HELIOSPECTRA AB

heliospectra

Intelligent Lighting Solutions for Optimal Plant Growth and Energy Efficiency

Heliospectra AB

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Status:
Public: (OTCQB:HLSPY);
(Nasdaq-OMX First North: HELIO)

Website:
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Key Contacts

Chief Executive Officer:
Staffan Hillberg

Chief Financial Officer
Håkan Bengtsson

Chief Operating Officer
Chris Steele

US General Manager
Chris Walker

Market / Industry Snapshot

Industry:
Controlled-Environment Agriculture

Sectors:
LED Plant Growth lamps / Greenhouse and Indoor horticulture

Market Size (Cannabis:
2013: $2.7 Billion
2018E: $10.3 Billion

Key Financial Data

Financial Snapshot
2013 Revenue:USD 138.7K
2013H2 Revenue:USD 92.4K

2013 Revenue:SEK 1.2M
2013H2 Revenue:SEK 0.8M

2014 Revenue:USD 496.9K
2014H2 Revenue:USD 231.1K

2014 Revenue:SEK 4.3M
2014H2 Revenue:SEK 2.0M

Balance Sheet *(USD)*
Current Assets: $1.67M
Current Liabilities: $0.67M
Total Liabilities: $1.79M
Shareholders' Equity: $1.86M

Trading/Stock Price
Stock Price (4/31/15):$1.55
52-Wk.H/L: $7.00 - $1.25
Avg. Daily Volume: 286
Market Cap: $22.89M
Float: 4.9M
Shares Outstanding: 13.8M

BUSINESS DESCRIPTION

Heliospectra ("the Company"), founded in 2006, specializes in intelligent lighting solutions for plant research, greenhouse cultivation, and indoor growers. The Company offers one of the market's most sophisticated products which stimulates growth characteristics and improves plant quality. By combining versatile light-emitting diodes (LEDs) and remote sensing techniques, the technology adjusts the intensity of each wavelength to creating a plant-specific spectrum that is defined based on the results of Company research. Heliospectra's patented system is also significantly more energy efficient than traditional lighting solutions currently used in greenhouses and other indoor growers. The Company has developed a diversified business model with multiple revenue streams by focusing on the development of growing technologies that span both the traditional agriculture and cannabis industries. This business model exploits, from multiple angles, a powerful new opportunity in the sector. At the core of the business model are the Company's patented biofeedback system and LED lamps that create sustainable revenue streams.

- **Disruptive Technology.** Heliospectra has developed a disruptive LED-based intelligent lighting solution for greenhouses, indoor growing, and growth chambers. Heliospectra's lighting system is centered on its ability to understand plants' characteristics and needs and modify the generated light spectrum to fast-track growth in an optimized manner. Heliospectra's technology is unique in its foundation in the Internet of Things (IoT). By combining sensors – which monitor the condition of plants and how they use the light – with state-of-the-art software that controls the lighting via Ethernet and/or WiFi, the Company offers growers the ability to collect data and potentially accelerate their own learning curve.

- **Leading Technology and Valuable Intellectual Property.** Heliospectra has worked diligently with its intellectual property development team to achieve a strong, strategic patent portfolio in the market for LED lights. Over the last two years, six patent applications have been submitted as supplements to the basic patent applications previously submitted in 2007. The basic patent applications have already been approved in Russia, China, Hong Kong, and, most recently, the United States. Heliospectra's patent portfolio includes applications for spectrum optimization, stress detection, growth detection and control, and system integration and support. In October 2014, Heliospectra was issued a patent by the US Patent and Trademark Office (USPTO) for methods in optimizing LED lighting for plants, and to make working processes more efficient in greenhouse environments of the future.

- **Large Market Opportunity.** The global food system will experience a food security crisis over the next 40 years. The global human population is expected to rise from 7 billion today to 8 billion by 2030, likely going on to exceed 9 billion by 2050. To sustain this population growth, global food production will need to increase by some 70%. Heliospectra' s advanced lighting system will allow quick market penetration due to the Company's patented biofeedback system and superior lamp engineering, helping growers in different agricultural sectors grow products, efficiently and cost-effectively, to help solve the global food security and scarcity challenges.

- **Diversified Business Model.** Heliospectra has diversified its business model through multiple revenue streams by focusing on the development of lighting technologies that can be used for a wide variety of products and industries, such as leafy greens, natural health products, flowering fruits, and cannabis. The Company has positioned its revenue streams to capitalize on international diversification though distribution agreements with local partners to launch products in the following markets: North America, England, Holland, Australia, China, Germany, Poland and Scandinavia.


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LAS VEGAS
NASDAQ OMX
WELCOMES
HELIOSPECTRA
heliospectra
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JVC JVC JVC


What is light? Depends on time of day, location, type of day ...
OUTDOORS
HELIO

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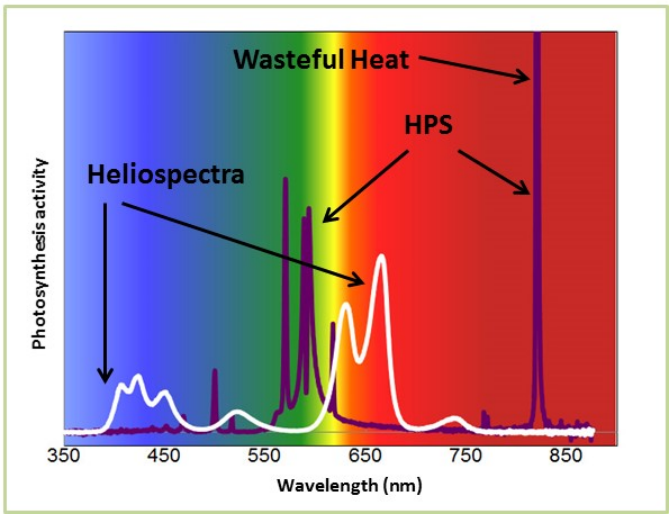
EXECUTIVE SUMMARY

THE COMPANY

Today, almost all commercial greenhouses and indoor grow operations use high-intensity discharge (HID) or high-pressure sodium (HPS) lamps for their plant growth lighting. These archaic lamps are, more or less, the same types as those used for highways and other industrial functions. They are highly energy inefficient and are being retrofitted worldwide – with horticulture being the least understood application. The spectra they emit is static and does not suit the action spectrum of the photosynthesis. In fact, this mismatch, with a lot of power in the far red, implies that approximately one third of the emitted light energy can never be used by the plants; often, percentage of wasted light is even higher. HPS lamps are not adjustable, are slow to start, produce heat that must be countered with additional A/C infrastructure and monthly costs, their bulbs must be replaced often – leading to potential crop contamination through human interaction – and are the last piece of the indoor and greenhouse growing hardware infrastructure to evolve significantly.

Heliospectra, (NASDAQ OMX First North: HELIO) (OTCQB: HLSPY), has developed a powerful plant lighting system to address the growing demand for a non-HID lamp technology. By actively delivering the right light intensity and spectrum as well as providing a modular solution for retrofitting or new construction, Heliospectra has the first viable substitute for HIDs in commercial growing applications. The Company's lighting system provides an effective and durable technology for cultivating greenhouse and indoor plants by combining several different groups of versatile light emitting diodes (LEDs) with optics, remote sensing techniques, and a robust heat dissipation solution. This proprietary setup gives growers the ability to control the intensity and wavelengths of the light emitted, creating a spectrum specifically adjusted to different plant species and growth stages to better facilitate photosynthesis. The complete, highly-engineered lamp produces crops that look better, taste better, and have a longer shelf-life than those grown under HID lamps. The technology not only reduces energy consumption by up to 50%, but also helps stimulate growth characteristics and improve plant quality. There are other added benefits to the environment such as reduced light pollution, lower mercury use due to the avoidance of traditional HID/HPS bulbs, and less HVAC investment and monthly expense requirements.

Heliospectra's light spectrum vs. HPS



Heliospectra's business concept involves developing and selling efficient lighting systems that enable growers to replace archaic lighting technology with more efficient and effective lamps to better control quality and growth. Heliospectra was founded in 2006 and is today a leading international company in the optimization of plant performance in greenhouse and indoor grow environments. The Company is beginning a very exciting phase in its development with the launch of the LX60 lamp, a high volume product for professional growers. Heliospectra's long-term goal for this lighting system will result in enabling growers with the ability to "communicate" with and control their crops. This ability to enhance or suppress desired characteristics has profound impacts on an operation's ability to flex with market demands.

The Company has launched the first cornerstone to the system, the LX60 lamp, which received enthusiastic customer response. The LX60 Series uses primary and secondary optic lens plates for achieving maximum uniform light intensity and spectral distribution across a growing footprint. By maximizing the amount of light across a growing surface, the lamp minimizes light-loss, produces uniform canopy growth, and can increase yields. As a foundation for further commercialization, Heliospectra plans to integrate sensors into their lighting platform and offer cloud services starting in 2015 or 2016. Its highly refined products and services will allow the Company to exploit its position in a growing market.

MARKET AND OPPORTUNITY

Global Food Production / Shifting Population

Global agriculture and food production are facing multiple pressures. Experts believe the main challenge of agriculture involves feeding a growing global population that is expected to increase from seven billion people today to approximately nine billion in 2050. As a result, The United Nations Food and Agriculture Organization estimates that food production must increase by 70% over the next forty years to satisfy increasing demand. The primary factor driving the population growth is urbanization, where the number of cities with over 1,000,000 people experienced the fastest growth in the developing world. Billions of people have already moved from rural areas into rapidly growing urban cities and billions more are expected to make this transition over the next 40 years.

Specifically, in North America, the last 50 years have brought a major cultural shift that has removed consumers further and further away from their food sources. U.S. Census data showed around 80% of Americans living in urban areas, while a Mexican Household Survey conducted by Harvard School of Public Health found that, in the last forty years, the number of Mexicans living in urban areas rose from 51% to 74%. According the Canadian Geographic, two-thirds of the entire population of Canada live in one of eight urban environments.

Scarce Natural Resources

As the population grows, the face of agriculture shifts. There is limited opportunity to expand the land used in agricultural production as climate change and diminishing natural resources create an increasingly hostile growing environment. From mechanized feedlots to automatic irrigation systems to agricultural machinery, global agriculture has become increasingly industrialized, placing ever-greater demands on fossil fuel, water, nutrients, and topsoil resources.

Water around the world is becoming scarcer and more contaminated. Groundwater is becoming more polluted by agricultural runoff and other toxins. 70% of all available fresh water on Earth is consumed by irrigation-style agriculture watering, and rates of water extraction for irrigation are exceeding rates of replenishment in many places. According to the US Geological Society, the amount of ground water drawn for use in irrigation has tripled since the 1950s. Additionally, this water — after being contaminated with pesticides, herbicides, fungicides, and fertilizers — seeps into rivers, streams, and aquifers and causes salinization of once arable land; this toxic runoff is responsible for more ecosystem disruption than any other kind of water pollution. Climate models also suggest that rainfall may become less predictable and dependable, forcing the construction of more sophisticated water catchment systems.

Whereas in the past, the agriculture industry has been able to expand croplands to meet increased demand for food, today, viable land for expansion is rapidly being exhausted. The amount of arable land available for each person has dropped from 1 acre in 1970 to half an acre in 2000 and will be one third of an acre by 2050. 25% of the world's land has now been highly degraded through soil

erosion, water degradation, and biodiversity loss. Another 8% is moderately degraded, while 36% is stable or slightly degraded and an additional 10% is improving. The rest of the Earth's surface is either bare or covered by inland water bodies. Furthermore, climate change is creating significant pricing and demand pressures on agriculture. The recent report on future food prices commissioned by Oxfam, estimated that, under normal circumstance, food commodity prices are likely to increase about 50% between now and 2030. If estimates of climate change are factored in, food prices could be up to 100% higher.

