affiliates Series B Warrants have a term of seven years and are not exercisable until after the six-month anniversary after the date of grant.

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## **Transaction with Cato Holding Company**

On July 29, 2009, we entered into a Securities Purchase Agreement with Cato Holding Company, referred to herein Cato, who is an accredited investor, pursuant to which, subject to stockholder approval, it is anticipated that we will issue an aggregate of 194,444 Shares of our common stock at \$0.90 per share and each of a Series A warrant, referred to herein as the Cato Series A Warrant, and a Series B warrant, referred to herein as the Cato Series B Warrant. The Shares will be issued to Cato in exchange for debt which is currently owed by us to Cato Research Ltd. in the amount of \$175,000. Cato Research Ltd. is an affiliate of Cato.

The Cato Series A Warrants entitle the holders to purchase in the aggregate, up to 175,000 shares of our common stock at \$0.01 per warrant share. The Cato Series A Warrants have a term of seven years and are exercisable immediately after the date of grant.

The Cato Series B Warrants entitle the holders to purchase, in the aggregate, up to 177,431 shares of our common stock at \$0.60 per warrant share. The Cato Series B Warrants have a term of seven years and are not exercisable until after the six-month anniversary after the date of grant.

As described above, we have already consummated part of the transaction with Partlet Holdings Limited, however, in order to consummate the Remaining Partlet Transaction and to consummate the transactions with each of Robert Forbes, Tim Forbes, the Affiliated Investors and Cato, collectively referred to herein as the Remaining Investors, certain conditions must be satisfied, including:

- the receipt of approvals from our stockholders, as described in this proxy statement;
- the accuracy of the representations and warranties of the parties; and
- the satisfaction of other customary closing conditions.

We have already received gross proceeds of \$950,000 (and net proceeds of approximately \$900,000 after deducting estimated expenses), in connection with our sale of Securities to Partlet Holdings Limited. We expect to receive additional net proceeds of approximately \$725,000 if we are able to consummate the Remaining Partlet Transaction as well as the transaction with the Remaining Investors. We expect the Remaining Partlet Transaction as well as the transaction with the Remaining Investors to close within five business days after receipt of any required approvals from our stockholders as well as approval from the NYSE Amex Exchange. We expect to use the net proceeds for general corporate purposes.

## **Purchase Agreement and Warrants**

**The following summary of the Purchase Agreements and the Warrants is qualified in its entirety by reference to, and should be read in conjunction with, the actual Purchase Agreements (which includes forms of the Warrant, a copy of which were filed as exhibits to Current Reports on Form 8-K filed on July 10, 2009 and July 30, 2009 and are incorporated herein by reference.**

*Purchase Agreement.* Under the respective Purchase Agreements, excluding the Securities which we have already issued to Partlet, we have agreed to issue the Securities in exchange for payment to us of aggregate gross proceeds, excluding costs and expenses, of \$755,000 and net proceeds of approximately \$725,000. Accordingly, pursuant to the terms of the Purchase Agreements, excluding the Securities which we have already issued to Partlet, we have agreed to issue and sell an aggregate of 838,887 Shares of our common stock, at \$0.90 per share and Warrants as more fully described below. The Securities will not be registered and Senesco and Partlet and the Remaining Investors have agreed to rely on Rule 144 of the Securities Act of 1933, as amended, when applicable, in the event Partlet or the Remaining Investors desires to undertake any resale of any of the Securities.

*Series A Warrants.* The Series A Warrants will be exercisable, in full or in part, to purchase an aggregate of 755,000 shares (which amount does not include the shares underlying the Series A warrants which were already issued to Partlet) of our common stock at a cash exercise price of \$0.01 per share. The Series A Warrants have a term of seven years and are immediately exercisable after the date of grant. The exercise price of the Warrant and the number of shares issuable upon exercise of the Warrant will be proportionately adjusted for any stock splits, stock dividends, recapitalization or other combination or subdivision of the outstanding shares of our common stock.

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*Series B Warrants.* The Series B Warrants will be exercisable, in full or in part, to purchase an aggregate of 817,572 shares (which amount does not include the shares underlying the Series B warrants which were already issued to Partlet) of our common stock at a cash exercise price of \$0.60 per share. The Series B Warrants have a term of seven years and are not exercisable until after the six-month anniversary after the date of grant. The exercise price of the Warrant and the number of shares issuable upon exercise of the Warrant will be proportionately adjusted for any stock splits, stock dividends, recapitalization or other combination or subdivision of the outstanding shares of our common stock.

*Representations and Warranties.* Except for its status as the contractual document between the parties with respect to the agreements described therein, it is not intended to provide factual information about the parties. The representations and warranties contained in the Purchase Agreements were made only for purposes of such agreement and as of specific dates, were solely for the benefit of the parties to such agreement, and are subject to limitations agreed to by the contracting parties, including being qualified by disclosures between the parties. These representations and warranties have been made for the purposes of allocating contractual risk between the parties to the agreement instead of establishing these matters as facts, and may be subject to standards of materiality applicable to the contracting parties that differ from those applicable to investors. Accordingly, they should not be relied upon by investors as statements of factual information.

*Need for Additional Capital.* We need to raise substantial additional funds, to continue our operations and fund clinical studies. Our plan is to continue to finance our operations with a combination of equity issuances (including the possible closings of the transaction) and other financings. Any future issuance of convertible debt securities, preferred stock or common stock may be at a discount from the then-current trading price of our common stock. If we issue additional common or preferred stock or securities convertible into common stock, our stockholders will experience additional dilution, which may be significant. If we are unable to raise substantial additional capital through the possible additional closings of the transactions covered by Proposals 2 and 3, and otherwise, we may not be able to continue to operate as a going concern. To the extent the additional closings of the transactions covered by Proposals 2 and 3 do not occur as a result of the failure to obtain requisite approval of our stockholders, we do not know whether additional funding will be available to us on acceptable terms, or at all, to continue to operate as a going concern.

