

HELIOSPECTRA - EXECUTIVE SUMMARY

BACKGROUND

Heliospectra was founded in 2006 and is based on research in plant science developed by scientists Sylvain Dubé and Tessa Pocock from Canada. Using Heliospectra’s patented system we estimate that we can reduce energy consumption by up to 50% in greenhouses while at the same time producing a crop that looks better, tastes better and has a longer shelf-life. In addition growth can be increased or slowed down which results in a controlled adjustment of product to demand. Further, by producing more crops at a faster rate, yield will increase better utilizing existing investments in greenhouse space.

There are other added benefits to the environment such as reduced light pollution and less mercury use due to avoidance of traditional HPS bulbs. We have worked closely with Swedeponic (Santa Maria), Europe’s largest producer of fresh herbs with 12 hectares (1 ha = 10000 sq.m) of greenhouses in Sweden, UK, Poland and Portugal. We are now going into a smaller testing phase during the fall of 2011 with a large scale installation in a complete 3000 sq.m greenhouse in 2012. Our goal is to be able to deliver production volumes during 2012.

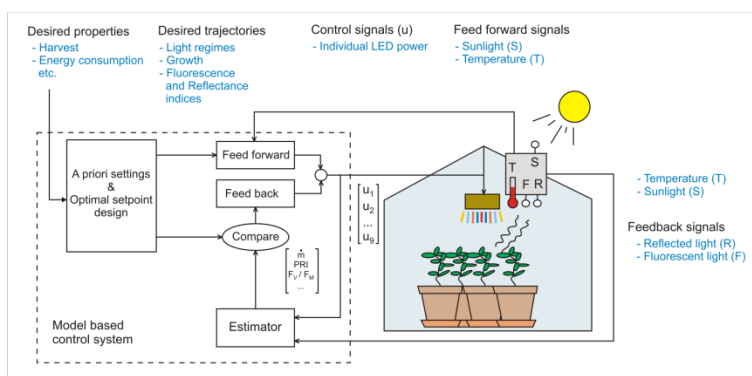
The business model that is being evaluated could enable Heliospectra to finance installations for customers and creating a recurring revenue stream for Heliospectra while giving significant value add to the customers.

TECHNOLOGY

A great deal of energy is used to grow crops indoor. Greenhouse growing requires, depending on the geographical latitude, a minimal 3500 hours supplemental light per year. The industry relies on an old technology, called High Pressure Sodium or High Intensity Discharge lamps as shown below. In Sweden, greenhouse growers spend 3.6 million kW hours electricity per hectare (10.000 sq.m) of greenhouse area per year. It is estimated that only 25% of light produced by HPS lamp is transformed into useful photosynthesis and therefore product growth, the rest is wasted as heat and reflected light. The system that we are developing will provide better plant growth at much lower energy cost.



The system is based on highly efficient LED (Light Emitting Diodes) where each wavelength will be driven in relation to plant’s needs. The system will have remote sensing devices to measure photosynthetic activity and key signals from plants. Heliospectra is currently installing the fifth generation of prototypes shown below.



CUSTOMER BENEFITS

Current versions of Heliospectra’s products result in a superior plant in many aspects. The benefits are:

Improved quality

- Looks better
- Tastes better
- Premium pricing possible

Can produce faster/slower coordinating supply with demand, reducing waste and increasing yield.

Environmental benefits

- Significant savings in energy, over 50% possible
- No need for mercury based HPS bulbs
- Longer shelf-life, less frequent truck transports
- Less light-pollution at night

Quantitative improvements

- biomass increase 37- 66%
- growth increase 9- 14%
- quality (leaf weight) 21-27% greater



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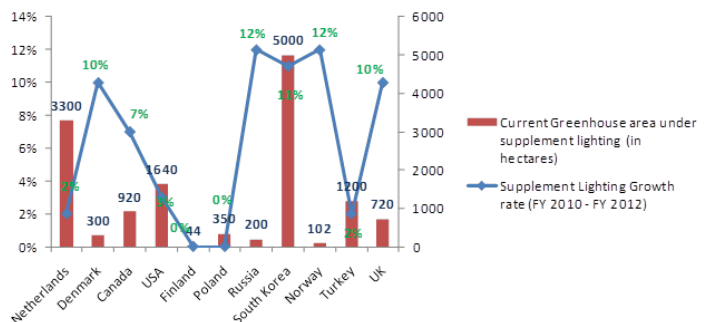
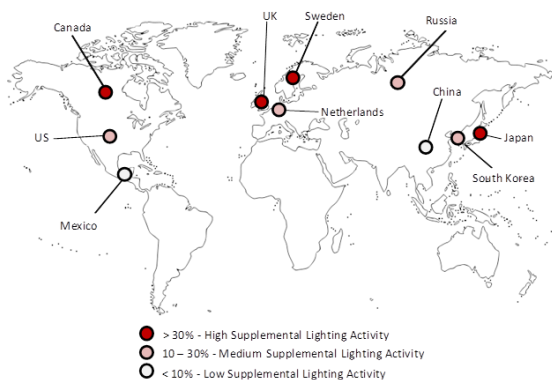


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BUSINESS OPPORTUNITY & MARKET POTENTIAL

The system will not only significantly lower energy use in the greenhouse industry but improve crop quality to the point which it will allow crops to be economically grown during winter time at northern latitudes. The system finds applications in all sectors of plant growing such as the commercial greenhouse industry (vegetables, herbs flowers), plant factories, forestry, interior urban landscaping, zoological and botanical gardens, industrial and academic research.

In many countries (such as the Netherlands, Canada, Scandinavia and Russia), natural light in greenhouses is not sufficient to grow good quality crops during the months of winter. Therefore, supplemental lighting such as HPS lamps are used in greenhouses to provide light for plant growth.