Controlled-Environment Agriculture

According to a new report from ReportsnReports.com, the LED grow light modules (for agriculture) markets is expected to grow from $395 million in 2013 to $3.6 billion by 2020 (a compound annual growth rate over 37%). The study states that rapid growth is anticipated to come in part from the home and restaurant market segments as people, particularly the affluent, become more health conscious. A fast developing consciousness is avoiding the deleterious effects of pesticides in food. Worldwide markets are poised to achieve significant growth as the food producers of the world begin to adopt automated processes. Grow lights have become more sophisticated and less expensive to run, and solar and wind energy continue to be adopted by greenhouses and plant factories. LED grow lights provide quality for growing, offering intense, homogeneous light distribution at precisely the right wavelengths. LED grow lights are also more powerful and significantly more energy-efficient than the older generation high-pressure sodium and metal halide grow lights.

Consequently, the number of commercial greenhouses and the area they occupy are sharply rising. For example, in the Netherlands, greenhouses occupy around 0.25% of the land area of the entire country. The Netherlands is not even the largest producer of greenhouse vegetables in Europe. Countries in higher latitudes use supplemental lighting to compensate for the lack of sunlight in the winter. However, even in lower latitudes these technologies and their deployment can be used to increase the number of light-hours for growing plants.

One industry these environmental challenges are impacting is the legal cannabis industry, which has experienced a major transformation over the past three years as increasing public approval of cannabis use and massive shifts in the regulatory environment changed the industry’s business landscape in a variety of ways. Based on a Gallup Poll from 2013, 58% of adults in the U.S. were in favor of the legalization of cannabis, a 10% increase from the previous year. Moreover, eight new states plus the District of Columbia have adopted legislation that permits the use of medical cannabis in the past year, bringing the total number of states with legalized medical cannabis to 23. However, the most instrumental change impacting the industry has been the development of the first recreational cannabis markets in the history of the United States. On January 1, 2014, Colorado and Washington became the nation’s inaugural states to implement recreational use policies, which have provided substantial tax revenue and job creation for these states. This legislation has also allowed states to redirect law enforcement efforts to other, more pressing needs. The progress of these two states has paved the way for new recreational legislation in many other jurisdictions. In the recent November midterm elections, Oregon, Alaska, and

Washington, DC voted to legalize recreational cannabis, which has quickly proven to be another strong driver for growth in the industry.

The shifting regulatory environment in favor of legal cannabis, combined with the increase in demand, has led to the legal cannabis industry becoming one of the fastest growing industries in the United States. The estimated value of this burgeoning industry was approximately $1.4 billion for 2013, growing to over $2 billion in 2014. However, these estimates are perhaps on the low side due to undercounting of ancillary products and services. The long-term growth outlook for the industry is strong; one estimate has the market exceeding $10 billion by 2018. Many experts believe this will hold true, conservatively, based on growth in the current market and additional states moving to allow medical cannabis and/or legalizing recreational use.

The result of this spectacular growth is that industry leaders are experimenting with new technologies, including lighting and growing methods to ensure premium quality to the consumer while at the same time optimizing profits. This has led to significant demand, specifically in regard to cultivation products. These technological innovations, such as automated fertilization systems, modern greenhouse technology, and LED Technology, create competitive advantages for cultivation businesses by allowing cultivation sites to lower costs, boost yields, and maximize production capacity compared to traditional methods of cultivation. The situation is changing so rapidly that the decisions cannabis cultivation businesses make today will play a huge role in whether they are still around in a few years. Growers know that the adoption of more efficient lighting lowers the cost of goods sold, forcing an inevitable adoption between competing growers. Electricity demand for lamps is the largest monthly expensive to the grower. Heliospectra's systems facilitate a competitive advantage through lower electricity usage as well as reduced monthly HVAC expenditure and upfront HVAC capital outlay as a result of less heat generated by the lamps.

COMPANY HIGHLIGHTS

- *Market Penetration*

Heliospectra's advanced lighting system will allow quick market penetration due to the Company's patented biofeedback system and superior lamp engineering, helping growers in different agricultural sectors efficiently and cost-effectively grow products to help solve food security problems.

Over the next 40 years, world population is expected to swell to 9 billion people. The United Nations' Food and Agriculture Organization predicts that, in that time, global food production will need to increase by 70% in order to prevent massive famine. Simultaneously, producers must learn to cope with changes in climate, intensification of floods and droughts, depletion of resources, and dramatic political shifts. Meeting the coming demand for food will mean addressing these large challenges that threaten the future of conventional agricultural production and food security worldwide. These trends are driving innovation of new farming technologies that allow plants to grow without sunlight in indoor environments close to or within cities. Global indoor farming - the CEA industry - is now competing with conventional farms. Employing the use of technologies like advanced lighting along with hydroponic, aquaponic, and aeroponic methods to quickly grow high quality fruits and vegetables year-round is quickly becoming commonplace. The Company is well positioned to take advantage of recent market trends with its current product, the LX60 Series, which uses primary and secondary optic lens plates for achieving maximum uniform light intensity and spectral distribution across a growing area. With the new generation LX60, which was launched in 2014 and has been very well received by the industry, Heliospectra has been able to improve efficiency and dramatically reduce energy consumption while simultaneously lowering the purchase price for consumers. The LX60 is currently being used by a number of major growers. Interest in optimizing cultivation at home or locally has increased dramatically in large towns and cities; people are now growing on roofs, on balconies, and in basements. The Company is positioned to capture this momentum.

- *LED-Based Lighting Solution*

By utilizing sophisticated LED based lighting solutions, Heliospectra has created many competitive advantages compared to traditional lighting equipment, such as:

Light Intensity: Superior engineering via two-tiered optics has resulted in one of the most efficient, light-intense, uniform footprints available to commercial grow operations.

Energy-use: LED lights have much lower energy consumption, approximately 50-60% of that of equivalent HID bulbs

Control: The Heliospectra LX60 is the only luminaire available with individual spectrum and variable intensity control. This equates to unprecedented control over *Light Recipes* or the ability to deliver dynamic light.

Example 1: the ability to mimic sunrise and sunset.

Example 2: Heliospectra customers have developed light recipes that involve a "far red push" at the end of a flowering photoperiod, resulting in faster to market product.

Longevity: There is no filament to burn nor bulbs to replace. LED luminaires have longer usable life spans - over 50,000 hours. Most HID bulbs only last 12,000 – 13,000 hours but degrade much earlier; the recommended replacement time is 9-10 months, but many growers replace every 3-4 months.

Heat Control and Reduction: LED lights change the HVAC equation, pose far less risk of fire, and, with Heliospectra's modular heat dissipation solution, growers can manipulate and direct heat within their environment. Minimized heat equates to less upfront HVAC capital expenditure and lower monthly electricity costs. In large grow operations, a 50% reduction in utility bills has been seen post LED adoption. This cost benefit alone is a compelling argument to move out of HID bulbs.

Color spectrums: The Company has developed light recipes, different diode plates and optics customized for different species. This highly advanced lighting system offers extreme value to all growers, specifically cannabis growers. Multiple light recipes, lamp batching per strain and grow phases opens the door to a new paradigm of growing techniques. Today, LEDs with spectrum control results in higher quality plants and customization of chemical profiles when compared with equivalent HIDs - which cannot alter peak spectral output.

Power Management: Heliospectra's lamps have built-in power management tools, while HID lamps rely on external ballasts that add another 150 watts of power consumption.

Upfront Costs: The initial cost of LED lights may be higher than equivalent HID units if subsidies and incentives are not available; however, given their benefits, they are less expensive over the long term, with ROI numbers fluctuating between 8-16 months depending on electricity costs, species grown, and methodologies employed.

- *Disruptive Technology*

The Company has developed a disruptive LED-based intelligent lighting solution for greenhouses, indoor growing, and growth chambers. Heliospectra's lighting system is centered on its ability to understand plants' characteristics and needs and to appropriately modify lighting to fast-track growth in an optimized manner. Heliospectra's technology is unique in its foundation in the Internet of Things (IoT) foundation. By combining sensors – which monitor the condition of plants and how they use the light – with state-of-the-art software that controls the lighting via Ethernet and/or WiFi, the Company offer growers the ability to collect data and potentially accelerate their own learning curve. The Company's protected portfolio of patents granted and pending is based on a complete biofeedback system that the Company intends to leverage in order to replace inefficient, traditional lighting technologies that are currently deployed in commercial grow operations.

This disruptive approach to growing is fueled by Heliospectra's goal of allowing growers to use light to communicate with and control their crop. Ultimately, this goal equates to developing, enhancing, and even retarding certain valuable or invaluable characteristics. To accomplish this, Heliospectra has invested in the development of sensor technology: energy-harvesting environmental sensors at the plant level and sensitive optical sensors above the plant canopy. Energy-harvesting sensors can report temperature, humidity, soil moisture, and spectral light intensity to the patented Heliospectra biofeedback light regulation system. At the same time, the physiology of the crop will be measured with highly sophisticated, optical sensors suspended above the canopy. After the sensor information is processed using patented algorithms developed by Heliospectra from years of plant physiology experience, the light intensity will be adjusted according to the specific plant type and desired crop characteristics. Biofeedback yields improved crop quality and overall improved plant health. The Heliospectra system can be used to produce a number of high quality agricultural products including herbs, lettuce, spinach, and plants that require pollination such as strawberries and cannabis.

- *Patented Technology & IP Portfolio*

Heliospectra has worked systematically with their intellectual property development to achieve a strategic and strong patent position in the market for LED lights. The strategy is to develop and protect Heliospectra's unique methods for biofeedback controlled lighting systems with a strong patent portfolio. Heliospectra is conducting an active patent strategy in collaboration with the patent agency Awapatent and the consulting firm Prospero Management. Over the last two years, six patent applications have been submitted as supplements to the basic patent applications previously submitted in 2007. The basic patent applications have already been approved in Russia, China, Hong Kong, and, most recently, the United States. Heliospectra's patent portfolio includes applications for spectrum optimization, stress detection, growth detection and control, as well as system integration and support.

In October 2014, Heliospectra was issued a patent (US 8,850,742) by the US Patent and Trademark Office (USPTO) for methods in optimizing LED lighting for plants as well as making working processes more efficient in greenhouse environments of the future. This patent strengthens the Heliospectra's system's ability to provide quality control and light optimization in greenhouses based on the desired qualities of plants. One result is that the appearance, color, and taste of the final product can be influenced and improved; greater quality produce can be grown with lower energy in different types of greenhouses in different environments using a simple adaptation of optimum lighting. This innovation will provide growers much closer to their markets with a tool for creating new opportunities to offer a broader and better selection of produce at lower price points.

For Heliospectra, the approved patent in the United States is a very important step. The Company's products, primarily the grow operation software, will receive a unique position and status. Moreover, this means that the prospects for approval of other submitted patent applications on other markets are excellent.

GROWTH STRATEGY

Heliospectra's business concept is to develop and sell efficient lighting systems that enable growers to effectively control the quality and growth of the plants. Heliospectra was founded in 2006, and this early start enabled the Company to gain an unrivaled understanding of the industry. Today, Heliospectra is a leading international company in the optimization of plant performance in greenhouse environments. Heliospectra's management has created a growth strategy that has been effectively used in the past to build and grow strong companies across a broad spectrum of industries.

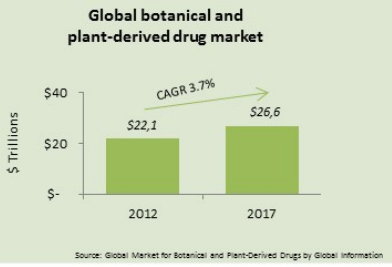
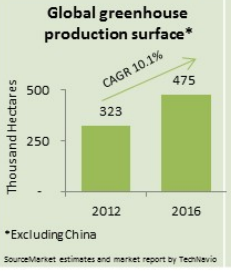
- *Execute on Current Business Pipeline*

During the autumn of 2013, Heliospectra began development of a new product: the LX60, which, from the outset, was intended for high volume production. The LX60 is being discussed with a number of early adopters in Sweden and abroad. In Sweden, the first installation of 42 LX60 units went to Spisa (Swedeponic), the largest grower of fresh herbs in Europe. Heliospectra is working with GrowersHouse, which is one of the single largest online sellers of cultivation accessories and lamps in the United States. GrowersHouse's on-line lamp sales have recently grown by about 10-20% per month, and they sell approximately several hundred LED-based light fixtures per month at prices similar to the Heliospectra target for the LX60 (approximately 2000 USD per lamp). Heliospectra offers a significantly better product than the lamps GrowersHouse currently carries.