### **Interest of Certain Persons in Matters to be Acted Upon**

Each of Messrs. Harlan W. Waksal, M.D., Rudolf Stalder, Thomas C. Quick, Christopher Forbes, David Rector, John N. Braca, Jack Van Hulst and Warren Isabelle are members of our board. It is anticipated that if Proposals 1, 2 and 3 are approved, each of Harlan W. Waksal, M.D., Rudolf Stalder, Thomas C. Quick (through the Thomas C. Quick Charitable Foundation which is an affiliate of Thomas C. Quick), Christopher Forbes, David Rector, John N. Braca, Jack Van Hulst and Warren Isabelle will participate in the transaction and purchase the Securities on the terms and conditions as set forth in the Purchase Agreement. For additional information regarding the number of Shares and Warrants (and shares underlying the Warrants) to be purchased by the Affiliated Investors, assuming the transaction is consummated, please refer to the chart contained in Proposal 3.

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## PROPOSAL 1

### APPROVAL OF AMENDMENT TO SENESCO'S CERTIFICATE OF INCORPORATION TO INCREASE THE TOTAL NUMBER OF AUTHORIZED SHARES OF COMMON STOCK

#### Overview and Reasons for Amendment

Stockholders are being asked to approve an amendment to our Amended and Restated Certificate of Incorporation, as amended to date, referred to herein as our Certificate of Incorporation, to increase the number of authorized shares of our common stock from 100,000,000 to 120,000,000. On June 25, 2009, our board adopted resolutions approving and authorizing the amendment and directing that the amendment be submitted to a vote of the stockholders at the meeting.

The board determined that the amendment is in the best interests of Senesco and its stockholders and unanimously recommends approval by the stockholders. If the proposed amendment is approved by the stockholders, the board currently intends to file, with the Secretary of State of the State of Delaware, a Certificate of Amendment to the Certificate of Incorporation, referred to herein as the Certificate of Amendment, reflecting such amendment as soon as practicable following stockholder approval. The following summary is qualified in its entirety by reference to the Certificate of Incorporation. Attached hereto as *Appendix A* to this proxy statement is the proposed Certificate of Amendment.

Our board has proposed this increase in authorized shares of common stock to ensure that we have sufficient shares of common stock available for general corporate purposes including, without limitation, sufficient shares available underlying the securities issued in the financings, equity financings, acquisitions, establishing strategic relationships with corporate and other partners, providing equity incentives to employees, and payments of stock dividends, stock splits or other recapitalizations. As of the date of this proxy statement, we have plans to issue additional equity as described in the section entitled "Background Information" beginning on page 4. As disclosed in our public filings, we are also exploring additional financing opportunities and will likely issue such equity when an opportunity presents itself.

Our Certificate of Incorporation currently authorizes the issuance of up to 100,000,000 shares of common stock and 5,000,000 shares of preferred stock, par value \$0.01 per share, referred to herein as the preferred stock. No shares of preferred stock are currently issued and outstanding. The proposed amendment will not, if adopted, result in an increase in the number of authorized shares of preferred stock.

Of the 100,000,000 shares of common stock currently authorized, as of the close of business on the record date, there were 21,939,339 shares of common stock issued and outstanding. Furthermore, we have reserved for future issuance:

- a. 4,661,684 shares of common stock upon the exercise of outstanding options and restricted stock units granted under the 1998 Stock Plan;
  - b. 6,137,200 shares of common stock upon the exercise of options and restricted stock units, of which 249,728 have been granted and 5,887,472 may be granted in the future, under the 2008 Incentive Compensation Plan;
  - c. 10,000 shares of common stock upon exercise of options granted outside the 1998 Stock Plan and 2008 Incentive Compensation Plan;
  - d. 20,666,221 shares of common stock upon the exercise of warrants issued and outstanding.
  - e. 11,064,706 shares of common stock upon conversion, at the current conversion fixed conversion price of \$.85, of the convertible debentures issued pursuant to the previously disclosed financing which we entered into with each of YA Global Investments, L.P. and Stanford Venture Capital Holdings, Inc. in 2007/2008;
  - f. 33,095,854 shares of common stock which may be issued upon conversion, when the conversion rate is either adjusted in connection with the anti-dilution feature of the convertible debenture or the conversion price is no longer fixed, of the convertible debentures issued pursuant to the previously disclosed financing which we entered into with each of YA Global Investments, L.P. and Stanford Venture Capital Holdings, Inc. in 2007/2008; and
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g. an estimated 2,000,000 shares of common stock, which may be issued as interest shares pursuant to the previously disclosed financing which we entered into with each of YA Global Investments, L.P. and Stanford Venture Capital Holdings, Inc. in 2007/2008.

If the proposed amendment is approved, then after the meeting, there will be 22,778,226 shares of common stock issued and outstanding.

### Reason For Request For Stockholder Approval

In accordance with Delaware law, approval and adoption of an amendment to our Certificate of Incorporation to increase the authorized shares of our common stock and preferred stock requires stockholder approval.

### Consequences if Stockholders Approve this Proposal

*Dilution.* As is the case with the current authorized but unissued shares of common stock, the additional shares of common stock authorized by this proposed amendment could be issued upon approval by our board without further vote of our stockholders except as may be required in particular cases by our Certificate of Incorporation, applicable law, regulatory agencies or the NYSE Amex rules. Under our Certificate of Incorporation, stockholders do not have preemptive rights to subscribe to additional securities that may be issued by Senesco, which means that current stockholders do not have a prior right to purchase any new issue of common stock in order to maintain their proportionate ownership interest in Senesco. In addition, if we issue additional shares of common stock or securities convertible into or exercisable for common stock, such issuance would have a dilutive effect on the voting power and could have a dilutive effect on the earnings per share of Senesco's currently outstanding shares of common stock.