A typical greenhouse uses one lamp per 4 sq.m and each lamp uses 400-600 watts with a yearly use of at least 3500 hours. The bulb itself has a life expectancy of 15.000 hours and the armature is replaced every 10 years.

Our estimates indicate that the current greenhouse market is using about 56 million HPS bulbs worldwide (excluding China). Assuming that each replacement has a total revenue potential of EUR 1000 for Heliospectra, then we estimate that Heliospectra could reach annual sales of minimum EUR 55 million.

EXECUTIVE SUMMARY

Total market HPS lamps	55 000 000	no
Revenue potential	1 000	EUR
Total market potential	55 000 000 000	EUR
Life time of HPS lamps	10	years
Yearly market potential	5 500 000 000	EUR
Percentage for Heliospectra	1,00%	
Total yearly market potential for Heliospectra	55 000 000	EUR

The greenhouse market is being complemented by completely enclosed units in so called Plant Factories which has been spearheaded by development in Japan. Recent estimates from Wintergreen Research indicates that the plant factory market is growing from US\$ 127 million in 2009 to US\$ 3.8 billion by 2016.

COMPETITION

Heliospectra has identified a number of competitors such as:

- Fionia Lighting, Denmark
- Flow Magic, Holland
- Lemnis Lighting, Holland
- Netled, Finland
- Philips, International
- Orbitec, USA
- A large number of very simple grow lights from China

Of these Philips is the strongest and Orbitec the most sophisticated. We have yet to see a product similar to Heliospectra's. The Dutch companies seem to be focusing more on inter canopy lighting in tomatoes which is a significant market in Holland.

Our conclusion is that Heliospectra has a very strong product especially since we are based on a deep understanding of how the plants function. As the market has yet to take off, we see an advantage in several companies entering the market including significant ones like Philips which will help legitimize and develop the market. However, as always, innovation through development and research has to continue in order to improve the offering to the customers.

BUSINESS MODEL / GO TO MARKET STRATEGY

Heliospectra is currently evaluating different business models. We are considering either selling or renting out the lamps themselves while offering updated light regimes on an annual subscription basis. It is also possible to supply a total solution by leasing the system to the customers complete with regimes and intelligence for a monthly fee. This will depend on types of customers and markets. The greenhouse industry is a conservative market but also wanting to change and progress through automation. The only area of greenhouse technologies that is not automated is the application of adaptive light regimes. Initial sales will be done directly but we also have good access to customers via Swedeponic. Further, Heliospectra could approach Ludvig-Svensson who supplies greenhouses shading systems across the whole world (the CEO of Ludvig Svensson is on the Heliospectra Board of Directors).

PATENTS / IP PROTECTION

Heliospectra has one patent pending which is being submitted worldwide in the most important markets. Besides the current and possible future patents, Heliospectra has core knowledge about the specific regimes required to grow crops. At present, we are developing a patent strategy for application of light regimes.

MANAGEMENT TEAM

Heliospectra has an experienced and international management team with complementary skills necessary in order to manage current and future development and business.

SYLVAIN DUBÉ, VP AND FOUNDER, BORN 1955

- Ph.D. & B.Sc, Plant Physiology (Biotechnology), Canada
- Experienced in starting businesses
- Indepth practical experience as crop technician and greenhouse operator



TESSA POCOCK, DIRECTOR OF RESEARCH, BORN 1958

- Ph.D. & M.Sc. Plant physiology and Biochemistry, Canada.
- Indepth practical experience as greenhouse technician and owner/operator of commerical greenhouse for over 8 years



KIRK CLENDINNING, DIRECTOR OF ENGINEERING, BORN 1957

More than thirty years of analogue and digital electronic design, as well as programming, management and international standards committee membership. IBM, Texas Instruments.



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STAFFAN HILLBERG, CEO, BORN 1964

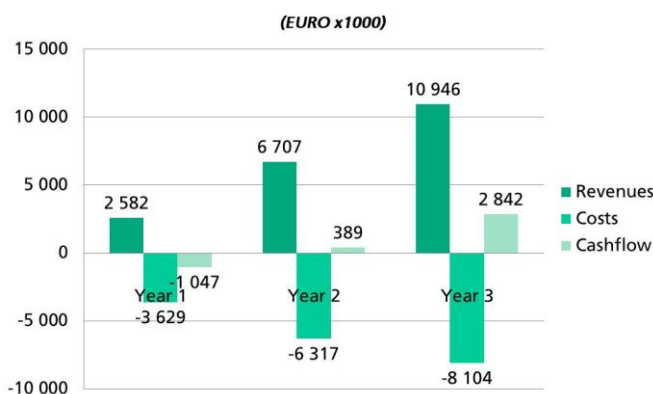
- More than twenty years of experience in international high technology space as specialist, manager, venture capital and business angel investor and board member.
- Apple Computer France/USA, Procera Networks USA, Bonnier Group ...
- MSc Engineering, MBA INSEAD



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FINANCIALS

The financials for the years 2012-2014 are as follows. Heliospectra expects to achieve break-even on a cash-flow basis in 2013 based on achieving sales of 3,000, 9,000 and 20,000 lights during 2012-2014. The current customer Swedeponic has a need of 30,000 units by themselves.



CAPITAL REQUIREMENT

In order to finance the initial installations and further development Heliospectra is seeking EUR 2 million by way of emitting new shares. Funds will be used to finance pilot installations, development, marketing and staff costs. Pre-money valuation is EUR 4 million giving new investors 33% ownership in Heliospectra. Since 2006 Heliospectra has raised EUR 1.75 million in venture capital.