Heliospectra is in negotiations for sales of its lighting systems with a number of retailers for professional greenhouses and indoor growers.

As discussed earlier, culinary herbs such as basil, parsley, dill, chives, and mint, to name a few, are good examples of plants that benefit from the Company's lighting technology. In addition, plants, such as flowers and medicinal plants, grown with supplemental lighting benefit greatly. It should be mentioned that the medicinal crop applications only represent the rapidly growing North American market, a market of approximately 300-500 million USD that has grown over 50% from 2013 to 2014. Heliospectra shall, by means of distribution agreements with local partners, launch products in the following markets: North America, England, Holland, Germany, Poland, and Scandinavia.

The Company initially targeted the plant research industry and controlled environment agriculture, but today Heliospectra's products are used in diverse industries. The LX60 is an ideal product for professional, commercial growers. The medical plants industry also presents a significant corporate opportunity.

Customer segment	Research	Medical plants	Professional growers	Retail	End user
					
Type of customer	Growth chamber manufacturers R&D institutes Agrotech research	Pharma companies R&D institutes	Greenhouses Plant factories Indoor Growers	Supermarkets Groceries	House owners Urban farming Small greenhouses
Example customers	DOW, MONSANTO, BASF	Bayer, Pfizer, MERCK	SPISA, SHENANDOAH GROWERS	ICA, TESCO, WHOLE FOODS, Walmart	General Public Home Growers
Market				

➢ *Potential Partnership Synergies*

The Heliospectra business model has the potential to create profitable integration synergies with many potential vendors of greenhouse control systems. A greenhouse represents an artificial environment wherein temperature, moisture, carbon dioxide, nutrients, and irrigation are controlled to optimize the growth of the plants inside. There are a number of international companies dealing exclusively with control systems for greenhouses. Heliospectra intends to cooperate with all of these companies and has already started cooperation with Argus Controls and the Dutch company, Hoogendoorn. Heliospectra and Hoogendoorn have started a joint development effort and officially presented the collaboration in June 2014 at the Green Tech Fair in Holland.

➢ *Consumer Product Development*

Currently, Heliospectra has plans to create products for both the professional and consumer markets. Heliospectra, together with Chalmers Technical Design, has done a study of prototypes for consumer products. As with the professional product line, Heliospectra takes a systematic approach and plans to integrate connectivity with devices such as smartphones and tablets.

The common thread in all Heliospectra development is systems intelligence. Whether lighting, sensors, or other controls, these systems are built to work together. The L4A, L1, and LX60 are all built in this way, making it easy for customers to mix different products and upgrade to new products. This creates opportunities for additional sales and the generation of a broader revenue base.

Besides the consumer market, there is a need for products in the restaurant business. Heliospectra has installed the LX60 product with the award winning Swedish restaurant, Upper House, where fresh herbs are grown for its customers.

- *Sensor Development*

Heliospectra is also investing in sensor technology: energy harvesting environmental sensors at the plant level and sensitive optical sensors above the plant canopy. The energy harvesting sensors will report temperature, humidity, soil moisture, and light spectral intensity to the patented Heliospectra biofeedback light regulation system. At the same time, the physiology of the crop will be measured with highly sophisticated, optical sensors, suspended above the plant. After the sensor information is processed using patented algorithms developed by Heliospectra from years of plant physiology experience, the light intensity will be adjusted according to the specific plant type and desired crop characteristics.

Sensor development is being done in close collaboration with Associate Professor Torsten Wik from the Department of Control Engineering at Chalmers University in Gothenburg. Two Ph.D. students are working in the project with Professor Wik with additional support from The Mistra Foundation.

The project with Chalmers was highlighted in a report on Swedish Television in 2013 in which the reporter filmed inside of Heliospectra's laboratory in Gothenburg. The cooperation with Chalmers is regulated by an agreement through which Heliospectra owns all rights to the project. The method has been proven to work very well and has been tested with chrysanthemum and basil.

KEY MANAGEMENT & DIRECTORS

Mr. Staffan Hillberg, *Chief Executive Officer*

Mr. Hillberg is an entrepreneur who, among other things, worked for Bonnier and Apple, founded Appgate, and worked within the Bure Group. Mr. Hillberg has long standing experience as an angel investor and board member, having successfully invested in companies such as Mirror Image, Digital Illusion (sold to Electronic Arts), Spotfire (sold to Tibco), and Location Labs (sold to AVG). His current company board responsibilities includes, among others, Zinzino AB (publ) listed on Nasdaq-OMX First North, as well as Procera Networks, Inc., listed in the USA on NASDAQ.

Håkan Bengtsson, *Chief Financial Officer*

Mr. Bengtsson has worked as Controller at Telia AB (Swedish Telecom), founder and part owner of Comeva, Vice President/CFO/HR manager, Vice President/CFO at Empower AB (+700 MSEK rev). Mr. Bengtsson also has many years of work experience in other capacities within these companies.

Anthony Gilley, *Chief Technology Officer*

Mr. Gilley is an experienced manager, project manager, and computer science major from GU/CTH with experience from the aviation, automotive, telecom, and telematics industries. His experiences include management, project management, process development, investigation, and system specification. Anthony has been PMO manager at Jeppesen Systems (a Boeing company), COO at Pilotfish Networks, and a project management consultant at HiQ. He has long experience in collaboration with international customers and suppliers including those from Singapore, USA, Switzerland, Germany, Japan, Canada, Turkey, and Saudi Arabia.

Christopher Steele, *Chief Operating Officer*

Mr. Steele was previously at Klarna, EPIC, Encubator AB, and Ricoh Americas Corporation. Mr. Steele holds an MSc Intellectual Capital Management from Göteborg University and a BSB from Indiana University. Mr. Steele joined Heliospectra in 2012 as the VP of Sales and Marketing. In 2014, his role expanded to Chief Operating Officer. As COO, he plays a central role in working international business development, strategy, sales, and marketing.

Chris Walker, *General Manager USA*

Mr. Walker commercializes products and services for start-up companies in the Ag 2.0 sector. Mr. Walker is typically involved in company ownership, the raise of initial funding, and tactical management of passion projects. Currently working on his fifth start-up, Mr. Walker performs the role of tactical operator during early stages. With a deep passion for sustainable business models and a BA in Agriculture Economics from the University of Arizona, Mr. Walker has performed varied roles throughout his 21-year career: owner, principal, boots-on-the-ground, consultant, and employee. Mr. Walker is the General Manager USA with Heliospectra AB, an industry-disrupting, Swedish plant sciences company. Focusing on controlled-environment agriculture, Mr. Walker and

his team will further the drive to replace the inefficient, archaic lighting sources found in most commercial horticultural grow operations.

Jan Tufvesson, *Chairman of the Board, Independent Director*

Mr. Tufvesson has extensive experience, most recently as purchasing manager for Ericsson worldwide. Mr. Tufvesson is an investor and chairman of a number of businesses, some of which have been listed on the London Stock Exchange, Frankfurt Stock Exchange, and the NASDAQ OMX in the United States. Mr. Tufvesson holds an MSc from KTH – Royal Institute of Technology in Stockholm and Business Studies at IMD in Switzerland.

Andreas Gunnarsson, *Independent Director*

Mr. Gunnarsson was an Investment Manager Midroc New Technology. Previously, he was an Investment Manager at Saab Ventures. Mr. Gunnarsson has solid experience in starting up and operating high-tech companies.

Anders Ludvigsson, *Independent Director*

Mr. Ludvigsson is a Partner and Vice-Director at Ludvig Svensson AB, the world's largest producer of curtains for the greenhouse industry. Mr. Ludvigsson was previously President of Ludvig Svensson AB Dutch. He holds an MSc in Production Management and Investment Analysis.

Martin Skoglund, *Independent Director*

Mr. Skoglund is one of the founders of Heliospectra. He participated in the establishment of Chalmers Innovation. He is also the founder of Wood & Hill Investment AB with a focus on buyouts and real estate investments. Mr. Skoglund holds an MBA from Handels Goteborg.

Göran Linder, *Independent Director*

Mr. Linder holds an MSc in Electronics from KTH – Royal Institute of Technology in Stockholm. Mr. Linder is a director for the venture capital company Midroc New Technology AB. He is on the board of directors in a large number of groundbreaking companies and has more than 25 years' experience in business development and company leadership with focus on technical companies.

Kennerth Thulin, *Independent Director*

Mr. Thulin has been a member of the board of Swedbank Sjuhärad AB (one of Sweden's most profitable banks) since 2008, as well as chairman of Inkubatorn i Borås AB and Hillerstorps Trä AB.

RECENT NEWS AND PRESS RELEASES

Heliospectra Receives Major Order Valued at One Million SEK, *January 19, 2015*

Heliospectra announced that it has received an order worth about one million SEK for the LX60 system.

Heliospectra launches online sales, *November 18, 2014*

Heliospectra announced that the Company's products will be sold via www.wexthuset.com, the biggest website in Sweden for online sales of functional cultivation products.

Heliospectra US patent application approved by the US patent office, *October 9, 2014*

Heliospectra announced its US patent application approved by the United States Patent and Trademark Office concerning methods in optimizing LED lighting for plants.

Heliospectra joins EDEN initiative for developing safe food crops, *September 30, 2014*

Heliospectra announced that it has been named one of thirteen partners in an international consortium participating in the EDEN Initiative, a research program from Germany's DLR Institute of Space Systems.

Heliospectra in wastewater treatment project with top Swedish organizations, *September 25, 2014*

Heliospectra announced that it has been named a member of "The Warm and the Clean City," an advanced collaborative Swedish project in waste water treatment and energy recovery using algae.

Heliospectra agreement on ADR program cleared, *August 29, 2014*

Heliospectra announced that it has signed an agreement with BNY Mellon (The Bank of New York Mellon Corporation) to carry out an ADR (American depository receipts) program.

Heliospectra's largest order in USA - first part-order worth SEK 200,000, *July 10, 2014*

Heliospectra announced that it has sold 20 of its new LX60 lighting systems for an order value of approximately SEK 200,000. The sales contract also contains a letter of intent for the delivery of a further 180 lighting systems in the second half of 2014.

Heliospectra - one of Sweden's eight most innovative cleantech companies makes international tour, *June 9, 2014*

Heliospectra announced that it is one of the eight carefully selected Swedish companies taking part in this year's Swedish Cleantech Tour, travelling to London, Zürich, and Boston.

Heliospectra's new intelligent lighting system in place at Spisa, *May 20, 2014*

Heliospectra announced that it has launched LX60, the new generation of intelligent lighting systems. The patented LX60 system is more efficient, cheaper, and greener compared to earlier products.

THE COMPANY

- *Overview*

Heliospectra, (NASDAQ OMX First North: HELIO) (OTCQB: HSPY) was founded in 2006 and specializes in intelligent lighting solutions for plant research, greenhouse cultivation, and indoor growers. The Company now offers one of the markets most sophisticated products that stimulates growth characteristics and improves plant quality. This is done by combining versatile light-emitting diodes (LEDs) and remote sensing techniques, which make it possible to adjust the intensity of each wavelength to create a plant-specific light regime based on Company research. Heliospectra's patented system is significantly more energy efficient when compared to traditional high-intensity discharge lamps (HID) such as the high-pressure sodium (HPS) bulbs currently used in greenhouses and for indoor growers. The technology not only reduces energy consumption by up to 50%, but also helps stimulate growth characteristics and improve plant quality.

In the last few years, products with LEDs have become a possible alternative to HPS when comparing light intensity, efficiency, and, recently, even price. A comprehensive study was done by gathering greenhouse data and doing sustainability analyses, field tests, interviews, and surveys to determine the requirements for a greenhouse light fixture that would meet the needs of growers. It became clear that price and energy efficiency were highly desirable, so developing a light fixture to deliver as much light with as little spillover and the smallest shadow profile was extremely important. The study also stressed that a robust product that could handle high humidity and intense sunlight was desirable.

To achieve production quotas that meet today's demands, greenhouse growers use supplemental lighting during a large part of the year - plant growth is dependent upon light to stimulate photosynthesis. In northern countries, supplemental lighting compensates for a lack of direct sunlight, but, even in lower latitudes, supplementary lighting is used to increase the light-hours the plants receive.