The following table sets forth the total number of: (1) authorized shares of our common stock, (2) outstanding shares of our common stock, (3) reserved shares of our common stock, (4) shares of our common stock available for issuance, (5) proposed shares authorized by this Proposal 1 and (6) common stock available for issuance if this Proposal 1 is approved by the stockholders.

Currently Authorized Shares (1)	Currently Outstanding Shares	Shares Currently Reserved for Issuance	Shares Currently Available for Issuance	Proposed Authorized Shares (2)	Shares Potentially Available for Issuance(3)
100,000,000	21,939,339	77,635,665	424,996	120,000,000	20,424,996

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(1) As of August 7, 2009.

(2) The number of authorized shares of our common stock, if this Proposal 1 is approved by the stockholders.

(3) The number of shares of our common stock available for issuance, if this Proposal 1 is approved by the stockholders.

*Anti-takeover Effects.* The proposed Certificate of Amendment could also, under certain circumstances, have an anti-takeover effect. The proposed increase in the number of authorized shares of common stock may discourage or make it more difficult to effect a change in control of Senesco. For example, we could issue additional shares to dilute the voting power of, create voting impediments for, or otherwise frustrate the efforts of persons seeking to take over or gain control of Senesco, whether or not the change in control is favored by a majority of our unaffiliated stockholders. We could also privately place shares of common stock with purchasers who would side with our board in opposing a hostile takeover bid. The board is not aware of any plans for or attempt to take control of Senesco.

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If approved, the amendment would amend and restate the first section of the fourth paragraph of the Certificate of Incorporation, as follows:

**FOURTH:** The total number of shares of all classes of stock which the Corporation shall have authority to issue is One Hundred and Twenty Five Million (125,000,000) shares. The Corporation is authorized to issue two classes of stock designated “Common Stock” and “Preferred Stock,” respectively. The total number of shares of Common Stock authorized to be issued by the Corporation is One Hundred and Twenty Million (120,000,000), each such share of Common Stock having a \$0.01 par value. The total number of shares of Preferred Stock authorized to be issued by the Corporation is Five Million (5,000,000), each such share of Preferred Stock having \$0.01 par value.

The Certificate of Amendment, which contains the above amendment, is attached to this proxy statement as *Appendix A*. The affirmative vote of a majority of the outstanding shares of common stock is required for approval of the proposed amendment. Therefore, abstentions and broker non-votes will have the same effect as votes against this proposal.

#### Consequences if Stockholders Do Not Approve this Proposal

We currently are in need of financing and have a limited of number of shares available for issuance. Typically capital is raised by issuing shares in exchange for financing. If our stockholders do not approve this proposed amendment, it is likely that we will be unable to fully consummate the transactions described in the section entitled “Background Information” beginning on page 4. Accordingly, because we could not consummate the transactions described, we would fall short of the working capital necessary to complete our corporate objectives and, thus, we would be required to pursue other strategic alternatives. We may not be able to realize such alternatives on commercially reasonable terms, if at all, given the current economic climate.

We have no additional plans to issue the common stock authorized pursuant to Proposal 1 other than in connection with the transactions described in the section entitled “Background Information” beginning on page 4. We are however seeking additional financing, but do not have any potential deals pending, other than those described in this proxy statement.

#### No Appraisal Rights

Under Delaware law, stockholders are not entitled to appraisal rights with respect to the actions contemplated by Proposal 1.

#### Required Stockholder Approvals

The following table sets forth the stockholder approvals which are necessary to consummate the transactions set forth in the section entitled “Background Information” beginning on page 4.

Transaction	Proposal 1 approval required to consummate the transaction?	Proposal 2 approval required to consummate the transaction?	Proposal 3 approval required to consummate the transaction?
Partlet Holdings Limited	No	Yes	No
Robert Forbes	Yes	Yes	No
Timothy Forbes	Yes	Yes	No
Cato Holding Company	Yes	Yes	No
Affiliate Investors	Yes	Yes	Yes

THE BOARD RECOMMENDS THAT STOCKHOLDERS VOTE “**FOR**” THE PROPOSAL TO AMEND SENESCO’S CERTIFICATE OF INCORPORATION.

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## PROPOSAL 2

**PROPOSAL TO APPROVE, FOR PURPOSES OF SECTION 713 OF THE NYSE AMEX COMPANY GUIDE, THE ISSUANCE OF OUR SHARES OF COMMON STOCK AND WARRANTS (AND THE SHARES OF COMMON STOCK ISSUABLE UPON EXERCISE OF THE WARRANTS), WHICH IN THE AGGREGATE EXCEED 20% OF OUR CURRENTLY OUTSTANDING SHARES OF COMMON STOCK PURSUANT TO THE TERMS AND CONDITIONS OF THE SECURITIES PURCHASE AGREEMENT, DATED AS OF JULY 9, 2009, BETWEEN PARTLET HOLDINGS LIMITED AND US, THE SECURITIES PURCHASE AGREEMENT, DATED AS OF JULY 29, 2009, BETWEEN EACH OF ROBERT FORBES, TIMOTHY FORBES, HARLAN W. WAKSAL, M.D., RUDOLF STALDER, CHRISTOPHER FORBES, DAVID RECTOR, JOHN N. BRACA, JACK VAN HULST, WARREN ISABELLE AND THE THOMAS C. QUICK CHARITABLE FOUNDATION AND US AND THE SECURITIES PURCHASE AGREEMENT, DATED AS OF JULY 29, 2009, BETWEEN CATO HOLDING COMPANY AND US.**

### Proposal

We are seeking approval of the issuance of the Securities in connection with the transactions contemplated pursuant to the terms and conditions of the Securities Purchase Agreement, dated as of July 9, 2009, between Partlet Holdings Limited and us, the Securities Purchase Agreement, dated as of July 29, 2009, between each of Robert Forbes, Timothy Forbes Harlan W. Waksal, M.D., Rudolf Stalder, Christopher Forbes, David Rector, John N. Braca, Jack Van Hulst, Warren Isabelle and the Thomas C. Quick Charitable Foundation and us and the Securities Purchase Agreement, dated as of July 29, 2009, between Cato Holding Company and us. For information regarding our proposed issuance of the Securities and the terms of the Purchase Agreements and Warrants, see "Background Information" beginning on page 4.

