



DIVISION OF  
CORPORATION FINANCE

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

June 9, 2010

Joel Brooks  
Chief Financial Officer  
Senesco Technologies, Inc.  
303 George Street, Suite 420  
New Brunswick, New Jersey 08901

**Re: Senesco Technologies, Inc.**  
**Registration Statement on Form S-3**  
**Filed April 23, 2010**  
**File Number: 333-166277**

Dear Mr. Brooks:

We have reviewed your response letter dated June 2, 2010 to our comment letter dated May 13, 2010 and have the following comments. In some of our comments, we may ask you to provide us with information so we may better understand your disclosure.

Please respond to this letter by amending your registration statement and providing the requested information. Where you do not believe our comments apply to your facts and circumstances or do not believe that an amendment is appropriate, please tell us why in your response.

After reviewing any amendment to your registration statement and the information you provide in response to these comments, we may have additional comments.

Form S-3

Total Potential Profit from Other Securities

1. We note your response to comment three and reissue the comment in part. We note, in particular, that the market price per share as indicated in your proposed tabular disclosure is inconsistent with the actual closing price of your common shares on the dates indicated. Please revise the information provided under the heading "Total Potential Profit from Other Securities" to reflect the closing price of your underlying shares on the date of the sale of the securities. Note that the revisions should also be reflected in your calculation of the combined market price of the total number of underlying shares and the total possible discount to the market price as of the date of the sale of the security.

2. We note that your response to comment five under the heading "Prior Transactions between the Issuer and the Selling Shareholders" includes prior transactions with Wm. Michael Phippen on January 15, 2004 and Iroquois Master Fund Ltd. on May 9, 2005. Please revise your tabular disclosure under the heading "Total Potential Profit from Other Securities" to include the requested information for both of these prior transactions with selling shareholders.

#### Comparison of Issuer Proceeds to Potential Investor Profit

3. We note your response to comment four and reissue the comment in part. Please revise your calculation of the combined total possible profit to be realized by the issuer, the percentage of profit, and the average percentage of profit to reflect the actual market price of the shares underlying securities as of the date of the sale of the securities.

#### Prior Transactions between the Issuer and the Selling Shareholders

4. We note your response to comment five and reissue the comment. In particular, we note that your tabular disclosure of prior transactions with the selling shareholders does not reflect the issuance of securities to Michael Berry on January 3, 2005 as disclosed in your table entitled "Total Potential Profit from Other Securities." Please revise your table to include the requested information for this transaction.

#### The Method by which the Number of Registered Shares was Determined

5. We note your response to comment nine and reissue the comment in part. Please provide us, with a view toward disclosure in the prospectus, with a description of the method by which the company determined the number of shares it seeks to register in connection with this registration statement.

We urge all persons who are responsible for the accuracy and adequacy of the disclosure in the filing to be certain that the filing includes all information required under the Securities Act of 1933 and all applicable Securities Act rules. Since the company and its management are in possession of all facts relating to a company's disclosure, they are responsible for the accuracy and adequacy of the disclosures they have made.

Notwithstanding our comments, in the event you request acceleration of the effective date of the pending registration statement please provide a written statement from the company acknowledging that:

- should the Commission or the staff, acting pursuant to delegated authority, declare the filing effective, it does not foreclose the Commission from taking any action with respect to the filing;

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- the action of the Commission or the staff, acting pursuant to delegated authority, in declaring the filing effective, does not relieve the company from its full responsibility for the adequacy and accuracy of the disclosure in the filing; and
- the company may not assert staff comments and the declaration of effectiveness as a defense in any proceeding initiated by the Commission or any person under the federal securities laws of the United States.

Please refer to Rules 460 and 461 regarding requests for acceleration. We will consider a written request for acceleration of the effective date of the registration statement as confirmation of the fact that those requesting acceleration are aware of their respective responsibilities under the Securities Act of 1933 and the Securities Exchange Act of 1934 as they relate to the proposed public offering of the securities specified in the above registration statement. Please allow adequate time for us to review any amendment prior to the requested effective date of the registration statement.

Please contact Bryan Pitko at (202) 551-3203 or Suzanne Hayes at (202) 551-3675 with any questions. In this regard, please free to contact me at (202) 551-3715.

Sincerely,

Jeffrey P. Riedler  
Assistant Director

cc: Emilio Ragoza, Esq.  
Morgan, Lewis & Bockius LLP  
502 Carnegie Center  
Princeton, New Jersey 08540