Today, high-pressure sodium lamps, the same light source used for streetlights, are used almost exclusively in growing operations. HPS bulbs have a relatively high efficiency, around 30%, but a large part of the energy is dissipated in heat (Pacific Energy Center, 1997). Furthermore, HPS lamps are structured similarly to incandescent lamps, containing traces of heavy metals, requiring regular bulb replacement, and having a history of breaking and spreading glass in a grow operation.

Together with customers, Heliospectra has developed a number of different luminaires over the years. The result is the LX60 platform, an advanced cultivation luminaire with LEDs in a variety of wavelengths for which intensity can be adjusted individually. The frame is built around the LED panels with integrated drive electronics, active cooling control via an integrated microprocessor, and optional connectivity through Wi-Fi or an RJ45 Ethernet connector. Diffusion and target area are adjustable by choosing from several different optical solutions, granting the ability to focus light onto the growing area and customize the lamp's height and footprint throw deep into canopy. There are also different spectrums available depending on types of plants that are being grown.

High reliability is achieved with a robust design where sensitive components are protected in a separate electronics box. The cooling system is based on a custom made heat sink together with high lifetime fans that have been developed specifically for harsh environments. By including driver circuits on the LED PCBs, production costs were lowered significantly at high production volumes.

The lamp suspension system is effective and safe. The light fixture can easily be affixed to roof beams. The mounting hardware is designed to prevent the lamp from rolling when it is cleaned or the LED panels are adjusted, and it is compatible with various beam sizes. The hardware also allows easy removal for transport and storage.

A typical system consists of multiple luminaries that are combined with different types of sensor technologies: energy harvesting light sensors at plant level and sensitive optical sensors above the plant canopy. The energy harvesting light sensors will report light spectral intensity, while the optical sensors look at reflected and fluoresced light from the plants that is reported to the patented Heliospectra biofeedback light regulation system. After the sensor information is processed using patented algorithms developed by Heliospectra from years of plant physiology experience, the light intensity and wavelength recipe will be adjusted according to the specific plant type and desired crop characteristics.

It is common to have several thousand lamps in a typical large-scale indoor or greenhouse operation. Today, these lamps are high-intensity discharge (HID) gas lamps such as conventional high-pressure sodium (HPS) or metal halide (MH) lamps that consume approximately 600-1000 watts of power each. Therefore, the cost of lighting and cooling of the lights is a significant part of the total cost of operation, creating a profitable incentive to reduce energy consumption. Research indicates that LEDs outperform traditional incandescent lights, and growers worldwide are transitioning to this new technology. There is a strong likelihood that in the future, HPS lights will have to be replaced due to legislation similar to the way incandescent lights are being replaced in markets such as Europe. Subsidies and deep rebates (up to 50%) are currently available for LED luminaires specified into new and retrofit construction.

Heliospectra intends to capitalize on this need by providing a holistic solution for commercial growers. The Company is currently launching its first commercial high volume product for professional growers, the LX60 system. This system is not only energy efficient, but it also provides farmers unprecedented control over plant growth, development, and nutritional content.

PRODUCTS AND TECHNOLOGY OVERVIEW

Today, it is important to be able to grow produce quickly, effectively, and efficiently. Here, greenhouses have a central role because they create an optimal growing environment that makes it possible to cultivate produce year-round in most areas of the world. To achieve production quotas that meet today's demands, greenhouse growers use supplemental lighting during a large part of the year - plant growth is dependent upon light to stimulate their photosynthesis. In northern countries, supplemental lighting is integral to the agricultural industry, compensating for a lack of sunlight. Even in lower latitudes, supplementary lighting is used to increase the hours of light for the plants. Furthermore, many farmers are manipulating vegetative and flowering photoperiods in commercial operations by extending day light hours in a grow operation, regardless of location.

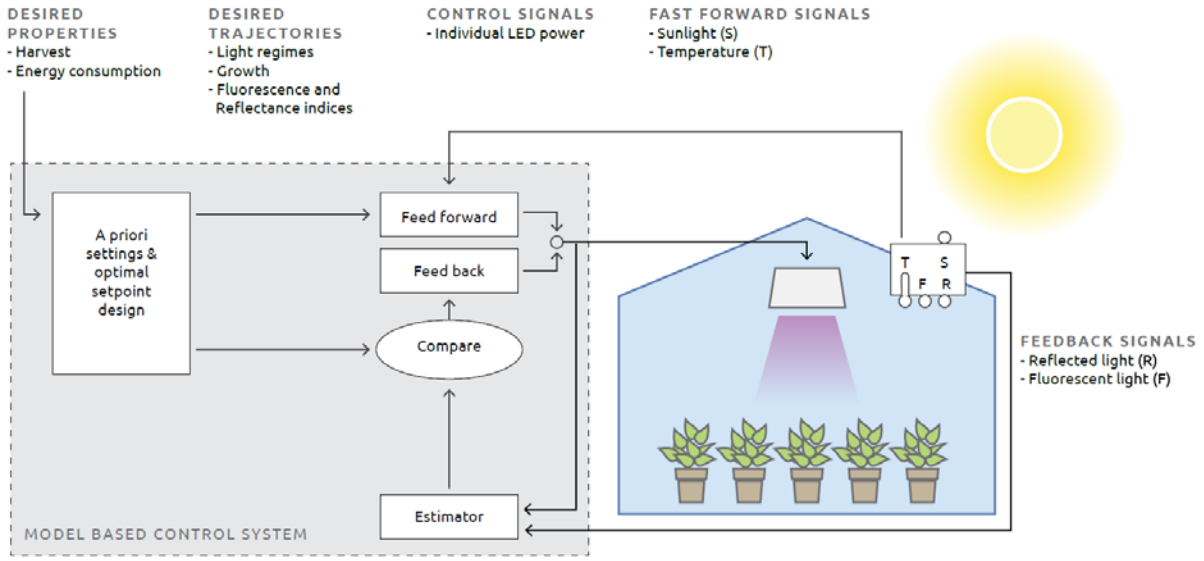
Currently, greenhouses are almost exclusively equipped with high-pressure sodium (HPS) lamps which are similar to traditional street lighting. These are used because of their relatively high efficiency (approximately 30%) compared with other alternatives. However, the majority of the energy used by the light is lost through heat generation (Pacific Energy Center, 1997). In addition, HPS lamps, similar to incandescent bulbs, contain traces of heavy metals. These less efficient variants are being phased out due to environmental reasons (Swedish Energy Agency, 2011). These types of lights are still utilized by the thousands in many greenhouses, causing large energy consumption and creating large quantities of hazardous waste. The cost of running these old lighting technologies is high, creating a large incentive to reduce energy consumption in order to reduce costs and further the bottom line.

Over the last few years, products with LEDs have become a possible alternative to HPS when comparing light intensity, efficiency, and price. A comprehensive study was done by gathering greenhouse data and performing sustainability analyses, field tests, interviews, and surveys to determine the requirements for a greenhouse light fixture that would meet the needs of growers. It became clear that price and energy efficiency were highly desirable characteristics. As a result, Heliospectra made it a priority to develop for large scale greenhouses a specialized lighting system that delivers to the plants as much light as possible with as little spillover and smallest shadow profile.

Heliospectra has developed such an advanced lighting system. The system is composed of intelligent luminaries combined with different types of sensors and a software based control system. Each fixture uses LEDs (light-emitting diodes) with up to nine different wavelengths to ensure maximum flexibility as each wavelength can be individually controlled. This allows the grower to closely control the intensity of various wavelengths to accurately match the spectrum to a specific plant at its current phase of development in order to enhance desirable growth characteristics and reduce undesirable growth characteristics. The spectral distribution of the Company's lighting systems (400nm to 735nm) is consistent with the action spectrum of photosynthesis and key photomorphological receptors. In addition to the basic wavelengths for driving photosynthesis, certain combinations of different wavelengths can be used to give signals to the plants. For Example, this can be used to accentuate the taste of the basilica or

to start/stop flowering. Heliospectra fixtures are technologically advanced and can monitor the growth of the plants, adjusting the lighting as needed, saving lots of energy compared to conventional lighting methods.

Heliospectra luminaires have built-in intelligence and communicate with a central control system. In Heliospectra's original patent, there is an additional component of sensors that detect the reflected and fluorescent light from the plants. This allows the system to detect how well the plants are doing and assimilate the light.



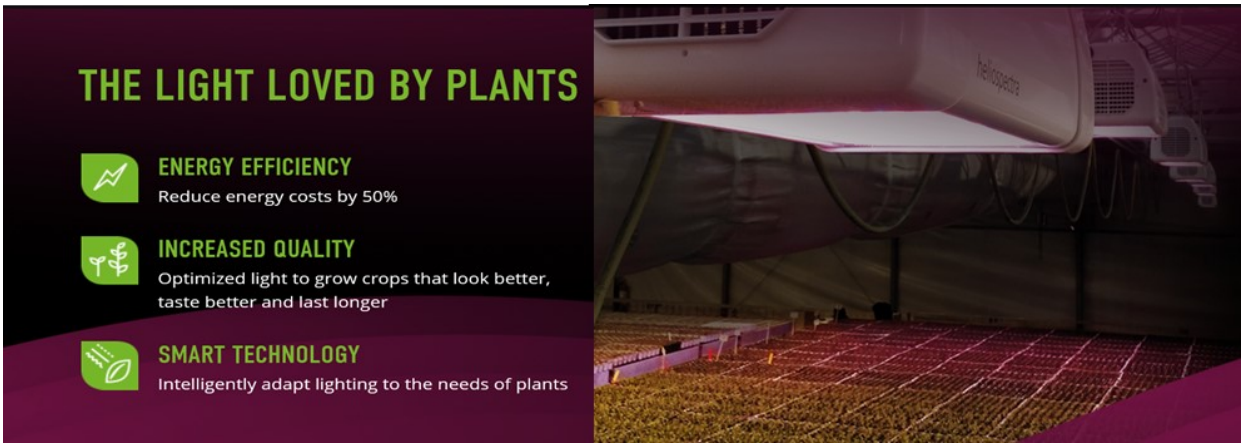
This proprietary biofeedback system uses advanced software algorithms to maintain spectral quality. The use of intelligent wavelength controls includes automated spectral tuning and optimization that make the light quality of the LED systems consistent with the action spectrum of photosynthesis and key plant receptors. This system controls the intensity of the light's wavelengths to match each plant's needs to maximize yields, a function not possible with conventional lighting systems.

By utilizing the Company's advanced LED lighting system, Heliospectra has created many benefits compared to traditional lighting methods, such as:

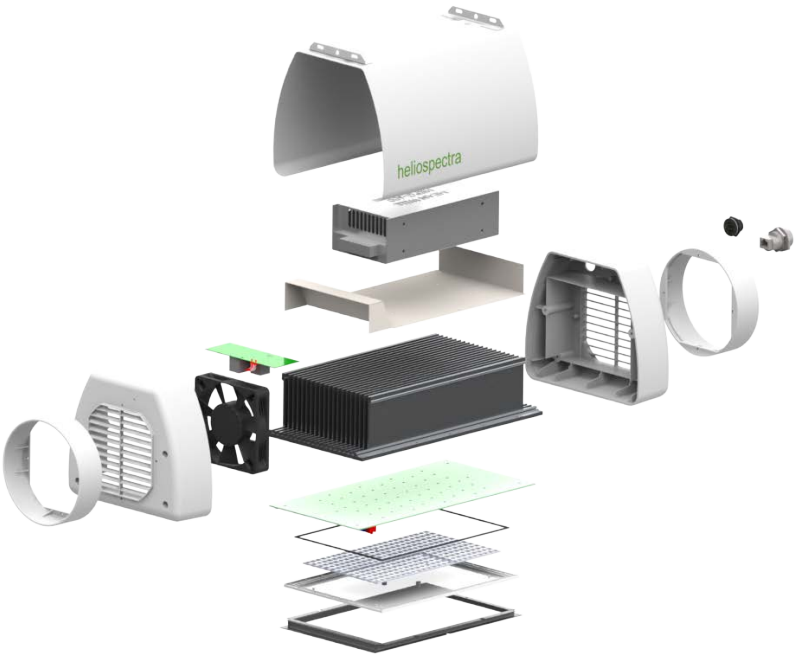
- up to 50% reduced energy consumption
- better quality plants, which in turn provides benefits such as:
    - reduced (in many cases half) the scrapping in the greenhouse
    - approx. two weeks longer shelf life
    - hardier plants that can better handle transport and storage
    - better tasting produce
    - more nutritious produce
- higher greenhouse throughput
- the ability to control production and growth rate to meet demand

Hardware

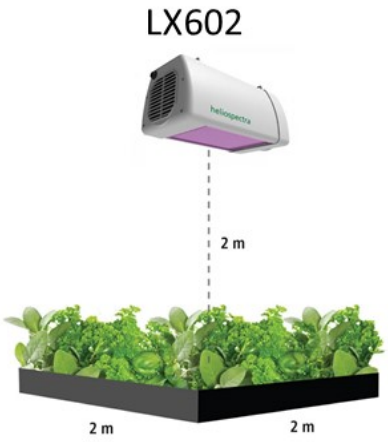
Heliospectra's hardware portfolio comprises customizable LED light units and highly sophisticated sensors. Previously, the Company sold over a hundred units of an expensive, custom-built unit named the L4A. During the past year, the Company has developed two new lamps using the above technology - the LX60 and the RX30 (replaces the L4A) - with a focus on cost, function, and use of a common platform. These two units replace and enhance the Company's previous product catalogue. Previously, the market readily accepted the L4A as a state of the art lamp due to its ability to be customized per species being grown.