### Reason For Request For Stockholder Approval

As of August 7, 2009, the record date for the Special Meeting, we had One Hundred Million authorized shares of common stock and approximately 21,939,339 shares of common stock outstanding. If successfully completed, the transaction, in the aggregate, will result in the issuance of more than 20% of our currently outstanding shares of common stock pre-transaction. Section 713 of the NYSE Amex Company Guide requires stockholder approval prior to the issuance of common stock, or securities convertible into or exercisable for common stock, in any transaction or series of transactions if (i) the sale, issuance, or potential issuance by the issuer of common stock (or securities convertible into common stock) at a price less than the greater of book or market value which together with sales by officers, directors or principal stockholders of the issuer equals 20% or more of presently outstanding common stock; or (ii) the sale, issuance, or potential issuance by the issuer of common stock (or securities convertible into common stock) equal to 20% or more of presently outstanding stock for less than the greater of book or market value of the stock.

Our issuance of the Shares and the shares and Warrants issuable under the Purchase Agreements will result in the issuance of common stock, or securities convertible into common stock, equal to 20% or more of our common stock outstanding immediately before we entered into the Purchase Agreements on each of July 9, 2009 and July 29, 2009. The per share market price of our common stock (which was greater than book value) was less than the consolidated closing bid price of \$0.73 on July 9, 2009 and immediately preceding entering into the Partlet Securities Purchase Agreement, which occurred after the close of market on that date. The per share market price of our common stock (which was greater than book value) was less than the consolidated closing bid price of \$0.51 on July 29, 2009 and immediately preceding entering into the Forbes Securities Purchase Agreement and the Cato Securities Purchase Agreement, which occurred after the close of market on that date. Accordingly, we are seeking stockholder approval of this proposal in order to ensure compliance with Section 713(a) of the NYSE Amex Company Guide.

Completion of the transaction depends on a number of conditions being satisfied or waived, including that our stockholders approve the issuance of our shares of common stock and warrants (and shares of common stock issuable upon exercise of the warrants) pursuant to the Purchase Agreements for purposes of Section 713(a) of the NYSE Amex Company Guide. We have already received gross proceeds of \$950,000 (and net proceeds of approximately \$900,000 after deducting estimated expenses), in connection with our sale of Securities to Partlet Holdings Limited. We expect to receive additional net proceeds of approximately \$725,000 if we are able to consummate the Remaining Partlet Transaction as well as the transaction with the Remaining Investors. We expect the Remaining Partlet Transaction as well as the transaction with the Remaining Investors to close within five business days after receipt of any required approvals from our stockholders. We expect to use the net proceeds for general corporate purposes.

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Consequences if Stockholders Approve this Proposal 2

*Ability to Complete the Transaction.* Assuming that our stockholders also approve (i) Proposal 1 relating to the amendment to our Certificate of Incorporation and (ii) Proposal 3 relating to the consummation of the transaction with the Affiliate Investors, the approval by the stockholders of the issuance the Securities pursuant to the terms and conditions of the Purchase Agreements will allow us, subject to the satisfaction or waiver of the other conditions contained in the Purchase Agreements, to complete the Remaining Partlet Transaction as well as the transaction with all of the Remaining Investors. Should stockholders not approve this Proposal 2 then we will not be able to consummate the Remaining Partlet Transaction as well as the transaction with all of the Remaining Investors.

*Dilution.* The issuance of our shares of common stock in connection with the Remaining Partlet Transaction as well as the transaction with the Remaining Investors would have a dilutive effect on our earnings per share and on each stockholder’s percentage voting power. In addition, such issuance could, under certain circumstances, have the effect of delaying or preventing a change in control by increasing the number of outstanding shares entitled to vote and by increasing the number of votes required to approve a change in control or remove incumbent directors from office. Moreover, any dividends paid per common share could be lower, as the funds available to pay dividends would be spread among a greater number of shares upon completion of the Remaining Partlet Transaction as well as the transaction with the Remaining Investors.

The following table summarizes (1) the total number of shares which will be issued and outstanding pursuant to the Purchase Agreements (not including the Warrants), (2) the number of shares each investor will be issued pursuant to Remaining Partlet Transaction as well as the transaction with the Remaining Investors assuming the Warrants are fully exercised at the current applicable exercise price and (3) the percentage of outstanding shares that the investors could potentially own after all securities anticipated by the Remaining Partlet Transaction as well as the transaction with the Remaining Investors are issued.

Investor	Total Number of Shares of Common Stock to be issued under the Purchase Agreement(1)	Total Number of Shares Underlying Warrants(2)	Underlying Shares as a Percent of Outstanding Shares Post Transaction (3)
Partlet Holdings Limited	55,555	208,333	16.7%
Robert Forbes	333,333	937,500	4.0%
Timothy Forbes	111,111	312,500	2.0%
Harlan W. Waksal, M.D.	15,000	42,188	0.3%
Rudolf Stalder	15,000	42,188	4.5%
Christopher Forbes	97,778	275,000	13.3%
David Rector	3,333	9,375	1.5%
John N. Braca	2,222	6,250	1.4%
Jack Van Hulst	1,111	3,125	0.7%
Warren Isabelle	2,222	6,250	0.1%
Thomas C. Quick Charitable Foundation	7,778	21,875	3.7%
Cato Holding Company	194,444	546,875	2.4%

(1) Represents the total number of shares outstanding assuming all shares are issued under the terms of the Purchase Agreements (not including the Warrants).

- (2) Represents the total number of shares which will be issued and outstanding assuming (a) all shares are issued under the terms of the Purchase Agreements and (b) upon the full exercise of the Warrants at the current applicable exercise price.
- (3) Represents the percentage of outstanding shares that the Investors could potentially own, calculated on a post-transaction basis, after all securities anticipated by the Remaining Partlet Transaction as well as the transaction with the Remaining Investors are issued.

### Consequences if Stockholders Fail to Approve this Proposal 2

If our stockholders do not approve the issuance of the Securities pursuant to the Purchase Agreements, we will fail to satisfy one of the conditions contained in the Purchase Agreement, and we will not be able to complete the Remaining Partlet Transaction as well as the transaction with the Remaining Investors. Accordingly, because we could not consummate the Remaining Partlet Transaction as well as the transaction with the Remaining Investors, we would fall short of the working capital necessary to further our immediate corporate objectives and, thus, we would be required to pursue other strategic alternatives. We may not be able to realize such alternatives on commercially reasonable terms, if at all, given the current economic climate.

Financial and other information concerning our company is incorporated herein by reference and contained in our Annual Report for the year ended June 30, 2008 and our Quarterly Report for the quarter ended March 31, 2009 which are being mailed with this proxy statement.

### No Appraisal Rights

Under Delaware law, stockholders are not entitled to appraisal rights with respect to the actions contemplated by Proposal 2.

### Required Stockholder Approvals

The NYSE Amex Company Guide requires that this proposal be approved by our stockholders representing a majority of the votes cast on the proposal (provided that a quorum is present).

The following table sets forth the proposals which are necessary to consummate the transactions set forth in the section entitled “Background Information” beginning on page 4.

Transaction	Proposal 1 approval required to consummate the transaction?	Proposal 2 approval required to consummate the transaction?	Proposal 3 approval required to consummate the transaction?
Partlet Holdings Limited	No	Yes	No
Robert Forbes	Yes	Yes	No
Timothy Forbes	Yes	Yes	No
Cato Holding Company	Yes	Yes	No
Affiliate Investors	Yes	Yes	Yes

THE BOARD RECOMMENDS THAT STOCKHOLDERS VOTE “**FOR**” THE PROPOSAL TO APPROVE, FOR PURPOSES OF SECTION 713 OF THE NYSE AMEX COMPANY GUIDE, THE ISSUANCE OF OUR SHARES OF COMMON STOCK AND WARRANTS (AND THE SHARES OF COMMON STOCK ISSUABLE UPON EXERCISE OF THE WARRANTS), WHICH IN THE AGGREGATE EXCEED 20% OF OUR CURRENTLY OUTSTANDING SHARES OF COMMON STOCK, PURSUANT TO THE TERMS AND CONDITIONS OF THE SECURITIES PURCHASE AGREEMENT, DATED AS OF JULY 29, 2009, BETWEEN PARTLET HOLDINGS LIMITED AND US, THE SECURITIES PURCHASE AGREEMENT, DATED AS OF JULY 29, 2009, BETWEEN EACH OF ROBERT FORBES, TIMOTHY FORBES, HARLAN W. WAKSAL, M.D., RUDOLF STALDER, CHRISTOPHER FORBES, DAVID RECTOR, JOHN N. BRACA, JACK VAN HULST, WARREN ISABELLE AND THE THOMAS C. QUICK CHARITABLE FOUNDATION AND US AND THE SECURITIES PURCHASE AGREEMENT, DATED AS OF JULY 29, 2009, BETWEEN CATO HOLDING COMPANY AND US.



## PROPOSAL 3

### PROPOSAL TO APPROVE, FOR PURPOSES OF SECTION 711 OF THE NYSE AMEX COMPANY GUIDE, THE ISSUANCE OF OUR SHARES OF COMMON STOCK AND WARRANTS (AND THE SHARES OF COMMON STOCK ISSUABLE UPON EXERCISE OF THE WARRANTS) PURSUANT TO THE TERMS AND CONDITIONS OF THE SECURITIES PURCHASE AGREEMENT, DATED AS OF JULY 29, 2009, TO CERTAIN OF OUR INSIDERS AND AFFILIATES.

#### Proposal

We are seeking approval of the issuance of the Securities to the Affiliated Investors. For information regarding our proposed issuance of the Securities and the terms of the Affiliates Purchase Agreement and Warrant, see “Background Information” beginning on page 4.

#### Reason For Request For Stockholder Approval

Pursuant to Section 711 of the NYSE Amex Company Guide, we are required to obtain stockholder approval when an equity compensation arrangement is made, pursuant to which stock may be acquired by officers, directors, employees, or consultants. NYSE Amex guidance indicates that the issuance of common stock or securities convertible into or exercisable for common stock by a company to affiliated entities of the company’s officers, directors, employees or consultants other than in a public offering at a price less than the greater of the book or market value of the common stock may be deemed to be equity compensation requiring stockholder approval under Section 711. Because each of Harlan W. Waksal, M.D., Rudolf Stalder, Thomas C. Quick, Christopher Forbes, David Rector, John N. Braca, Jack Van Hulst and Warren Isabelle serve as directors of Senesco, we need to seek approval of this proposal in order to ensure compliance with Section 711 of the NYSE Amex Company Guide.

#### Consequences if Stockholders Approve this Proposal

*Ability to Complete the Transaction.* Assuming that our stockholders also approve (i) Proposal 1 relating to the amendments to our Certificate of Incorporation and (ii) Proposal 2 relating to our ability to issue Securities which, in the aggregate (assuming the Warrants are fully exercised), exceed 20% of our currently outstanding shares of common stock, the approval by the stockholders of the issuance of Securities pursuant to the terms and conditions of the Purchase Agreements will allow us, subject to the satisfaction or waiver of the other conditions contained in the Purchase Agreements, to complete the transaction with the Affiliated Investors.