The RX30 remains one of the most versatile, cutting edge tools for light plant research. As previously mentioned, the Company has recently transitioned into a new and improved, more commercially appropriate product: the LX60. The Company's leading product is a highly sophisticated, energy-efficient, modular LED lamp that is internet enabled, allowing for online monitoring, scheduling, and control of plant growth. These various functions and characteristics make it ideal for use in commercial and R&D grow operations.

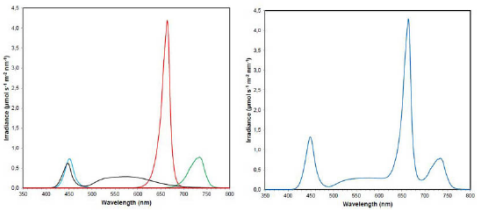


Like the RX30, the LX60 can customize a dynamic light recipe per spectrum and intensity over a given period of time. Optics, diodes, CPUs, and other components can be customized per customers' species or usage, but two primary versions are stocked and sold: a greenhouse model and an indoor model which use different spectrums and light footprints



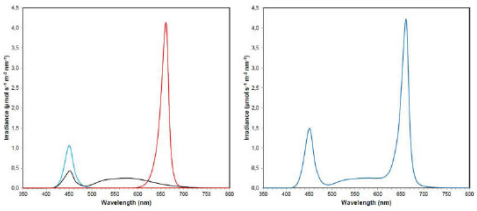
Spectral & Full Spectrum Output Options

C-Plate
Wavelength (nm)
450
5700K
660
735



Optics: C-Plate

G-Plate
Wavelength (nm)
450
5700K
660



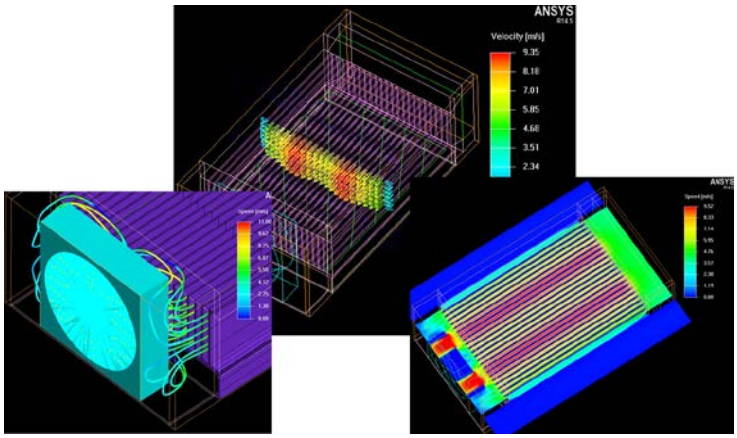
Optics: G-Plate

The LX602 is optimized for greenhouse growers where their plants are typically quite far away from the lights due to the equipment being used between the plant canopy and the light. Therefore, it is designed to focus on a 6.5 ft. x 6.5 ft. area (2 m x 2 m) when hanging 6.5 ft. (2 m) above the plant canopy. The LX601m, on the other hand, is designed for indoor growers, typically growing medical cannabis, where the light is close to the plants, normally covering a 4 ft. x 4 ft. area (1.2 x 1.2m).

The C-plate has a spectrum designed for flowering types of plants such as ornamentals or medical cannabis, while the G-plate has a spectrum designed for leafy greens.

The Heliospectra LX60 has the same number of LEDs and similar power to the Heliospectra L4A, but with a number of improvements such as reduced weight and size, newly developed optics to optimize the beam pattern on different surfaces, different application areas, and nearly 50% more light on the plants compared with L4A, all at a lower price.

	LX60	**L4A**
Weight	17.6 lbs	28.7 lbs
Dimensions	16.7” × 8.6” × 7.8”	23.4” × 15.2” × 6.2”
Price	1999 USD	7499 USD
Optics	Application specific	Basic reflector
Light efficacy	1.7 µmol/J	.97 µmol/J



The LX60 product is ingenious due to its ability to answer the demands of the two different growing environments and customer segments, while simultaneously offering niche growers a highly customizable, modular product.

The LX60 was developed to operate for up to 50,000 hours in harsh environments. By sealing the enclosure for the control electronics, an ingress protection rating of IP54 has been achieved. Due to the small size of the LX60, a significant amount of development effort was invested in thermal management. Computer simulations (pictured above) were used extensively to assure that the thermal design would function well in the greenhouse environment, as effective cooling is a major factor in product lifespan.

The LX60 has been independently tested by horticultural light expert Bruce Bugbee with very positive results:

> "We recently tested a new, small-profile, 600-W LED fixture from Heliospectra in Sweden (model LX601G). Our measurement using flat plane integration indicate that this fixture has an efficiency of 1.7 micromoles per joule, which is equal to the best LED and DE-HPS fixtures we tested. This fixture had a relatively broad distribution of photons compared to other LED fixtures we tested."
>
> From http://www.plosone.org/annotation/listThread.action?root=82694

By using the optional air duct attachments, several units can be put together in series to allow for the intake of cool air and the exhaust of hot air which can then be reused.

The unit is designed to fit into any type of growing environment with a well thought-out hanging system using C-brackets, V-hook, or Carabineers.

C-brackets V-hooks (included) Carabiners

Beside the lamps, external sensors are an integral part of the biofeedback system. Lamp-mounted, energy harvesting environmental sensors measure and track the temperature, humidity, soil moisture, and light spectrum and intensity at the plant level. Intra-canopy sensors are sensitive optical sensors placed above the plant canopy to capture the physiology of the plant.

HARDWARE

LX60

The LX60 lamp has independent intensity control for each wavelength. Payback period (compared to HPS) about 2 years based solely on energy savings.

Status: LX60 is ready for delivery.

LAMP-MOUNTED SENSOR

Lamp-mounted sensor for plant monitoring. The sensor can be retrofitted to legacy lamps and is a crucial component in the patented Heliospectra biofeedback light regulation system.

Status: Development is underway.

INTRA-CANOPY SENSOR

The Intra-canopy sensor is placed just over the top of the plant canopy. Data are sent using ultra low power radio technique to receivers in the lamps above, then collected and processed by the patented Heliospectra biofeedback light regulation system. The lamps are set so that a predetermined light recipe, daily light integral or spectral ratio is maintained, depending upon the control system.

Status: Beta testing is carried in 2014.

Software

Heliospectra's software portfolio includes a web interface, a proprietary algorithm driven software, and light regimes.

Using algorithms, the Web-based user interface can be used to control the lighting fixtures based on the analysis of data available from the sensory network. Light regimes (or species specific lighting) help in optimizing and modulating plant growth. These regimes are created from analysis of hours of live data, collected through the sensory network, that is then stored in the data center. The most important software is the control system that uses the analyzed data feeds to modify the light spectrum on the LED fixture.

The sensory network provides a real-time, global database of information that can be further customized and distributed per organization need. The sensory network is a potential revenue-generating opportunity in the future. These sophisticated sensors create a sensory network that provides an essential data feed for the patented light regulation system, enabling remote services and custom control to improve crop yield and quality.

SOFTWARE

WEB BASED USER INTERFACE

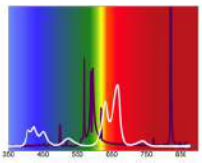
Web-based interface for displaying status and controlling of lamp. Runs on PC, Mac and Android. Sets light regimes in LED systems.

Status: The interface is ready for delivery.

DATA CENTER AND CONTROL SYSTEM

Heliospectra data center for the collection, analysis and implementation of light regimes (recipes) for different types of plants.

Status: Beta Testing of intra-canopy sensor and spectral regulation, cloud based development is underway.



LIGHT REGIMES

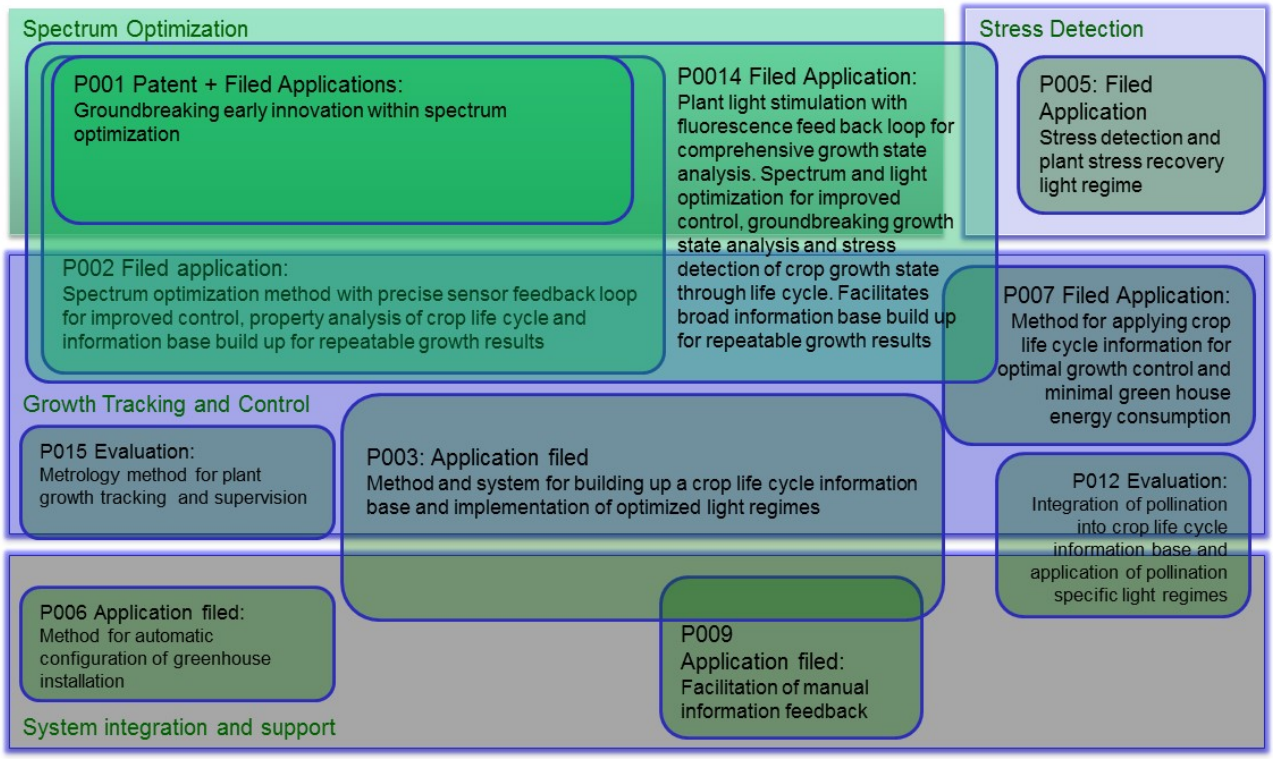
Every crop has a different preference for light. The Company offers specially tailored light regimes for the most of produce (which can be expressed as a manual for expressing how growth characteristics of a plant develop under different spectra). By controlling the total light environment of a crop, the grower can affect time to market, taste, size, weight, hardiness, etc.