*Dilution.* The issuance of our shares of common stock in connection with the transaction with the Affiliated Investors would have a dilutive effect on our earnings per share and on each stockholder’s percentage voting power. In addition, such issuance could, under certain circumstances, have the effect of delaying or preventing a change in control by increasing the number of outstanding shares entitled to vote and by increasing the number of votes required to approve a change in control or remove incumbent directors from office. Moreover, any dividends paid per common share could be lower, as the funds available to pay dividends would be spread among a greater number of shares upon completion of the transaction with the Affiliated Investors.

The following table summarizes (1) the total number of shares which will be issued and outstanding pursuant to the Purchase Agreement (not including the Warrants), (2) the number of shares each Affiliated Investor will be issued pursuant to the transaction with the Affiliated Investors assuming the Warrants are fully exercised at the current applicable exercise price and (3) the percentage of outstanding shares that the Affiliated Investors could potentially own after all securities anticipated by the transaction with the Affiliated Investors are issued.

Investor	Total Number of Shares of Common Stock to be issued under the Purchase Agreement(1)	Total Number of Shares Underlying Warrants(2)	Underlying Shares as a Percent of Outstanding Shares (3)
Harlan W. Waksal, M.D.	15,000	42,188	0.3%
Rudolf Stalder	15,000	42,188	4.5%
Christopher Forbes	97,778	275,000	13.3%
David Rector	3,333	9,375	1.5%
John N. Braca	2,222	6,250	1.4%
Jack Van Hulst	1,111	3,125	0.7%
Warren Isabelle	2,222	6,250	0.1%
Thomas C. Quick Charitable Foundation	7,778	21,875	3.7%

(1) Represents the total number of shares outstanding assuming all shares are issued under the terms of the Purchase Agreement (not including warrants).

- (2) Represents the total number of shares which will be issued and outstanding assuming (a) all shares are issued under the terms of the Purchase Agreement and (b) upon the full exercise of the warrants at the current applicable exercise price.
- (3) Represents the percentage of outstanding shares, calculated on a post-transaction basis, that the Affiliated Investors could potentially own after all securities anticipated by the Transaction with the Affiliated Investors are issued.

### **Consequences if Stockholders Fail to Approve this Proposal 3**

If our stockholders do not approve the issuance of our shares of common stock and warrants (including the shares of common stock issuable upon exercise of the Warrants) pursuant to the Purchase Agreement with the Affiliated Investors, we will fail to satisfy one of the conditions contained in the Purchase Agreement which is applicable to the Affiliated Investors and will not be able to complete the transaction with the Affiliated Investors in its entirety. Because stockholder approval is needed to consummate the transaction with the Affiliated Investors in its entirety, the Company, pursuant to the terms of the Purchase Agreement with the Affiliated Investors would not be able to close on the sale of any of Securities. Accordingly, because we could not consummate the transaction with the Affiliated Investors in its entirety, we would fall short of the working capital necessary to further our immediate corporate objectives and, thus, we would be required to pursue other strategic alternatives. We may not be able to realize such alternatives on commercially reasonable terms, if at all, given the current economic climate.

We have already received gross proceeds of \$950,000 (and net proceeds of approximately \$900,000 after deducting estimated expenses), in connection with our sale of Securities to Partlet Holdings Limited. We expect to receive additional net proceeds of approximately \$110,000 if we are able to consummate the transaction with the Affiliated Investors. We expect the transaction with the Affiliated Investors to close within five business days after receipt of any required approvals from our stockholders. We expect to use the net proceeds for general corporate purposes.

Financial and other information concerning our company is incorporated herein by reference and contained in our Annual Report for the year ended June 30, 2008 and our Quarterly Report for the quarter ended March 31, 2009 which are being mailed with this proxy statement.

### **No Appraisal Rights**

Under Delaware law, stockholders are not entitled to appraisal rights with respect to the actions contemplated by Proposal 3.

### **Required Stockholder Approvals.**

The NYSE Amex Company Guide requires that this proposal be approved by our stockholders representing a majority of the votes cast on the proposal (provided that a quorum is present).

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The following table sets forth the proposals which are necessary to consummate the transactions set forth in the section entitled “Background Information” beginning on page 4.

Transaction	Proposal 1 approval required to consummate the transaction?	Proposal 2 approval required to consummate the transaction?	Proposal 3 approval required to consummate the transaction?
Partlet Holdings Limited	No	Yes	No
Robert Forbes	Yes	Yes	No
Timothy Forbes	Yes	Yes	No
Cato Holding Company	Yes	Yes	No
Affiliate Investors	Yes	Yes	Yes

THE BOARD RECOMMENDS THAT STOCKHOLDERS VOTE “FOR” THE PROPOSAL TO APPROVE FOR PURPOSES OF SECTION 711 OF THE NYSE AMEX COMPANY GUIDE, THE ISSUANCE OF OUR SHARES OF COMMON STOCK AND WARRANTS (AND THE SHARES OF COMMON STOCK ISSUABLE UPON EXERCISE OF THE WARRANTS) PURSUANT TO THE TERMS AND CONDITIONS OF THE SECURITIES PURCHASE AGREEMENT, DATED AS OF JULY 29, 2009, TO CERTAIN OF OUR INSIDERS AND AFFILIATES.

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## **STOCKHOLDERS' PROPOSALS-2009 ANNUAL MEETING**

Stockholders may submit proposals on matters appropriate for stockholder action at annual meetings in accordance with the rules and regulations adopted by the Securities and Exchange Commission. Any proposal that an eligible stockholder wished to submit for inclusion in our 2009 annual meeting proxy statement must have advised our Secretary of such proposals in writing by July 5, 2009 (120 calendar days prior to the anniversary of the mailing date of our 2008 annual meeting proxy statement). Such proposal would have been included if it complied with Securities and Exchange Commission rules regarding inclusion of proposals in proxy statements.

We did not receive notice of a stockholder proposal within this timeframe. If we had received notice of a stockholder proposal within this timeframe, our management would have used its discretionary authority to vote the shares they represent, as our board may recommend. We reserve the right to reject, rule out of order, or take other appropriate action with respect to any proposal that does not comply with these requirements.