Status: dozens of regimens are ready for delivery and development prog.

PATENT PORTFOLIO

Since the beginning, Heliospectra has known that the key factor for efficient cultivation of plants is light, and is therefore focused on creating different lighting regimes for different plants. To use the light regimes in dynamic environments requires sensors, feedback, and regulation software that can optimize the light regime to create the best environment for the plant's wellbeing. Heliospectra has worked systematically with their intellectual property development to achieve a strategic and strong patent position in the market for LED lights. The strategy is to develop and protect Heliospectra's unique methods for biofeedback controlled lighting systems with a strong patent portfolio.

The chart below depicts how Heliospectra is working to cultivate a patent portfolio surrounding the processes in crop production where light regulation is needed or software plays a critical role in order to achieve the desired properties of the plant.



- *SPECTRUM OPTIMIZATION* is the main process for Heliospectra's Holy Grail, i.e. the application of different light regimes to different plants in order to control which properties of the plant will develop or recede.

- *STRESS DETECTION* is a vital parameter in Heliospectra's automated lighting system. When light intensity is increased, plants become stressed (i.e. have received too much light) and cannot accept more light. Sensing stress and controlling light accordingly is an important part of the Holy Grail. Heliospectra has also developed a light regime to bring stressed plants back to a normal state.

- *TRACKING AND CONTROLLING* plant development is the main process for the sensors integrated into the lighting system, and managing the information from these sensors will be used to set light levels.

- *SYSTEM INTEGRATION AND SUPPORT* is the generic name for innovations that make it easier for growers to use Heliospectra lamps.

The company is continuously collaborating with Prospero, specialists in IP strategy, and Awapatent, a patent agency. In 2013, Heliospectra became a protected trademark in Sweden, and, today, applications in other countries are currently in progress. In early 2014, Heliospectra received industrial design protection of the LX60, the high volume product launched in 2014.

Heliospectra is also developing unique optical sensors that will be an important part of the Company's intellectual property. There are two types of sensors: those that measure incident light and those that measure signals from the plants. The plant sensors use advanced optics to detect extremely weak light emitted by the plants; the incident light sensors measure the spectral quality of the light reaching the plants.

During the past 18 months, Heliospectra has submitted six patent applications in their field of research to supplement the basic patent application from March 2007. The recent applications address methods for optimizing LED lighting for plants and streamlining the work processes of future cultivation. The basic patent is now approved in the USA, Russia, Hong Kong, and China, and is under application process in the EPO, Japan, Canada, and South Korea.

Heliospectra's patent portfolio includes applications for spectrum optimization, stress detection, growth detection and control, as well as system integration and support. A list of patents is included below:

Patent	
Method for implementing a crop growth lighting regime.	Patent approved in Russia, China, Hong Kong. Approval pending in US, EPO, Canada, Japan, Korea.

Patent Applications	
Method for implementing a crop growth lighting regime	Patent application filed at EPO, 2012-09-24, EP12185721.
Method for decision oriented feedback control for growing plants	Patent application filed at EPO, 2013-11-07, EP13191915.1
Recovery Regime	Patent application filed in SE, SE-21061056, 2012-12-20. Scientific paper submitted
Auto configuration and calibration of physical greenhouse installation	Patent application filed at EPO, 2014-03-24, EP14161251.5
System for energy optimization	Patent application filed at EPO, 2013-07-10, EP1317582.6
Information Feedback	Patent application filed at EPO, 2013-10-22, EP13189630.0

BUSINESS MODEL

Heliospectra is involved in the controlled-environments agriculture and commercial horticulture sectors, each of which requires a slightly different marketing strategy. The Company has introduced ground-breaking technology that is likely to change the commercial grow lamp paradigm. The business model exploits, from multiple angles, a powerful newly opened opportunity in the sector. At the center of the business model is its patented biofeedback system and LED lamps that create sustainable current and future revenue streams.

Heliospectra leverages its patented technology to create a versatile business model, allowing for multiple current revenue streams as well as future recurring revenue streams. The Company generates revenues from various sources including sales for the replacement of old HPS lights in the greenhouse market, new sales to cultivators in other agricultural sectors, aftermarket sales of software and hardware, subscription fees from plant biofeedback data, equipment lease financing fees, and intellectual property licensing fees. The Company's current revenue model is composed of the following income streams:

1. **Revenue from replacement sales of old HPS lights in the greenhouse market:** This revenue stream is a consistent component of Heliospectra's current and anticipated future revenues. The Company's initial focus is on the greenhouse market, in regard to replacements for HPS bulbs and other similar conventional technologies. This is a significant market with approximately 2 million replacement bulbs. The next stage for the Company is to penetrate newer markets in other sectors.

2. **Revenue from new sales to cultivators in other agricultural sectors:** This revenue stream is the other primary component of Heliospectra's current and anticipated future revenues. In addition to the greenhouse market, there are a variety of other uses for Heliospectra products such as lighting for tree seedlings, plants in botanical gardens, algae for biofuel and nutrients, growth chambers at all major universities and research labs, as well as the U.S. market for medicinal plants, which is very large.

3. **Revenue from aftermarket sales of software and hardware:** As the Company begins selling intelligent lights, it will build a robust user base, creating numerous opportunities for aftermarket sales of software with new features and new hardware. These will include specialized lamps and advanced sensors targeted for add-on sales of accessories, software that is compatible with the old system, as well as upgrades of various components. Since many customers will look to upgrade their software and hardware as new versions are released, Heliospectra ensures its upgrades of various components are able to be retrofitted to older Heliospectra lighting systems or legacy systems. This not only increases customer loyalty by enabling users to bypass full cost of replacement, it also creates the opportunity for Heliospectra to build recurring revenue streams through upgrade subscriptions. The Company has begun engaging in discussions with partners such as utility companies and clean-tech financing companies to underwrite installations by offering periodic payments and enabling an ongoing revenue flow in which upgrades can also be included.

4. **Subscription fees from plant biofeedback data:** The Company also intends to monetize the data collected through its sensory networks by leveraging its ability to analyze, re-package, and sell this data. The Company can gather plant-level data from all of its users, which will be directly correlated to quality and yield results. With this data, Heliospectra can predict and forecast plant behavior and characteristics, and create species-specific light regimes, etc. Once the complete biofeedback system with data via the cloud is fully developed, Heliospectra believes it can generate additional ongoing revenue opportunities with or without the need for creative financing solutions.

5. **Revenue from equipment lease financing:** Heliospectra believes that most growing environments (controlled-environment agriculture) will be highly intelligent in the future, integrating all aspects of cultivation, such as energy use, HVAC, etc. The Company expects to create a future recurring revenue stream which will include leasing hardware on the back-end and then selling complete, financed systems with information. This integration will allow customers to achieve a flexible production volume with predictable results, regardless of the type of plant, world-wide location and environment in which they can grow.

6. **Revenue from intellectual property licensing fees:** Since Heliospectra's intellectual property is primarily software that controls the luminaires and integration with plant specific sensors, the Company believes it will also have significant licensing opportunities to other lighting manufacturers, commercial operators in a variety of agricultural divisions, as well as horticulture research professionals.

SALES AND MARKETING

Heliospectra's products are used in diverse industries. The Company initially targeted the plant research industry and controlled-environment agriculture. However, the LX60 is an ideal product for professional, commercial growers. The medical plants industry presents another significant corporate opportunity, including the medical cannabis market in North America.

Heliospectra has many letters of intent and real-time proof-of-product trials with potential customers regarding sales and delivery of the Company's next generation of products. Market potential is significant and reaches multiple billions of dollars. As lamp technology progresses, customers are eager to learn about non-HID lamps. Therefore, tapping this massive demand accurately is critical. The US sales effort involves corporate relationship building at the highest level, frequently taking meetings on-site to demonstrate the effectiveness of the LX60 in commercial environments and ensuring that all decision makers – accountant, owners and principals, as well as head growers - are aware of the value.

Heliospectra's technology is a patented system that includes intelligent LED light, sensor technology, and specialized software for optimized plant growth. The first product being launched on the market is a controllable LED lamp, to be followed by a selection of sensors that will be incrementally introduced to the market. Heliospectra has received several awards, including the Swedish American Chamber of Commerce Green Award for 2013 and the "Top 33 list" in Affarsvarlden (Business World, a Swedish language magazine), among others, and was also highlighted as one of Sweden's hottest companies of 2012 by Affarsvarlden. The Company received the World Wildlife Fund award, "WWF Climate Solver 2012", and was included in the environmental organization Sustainia's "World's top 100 environmentally innovative companies" list for 2013.

Heliospectra evaluates each specifically targeted market on an individual basis when developing their methods to build out the Company's marketing impact. Their approach has been refined through years of successful operations in their respective industries and includes the following elements:

- Sector specific marketing: greenhouse, indoor, species, and/or commercial vs personal use
- Develop working partnerships with resellers, leasing, and financing parties; grow contractors, consultants, and parties tied into utility-centric rebate/incentive programs
- Developing a comprehensive online marketing plan through media partners that includes Heliospectra's email database, banner ads, sponsorships, co-branded email, and other creative means to reach online audiences
- Building out the new company's online presence by updating its website and integrating it with social media
- Ensuring that marketing programs are accurately reflected on Heliospectra's web site and that all required lead acquisition components are fully in place

- Leveraging local events & celebrations as opportunities to increase awareness of the compliance, security, and oversight Heliospectra brings to the cannabis industry
- Establishing a presence in targeted local media sources, such as magazines, visitor's centers, radio, and TV
- Representing Heliospectra by attending trade shows and related industry events
- Creating partnership-marketing relationships with other companies in the industry to create profitable synergies
- Creating community partnerships to cross-promote each other's businesses and strengthen the local economy, while benefiting everyone's bottom line

By harnessing the power of social media and interactive online environments, Heliospectra is developing an integrated approach to customer engagement and advertising for both themselves and their clients' businesses. Heliospectra's marketing strategy is to partner with businesses, trade associations, reform organizations, and government officials in the markets the Company currently operates to help draw business and increase compliance, oversight, and security for the benefit of the industry as a whole.

OPERATIONS

Heliospectra AB in Sweden is the parent company which owns one subsidiary in the USA, Heliospectra, Inc.

Heliospectra has a unique environment in which to develop its products: a fully-staffed and active plant laboratory. Since these products are intended to improve plant lighting technology, Heliospectra has invested in a fully-equipped, temperature, and humidity controlled laboratory for growing plants and has assembled a team who have been trained in plant science. Heliospectra products are extensively tested in the lab before being released to the marketplace.

Through years of testing, Heliospectra has learned how various families of plants react differently to lighting conditions. Statistical analysis techniques have been used to evaluate plant growth and morphology resulting from experimental light regimes. Algorithms to express control of plant growth and commercially valuable characteristics are under development. Using Heliospectra's patented biofeedback light regulation system, researchers and growers will soon have exquisite control over plant development in their greenhouses and laboratories.

Heliospectra has a very competent staff, where all developers are university graduates within computing, IT, or systems development. Firmware and software for the lamps and sensors has been largely written by Heliospectra staff.

The hardware has been developed in collaboration with its subcontractor, Aluwave (www.aluwave.se), in Gothenburg. Aluwave specializes in producing LED-based light fixtures and has the capacity to produce up to 10,000 LX60s annually. The LX60 was developed to operate for up to 50,000 hours in harsh environments. By sealing the enclosure for the control electronics, an ingress protection rating of IP54 has been achieved. Due to the small size of the LX60, a significant amount of development effort was invested in thermal management. Computer simulations were used extensively to assure that the thermal design would function well in the greenhouse environment, as effective cooling is a major factor in product lifespan.

RECENT FINANCINGS

Until mid-2014, Heliospectra has been financed by venture capital. The major owners to date are:

- The Weland Group, a large Swedish industrial group,
- Midroc, a large international industrial conglomerate in construction, oil and gas, and
- The Swedish Industrial Fund, one of Sweden's major venture capital investors in technology based companies.

A total of approximately 10M USD was raised before the IPO on the Swedish Nasdaq-OMX First North Exchange on June 18, 2014. In conjunction with the IPO, another 5M USD was raised and the IPO was done at the conservative level of 15M USD, equaling the total amount of capital raised.

RESEARCH AND DEVELOPMENT

Heliospectra has developed its products using deep knowledge about how plants are influenced by light. This is based on years of systematic research done by the company's staff in close cooperation with leading customers. Spisa (formerly Swedeponic), the largest producer of fresh herbs in Europe, has been one of the major contributors. Indoor growers in Europe and North America have also contributed significantly to these efforts.

Heliospectra is co-located with SIK - the Swedish Institute for Food and Biotechnology, a unit within the SP Technical Research Institute of Sweden, with headquarters in Göteborg, Sweden.

SIK has close cooperation with the Swedish as well as international food industries. There are over 100 employees involved in everything from in-depth analysis of food compounds to logistics. Heliospectra has managed to leverage this expertise.

Heliospectra has its own environmentally controlled lab with twenty different growing compartments plus a Conviron A1000 growth chamber. In each compartment, light spectrum is varied, leading to an understanding how light effects the plants.

Besides having its own staff of plant biologists with Ph.D.'s, Heliospectra is in close contact with the international scientific horticultural community. Heliospectra participates in the major international conferences and also publishes its own scientific papers and posters. This is one of the reasons why the company was asked to be a collaborator in a European Union project

managed by DLR, The Germany Space Agency, with participants such as Wageningen University, the leading horticultural university in the world.

Part of the biofeedback system that Heliospectra is developing is financed through a grant from the Swedish Mistra Foundation in the project iLight, where Professor Torsten Wik and two Ph.D. students from Chalmers University of Technology are involved together with Heliospectra's own experts.

Most lights used for growing today, i.e. HPS lights, are static, meaning the spectrum does not change throughout the day. This is in stark contrast to nature where light changes throughout the day and goes through cycles. In the early morning, light has a red hue, changing into a full-spectrum white during the day, and ending the day with a more blue hue. These changes in spectrum are used as behavioral signals to the plants: in the morning, the plant needs to "wake up", similar to when we humans drink coffee, while, in the evening, the plants needs to close down its processes and prepare for "sleep".

Heliospectra's luminaires can replicate these changes in spectrum and thereby control the way plants are growing. Changes in spectrum can influence the morphology of the plants (i.e. the physical form and external structure of the plants) and the outcome of various other features such as taste and smell, all while also improving yield and effecting the grow cycle as a whole.

By altering the spectrum, significant improvements can be made for all types of plants. One such example is basil, which is one of the larger greenhouse crops.

Before: Traditional HPS Luminaires

Customer problems with HPS lamps

- Temperature intolerance of basil
- Challenging distribution due to short plant lifetime
- Consumers demand top quality
- Need to reduce OPEX
- High amount of waste due to the fact that retailers can cancel an order on short notice

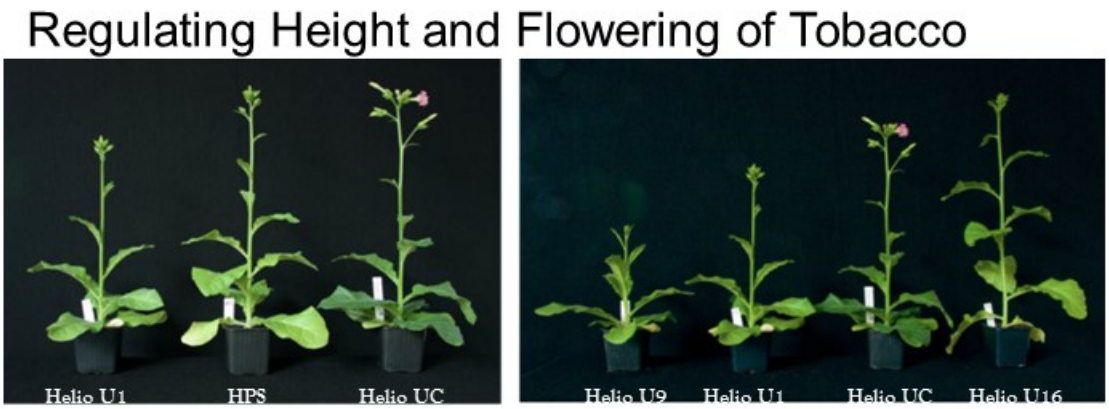
After: Heliospectra's Luminaires

Heliospectra's solution

Installation of an intelligent grow lighting system to optimize plants' growth. **Results from laboratory:**

- **+37-66%** increase in biomass
- **+9-14%** growth speed
- **-25-35%** waste
- **-24%** electricity costs
- Improved quality, taste, shell life

This works for flowering plants as well. Tobacco is a good example of a flowering plant where flowering can be started or stopped and the height of the plant affected.



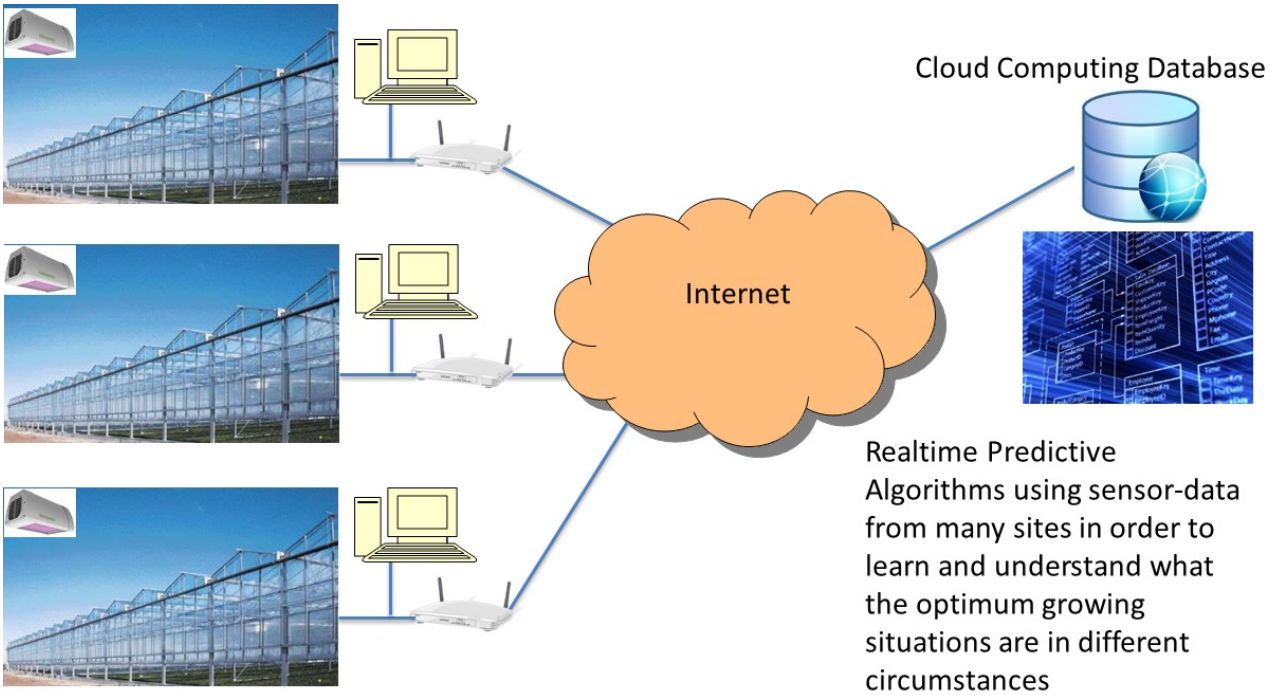
Chrysanthemums are so-called short-day plants that flower when the day becomes shorter. This is similar to cannabis, which is also a short-day plant. One of Heliospectra's customers in the USA has been able to reduce the flowering time of Cannabis by two weeks using the ability to control the spectrum during the growth cycle. Heliospectra has been able to control the height and flowering time of the chrysanthemum in order to avoid the use of carcinogenic growth retardants that are used by the industry today. The same goes for the typical Christmas flower, the poinsettia, with which growers have problems controlling the height and flowering so they are ready in time and don't develop too quickly.

Reducing height of chrysanthemums for UK grower in order to avoid growth retardants

Dill is one of the hardest herbs to grow as it is very important to get the properties right at the early development of the plant. By creating an optimal light regime, Heliospectra not only managed to make the dill sturdier and grow upright from the start (as shown in BR2 and D1 below), but can also replicate the poor development that coincides with the use of HPS bulbs.

Regulating Development of Dill

The industry is becoming more automated over time and we see some European customers who are totally automating their environment, installing automatic conveyor belts, pick-and-place machines for plants, and automated systems for packaging. This is the direction in which the whole industry is moving. Heliospectra's technology fits right into this scenario whereby sensors and control create large sets of data that can be used for analysis and continuously refined. There is a future where this potentially turns into a form of Big Data, wherein the data itself becomes valuable and allows for new types of business models such as Growing-as-a-Service.


Cloud Computing Database
Internet
Realtime Predictive Algorithms using sensor-data from many sites in order to learn and understand what the optimum growing situations are in different circumstances

MARKETS

Heliospectra is focusing on three different market segments and has custom designed optics and diode arrays to meet each demand:

- Research
- Commercial growers of vegetables and flowers
- Legal cannabis industry

RESEARCH INDUSTRY

The research market is where Heliospectra started making inroads with its first commercial model the L4A, which has now been replaced by the RX30. This market is composed of plant researchers that are studying plants at universities, institutes, and large agro-tech companies. Typical for these customers is that they have controlled growing environments, so-called growth chambers or growth rooms.

This is a large market including companies such as Monsanto, Syngenta, Bayer, Dupont, Dow, and BASF that are developing seeds, fertilizers, and crop protection chemicals. All of these companies have very large research facilities including growth rooms and greenhouses. For example, one of the major companies has over 90,000 ft^2 of plant area composed of 60,000 ft^2 of greenhouses, including 26 greenhouses on the roof, where each greenhouse is 2,400 ft^2 with 60 1000W HPS lights in each. They also have 30,000 ft^2 of growth rooms where the rooms are typically 200 ft^2 with 144 400W lights in each. These premises are not only being expanded in size but also modified to include more efficient LED lights in order to save energy and replicate what the industry is evolving towards.

In each country, there are usually at least one and sometimes several universities focusing on agriculture. They have the same issues as many growers, such as the requirement to reduce energy consumption. As an example, the largest consumer of electricity at Cambridge University is the plant laboratory with its many lights running all the time.

Heliospectra has been successful selling to a number of these universities and research institutes across the world:

Customer	Country
Australian National University	Australia
Hempflax Agro	Holland
Aralab	Portugal
Danish Center for Food and Agriculture – Aarhus Universitet	Denmark
DLR – German Space Agency	Germany
Aberystwyth University	UK
Eon	UK
University of Western Australia	Australia
National Center for Scientific Research	France
Invitrotech	Japan
Kyoto University	Japan
Danforth Plant Research Center	USA
Forschungszentrum Jülich	Germany
University of Sydney	Australia
Turku Universitet	Finland
Controlled Environmant Laboratory for Life Sciences	Ireland
University of Minnesota	USA
MIT Media Lab	USA
Google	USA
Sveriges Lantbruksuniversitet	Sweden
Botaniska Institutet	Sweden
Conviron	Canada
Swedeponic	Sweden

In order to reach these customers, Heliospectra has developed a relationship with Conviron, the premier provider of controlled growing environments to the research industry, through which Heliospectra's products have been successfully sold to several of the customers above. Other similar resellers are Aralab out of Portugal and Weiss Technik in the UK.

The volumes in the research market are substantial, but the relationships with these customers also drive innovation and development. As an example, Heliospectra is working with DLR, the Germany Space Agency, regarding how to build life support systems for space travel. These systems are first tested in inhospitable environments like the Antarctic which is unreachable 180 days a year. The European Union has granted the consortium 4.5M EUR, and Heliospectra's task is to develop the advanced lighting systems for plant growth for this mission. Another example is NASA using Heliospectra's products for plant growth in a Mars mission simulation, wherein they put together a team that was locked inside a mountain for an extended period of time.