### **OTHER MATTERS**

Our board of directors is not aware of any matter to be presented for action at the meeting other than the matters referred to above and does not intend to bring any other matters before the meeting. However, if other matters should come before the meeting, it is intended that holders of the proxies will vote thereon in their discretion.

### **MULTIPLE STOCKHOLDERS SHARING ONE ADDRESS**

In accordance with Rule 14a-3(e)(1) under the Exchange Act, one proxy statement will be delivered to two or more stockholders who share an address, unless we have received contrary instructions from one or more of the stockholders. We will deliver promptly upon written or oral request a separate copy of the proxy statement to a stockholder at a shared address to which a single copy of the proxy statement was delivered. Requests for additional copies of the proxy statement, and requests that in the future separate proxy statements be sent to stockholders who share an address, should be directed to Senesco Technologies, Inc., 303 George Street, Suite 420, New Brunswick, New Jersey 08901, telephone: (732) 296-8400. In addition, stockholders who share a single address but receive multiple copies of the proxy statement may request that in the future they receive a single copy by contacting us at the address and phone number set forth in the prior sentence.

### **WHERE YOU CAN FIND MORE INFORMATION**

We file annual, quarterly and current reports, proxy statements and other information with the SEC. You may read and copy any reports, proxy statements or other information that we file with the SEC at its Public Reference Room, 100 F Street, N.E., Washington, D.C. 20549. Please call the SEC at 1-800-SEC-0330 for further information on the public reference rooms. You may also obtain copies of this information by mail from the Public Reference Section of the SEC, 100 F Street, N.E., Washington, D.C. 20549, at prescribed rates. Our public filings are also available to the public from document retrieval services and the Internet website maintained by the SEC at [www.sec.gov](http://www.sec.gov).

### **INCORPORATION BY REFERENCE**

The following sections of our Annual Report on Form 10-K, which is enclosed with this proxy statement, for the fiscal year ended June 30, 2008, as filed on September 26, 2009 (File No 001-31326), are incorporated by reference into this proxy statement:

- Financial Statements and Supplementary Data (Part II, Item 8);
  - Management's Discussion and Analysis of Financial Condition and Results of Operations (Part II, Item 7); and
  - Qualitative and Quantitative Disclosures About Market Risk (Part II, Item 7A).
-

The following sections of our Quarterly Report on Form 10-Q for the quarter ended March 31, 2009, as filed on May 1, 2009 (File No 001-31326), which is enclosed with this proxy statement, are incorporated by reference into this proxy statement:

- Unaudited condensed consolidated financial statements, including the Notes thereto (Part I, Item 1);
- Management's Discussion and Analysis of Financial Condition and Results of Operations (Part I, Item 2); and
- Qualitative and Quantitative Disclosures About Market Risk (Part I, Item 3).

A representative of McGladrey & Pullen, LLP is expected to attend the special meeting, will have an opportunity to make a statement if they desire to do so and will be available to respond to appropriate questions.

No persons have been authorized to give any information or to make any representations other than those contained in this proxy statement and, if given or made, such information or representations must not be relied upon as having been authorized by us or any other person. This proxy statement is dated August 10, 2009. You should not assume that the information contained in this proxy statement is accurate as of any date other than that date, and the mailing of this proxy statement to stockholders shall not create any implication to the contrary.

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## GENERAL

The accompanying proxy is solicited by and on behalf of our board of directors, whose notice of meeting is attached to this proxy statement, and the entire cost of such solicitation will be borne by us.

In addition to the use of the mails, proxies may be solicited by personal interview, telephone and telegram by our directors, officers and other employees who will not be specially compensated for these services. We will also request that brokers, nominees, custodians and other fiduciaries forward soliciting materials to the beneficial owners of shares held of record by such brokers, nominees, custodians and other fiduciaries. We will reimburse such persons for their reasonable expenses in connection therewith.

Certain information contained in this proxy statement relating to the security holdings of our directors and officers is based upon information received from the individual directors and officers.

**WE WILL FURNISH, WITHOUT CHARGE, A COPY OF OUR REPORT ON FORM 10-K FOR THE YEAR ENDED JUNE 30, 2008, INCLUDING FINANCIAL STATEMENTS AND SCHEDULES THERETO, BUT NOT INCLUDING EXHIBITS, TO EACH OF OUR STOCKHOLDERS OF RECORD ON AUGUST 7, 2009 AND TO EACH BENEFICIAL STOCKHOLDER ON THAT DATE UPON WRITTEN REQUEST MADE TO OUR SECRETARY. A REASONABLE FEE WILL BE CHARGED FOR COPIES OF REQUESTED EXHIBITS.**

**PLEASE DATE, SIGN AND RETURN THE PROXY CARD AT YOUR EARLIEST CONVENIENCE IN THE ENCLOSED RETURN ENVELOPE. A PROMPT RETURN OF YOUR PROXY CARD WILL BE APPRECIATED AS IT WILL SAVE THE EXPENSE OF FURTHER MAILINGS.**

By Order of the Board of Directors

/s/ Sascha P. Fedyszyn

\_\_\_\_\_  
Sascha P. Fedyszyn

*Secretary*

New Brunswick, New Jersey  
August 10, 2009

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**Appendix A**

**Certificate of Amendment**

**CERTIFICATE OF AMENDMENT  
OF THE  
AMENDED AND RESTATED  
CERTIFICATE OF INCORPORATION  
OF  
SENESCO TECHNOLOGIES, INC.**

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*Pursuant to Sections 228 and 242  
of the  
Delaware General Corporation Law*

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Senesco Technologies, Inc. (the "Corporation"), a corporation organized and existing under and by virtue of the General Corporation Law of the State of Delaware (the "DGCL");

DOES HEREBY CERTIFY THAT:

FIRST: The name of the corporation (hereinafter, the "Corporation") is:

**Senesco Technologies, Inc.**

SECOND: The Amended and Restated Certificate of Incorporation of the Corporation was filed with the office of the Secretary of State of Delaware on January 22, 2007 (the "Restated Certificate") and a Certificate of Amendment of the Restated Certificate was filed with the office of the Secretary of State of Delaware on December 13, 2007 (the "Amendment" together with the Restated Certificate, the "Charter").

THIRD: The Charter is hereby amended as follows:

(a) The first section of Article FOURTH of the Charter is hereby deleted in its entirety and replaced by the following new paragraph:

"The total number of shares of all classes of stock which the Corporation shall have authority to issue is One Hundred and Twenty Five Million (125,000,000) shares. The Corporation is authorized to issue two classes of stock designated "Common Stock" and "Preferred Stock," respectively. The total number of shares of Common Stock authorized to be issued by the Corporation is One Hundred and Twenty Million (120,000,000), each such share of Common Stock having a \$0.01 par value. The total number of shares of Preferred Stock authorized to be issued by the Corporation is Five Million (5,000,000), each such share of Preferred Stock having a \$0.01 par value."

FOURTH: That the foregoing amendments have been duly adopted in accordance with the provisions of Sections 228 and 242 of the DGCL.

FIFTH: This Certificate of Amendment shall be deemed effective upon its filing with the Secretary of State of the State of Delaware.

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IN WITNESS WHEREOF, this Certificate of Amendment of the Certificate of Incorporation has been duly executed by the undersigned officer of the Corporation this \_\_\_\_ day of \_\_\_\_\_, 2009.

**SENESCO TECHNOLOGIES, INC.**

By: \_\_\_\_\_

Name:

Title: President and Chief Executive Officer

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**SPECIAL MEETING OF STOCKHOLDERS OF**

**SENESCO TECHNOLOGIES, INC.**

**SEPTEMBER 22, 2009**

**NOTICE OF INTERNET AVAILABILITY OF PROXY MATERIAL**

**The Notice of Meeting, proxy statement and proxy card  
are available at – [www. Senesco.com/invest.htm](http://www.Senesco.com/invest.htm)**

Please sign, date and mail your proxy card in the  
envelope provided as soon as possible.

Please detach along perforated line and mail in the envelope provided.

**PLEASE SIGN, DATE AND RETURN PROMPTLY IN THE ENCLOSED ENVELOPE. PLEASE MARK YOUR VOTE IN BLUE OR  
BLACK INK AS SHOWN HERE**

x

- |    |   | FOR                   | AGAINST               | ABSTAIN               |
|----|---|-----------------------|-----------------------|-----------------------|
| 1. | To approve an amendment to the Company's Certificate of Incorporation to increase the total number of authorized shares of common stock, \$0.01 par value per share, of the Company from 100,000,000 to 120,000,000.  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 2. | To approve, for purposes of section 713 of the NYSE Amex Company Guide, the issuance of our shares of common stock and warrants (and the shares of common stock issuable upon exercise of the warrants), which in the aggregate exceed 20% of our currently outstanding shares of common stock, pursuant to the terms and conditions of the Securities Purchase Agreement, dated as of July 9, 2009, between Partlet Holdings Limited and us, the Securities Purchase Agreement, dated as of July 29, 2009, between each of Robert Forbes, Timothy Forbes, Harlan W. Waksal, M.D., Rudolf Stalder, Christopher Forbes, David Rector, John N. Braca, Jack Van Hulst, Warren Isabelle and the Thomas C. Quick Charitable Foundation and us and the Securities Purchase Agreement, dated as of July 29, 2009, between Cato Holding Company and us. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 3. | To approve, for purposes of section 711 of the NYSE Amex Company Guide, the issuance of our shares of common stock and warrants (and the shares of common stock issuable upon exercise of the warrants) pursuant to the terms and conditions of the Securities Purchase Agreement, dated as of July 29, 2009, to certain of our insiders and affiliates.  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 4. | In his discretion, the proxy is authorized to vote upon other matters as may properly come before the Meeting.  |                       |                       |                       |

MARK "X" HERE IF YOU PLAN TO ATTEND THE MEETING ☐

To change the address on your account, please check the box at right and indicate your new address in the address space above. Please note that changes to the registered name(s) on the account may not be submitted via this method.

☐

Signature of Stockholder	_____	Date: _____	Signature of Stockholder	_____	Date: _____
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**Note:** Please sign exactly as your name or names appear on this Proxy. When shares are held jointly, each holder should sign. When signing as executor, administrator, attorney, trustee or guardian, please give full title as such. If the signer is a corporation, please sign full corporate name by duly authorized officer, giving full title as such. If signer is a partnership, please sign in partnership name by authorized person.

**SENESCO TECHNOLOGIES, INC.**

**PROXY SOLICITED ON BEHALF OF THE BOARD OF DIRECTORS  
OF THE CORPORATION FOR THE SPECIAL MEETING OF STOCKHOLDERS**

The undersigned hereby constitutes and appoints Bruce C. Galton and Joel Brooks, and each of them, his or her true and lawful agent and proxy with full power of substitution in each, to represent and to vote on behalf of the undersigned all of the shares of Senesco Technologies, Inc. (the “Company”) which the undersigned is entitled to vote at the Special Meeting of Stockholders of the Company to be held at the New York offices of Morgan, Lewis & Bockius LLP at 101 Park Avenue, New York, NY 10178 on September 22, 2009, at 11:00 A.M, and at any adjournment or adjournments thereof, upon the following proposals more fully described in the Notice of Special Meeting of Stockholders and Proxy Statement for the Meeting (receipt of which is hereby acknowledged).

**This proxy when properly executed will be voted in the manner directed herein by the undersigned stockholder. If no direction is made, this proxy will be voted FOR proposals 1, 2 and 3.**

**(Continued and to be signed on the reverse side)**

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