In another example, the Goteborg Botanical Gardens are using Heliospectra LX60 to grow rare species of succulents, achieving some major improvements in their plants. Moreover, Heliospectra is working with MIT Media Lab, and, together, they are using the products in the CityFarm project through which they are developing new ways to grow food in the future.

Besides these segments, there are other applications such as the use of algae for nutritional purposes, biofuel, and waste-water treatment. Heliospectra is involved with a local Swedish government in analyzing how algae can be used for the treatment of waste-water. The algae market is still in its infancy but has a very large potential and is currently driving innovation.

GREENHOUSE INDUSTRY

The greenhouse and indoor commercial grow industry is experiencing similar development all over the world. Japan and South Korea are aggressively developing vertical farming solutions. China has an even bigger challenge. If China were self-sufficient with regard to agricultural products, it would have to feed 20% of the world's population with only 10% of the world's arable land and 6% of global water resources (The China Analyst April 2014). Additionally, the low quality of China's natural resources exacerbates the country's resource shortage. Furthermore, food scandals, whether comical glow-in-the-dark pork chops or melamine-tainted milk, emerge in China with alarming regularity. Unsurprisingly, China's growing middle class is demanding imported food and beverages so long as there is apprehension regarding the quality of local products. One solution to this is to grow local food in controlled environments. Albeit an existing concept, the controlled-environment agriculture (CEA) sector has resurged, in earnest, as a new, rapidly expanding industry.

The environmental challenges posed by agriculture are formidable and will only become more pressing as growing needs for food worldwide continue to increase. This has created a massive opportunity to leverage technology that allows producers to conquer these challenges, especially if these technologies have positively impact the bottom line.

The challenges the CEA industry faces serve to drive innovation. New farming technologies that allow plants to grow without direct sunlight in indoor environments close to or within cities are rapidly emerging. Global indoor and greenhouse farming is now competing with conventional farming. These CEA-centric farms leverage numerous new, more efficient technologies and

methodologies to achieve more with less. Technologies such as digitally controlled nutrient dosing and watering techniques via hydroponic, aquaponic, and aeroponic methodologies are all focused on growing high quality fruits and vegetables healthier, faster, and with less inputs. These farms operate year-round, and can economically and efficiently grow 200% more food per square foot than conventional farms without the use of chemical fertilizers. And, although advanced lighting is gaining momentum because all growers know that adoption will be mandatory, widespread, commercial usage lags.

Controlled-environment agriculture (greenhouse and indoor grow operations) is here to stay and will play a crucial role in agricultural production as the world population grows and natural resources become scarce.

According to a new report from ReportsnReports.com, the LED grow light modules (for agriculture) markets is expected to grow from $395 million in 2013 to $3.6 billion by 2020 (a compound annual growth rate over 37%). The study states that rapid growth is anticipated to come in part from the home and restaurant market segments as people, particularly the affluent, become more health conscious. A fast developing consciousness is avoiding the deleterious effects of pesticides in food. Worldwide markets are poised to achieve significant growth as the food producers of the world begin to adopt automated processes. Grow lights have become more sophisticated and less expensive to run, and solar and wind energy continue to be adopted by greenhouses and plant factories. LED grow lights provide quality for growing, offering intense, homogeneous light distribution at precisely the right wavelengths. LED grow lights are also more powerful and significantly more energy-efficient than the older generation high-pressure sodium and metal halide grow lights.

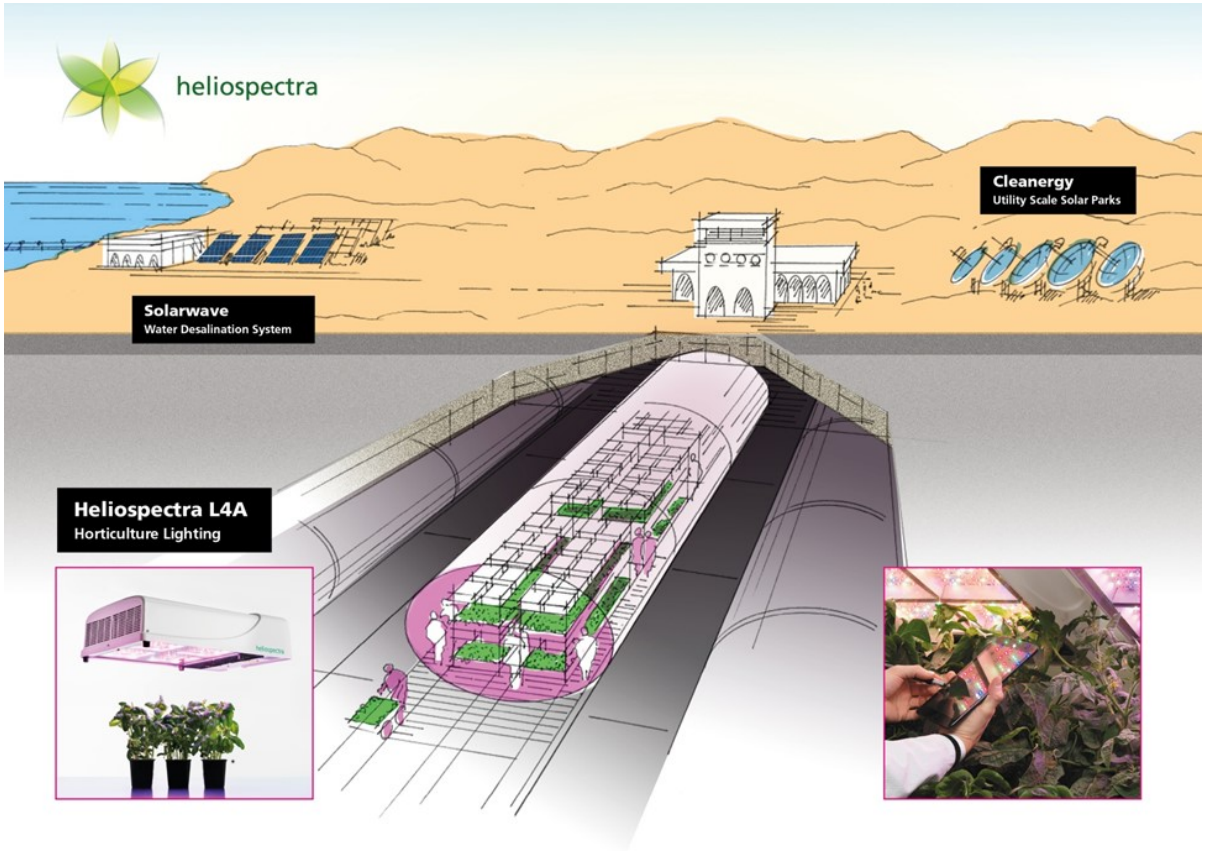
Consequently, the number of commercial greenhouses and the area they occupy are sharply rising. For example, in the Netherlands, greenhouses occupy around 0.25% of the land area of the entire country. The Netherlands is not even the largest producer of greenhouse vegetables in Europe. Countries in higher latitudes use supplemental lighting to compensate for the lack of sunlight in the winter. However, even in lower latitudes these technologies and their deployment can be used to increase the number of light-hours for growing plants.

Gotham Greens, New York

Whole Foods Market, Gowanus, Brooklyn

South Korea

Another rapidly growing market is in areas with limited water resources, such as the Middle East, where some areas have only two days water supply. This has created rapid innovation in utilizing controlled environment growing technology in an underground settings. By leveraging advanced growing technology it's possible to grow underground using only a fraction of the water required in outdoor and normal greenhouse operations. The sun's energy can be converted into electricity using solar cells, which power the luminaires and desalination plants to create the required water need for cultivation. Through one of Heliospectra's larger Investors Midroc (owned by Sheikh Mohammed Hussein Ali Al Amoudi, listed as one of the world's 100 richest people), there are ongoing discussions about starting a pilot project in the Middle East which could potentially lead to significantly larger installations.



LEGAL CANNABIS INDUSTRY

Overview: United States

The legal marijuana industry has experienced a major transformation over the past three years. Massive shifts in the business environment have changed the industry landscape in a variety of ways. The American population's increasing support for the legalization of marijuana has been a primary driver of this rapid change, with the trend being validated by the Gallup Poll released in October 2013 showing that 58% of Americans are in favor of legalization, a 10% increase from 2012. The accelerating momentum of support has given rise to the passage of new marijuana regulations in many states, as well as multiple law reforms that are currently underway in others.

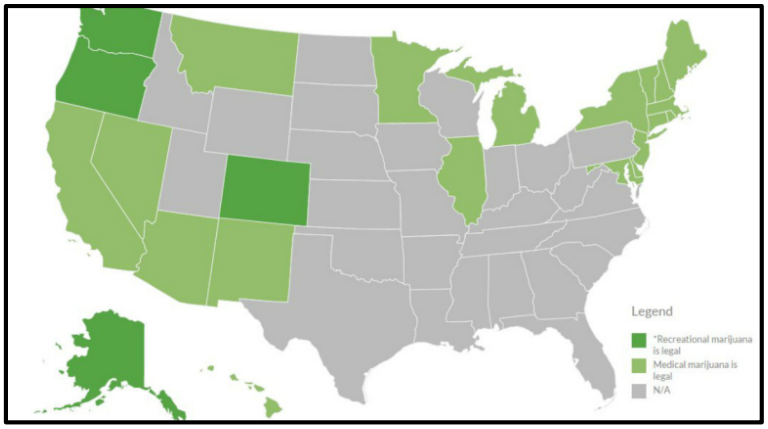
In the past year eight new states plus the District of Columbia have approved new medical marijuana sales regulations, which include Massachusetts, Illinois, Connecticut, Vermont, Delaware, New Hampshire, Minnesota, and most recently New York. With the new legislation in place, the total number of states permitting medical marijuana use has risen to 23. Moreover, on January 1, 2014, Colorado and Washington became the first state in the nation's history to implement recreational marijuana use policies. With these states benefitting from substantial tax revenue from these inaugural policies, many experts estimate that seven to fourteen new states could attempt to enact similar recreational use policies by 2017. Recently in the November 2014 midterm election, Oregon, Alaska and the District of Columbia successfully passed legislation to legalize recreational cannabis. This will help to propel the cannabis sector in several key ways, from increasing the flow of capital into legal marijuana companies to setting up a 2016 legalization push in California.

Oregon and Alaska now join Colorado and Washington State, which legalized recreational marijuana in 2012. State officials in Oregon and Alaska will move to create the administrative system for marijuana sales, which are expected to begin in both states by 2016. Voters in the District of Columbia passed what has been called "soft legalization," which allows citizens to possess and grow small amounts of marijuana, but does not create cannabis stores (the DC initiative must also be approved by Congress, where opposition is already brewing.)

The successful legislation in Oregon, Alaska, and the District of Columbia, along with the close result in Florida, will make 2015 a critical year for the cannabis industry. These midterm results will offer law makers in other states the confidence to introduce new initiatives for action in 2015 and placement on 2016 ballots. This trend will be accelerated if the sale of recreational marijuana in Colorado and Washington State appears to be a success.

Each state's regulatory structure is unique, making it critical for potential business owners in the industry to know and understand each states regulatory landscape. Understanding individual state markets requires potential business operators to account for multiple levels of regulatory understanding and compliance, such as who is allowed to legally purchase marijuana, how it may be sourced, processed, and distributed.

Chart 1: Cannabis Legal Status by State



Even with the shifting views of society as well as many federal officials, cannabis is still classified as an illegal substance in the United States. The Drug Enforcement Agency and the Food and Drug Administration still classifies cannabis as a Schedule 1 drug under the Controlled Substance Act – as of this writing, there is an active bill, passed by The Senate and moving to The House, to declassify cannabis from Schedule 1 to Schedule 2. The classification makes cannabis illegal under federal law to manufacture, distribute, or dispense and has created a discrepancy between the laws in states, that permit the distribution and sale of medical and recreational cannabis, from federal law that prohibits any such activities.

The discrepancies in federal and state law have created a complicated and risky environment for businesses in the industry, especially in regards to restricted banking access for legal cannabis companies. The banking system in the U.S. is, in most states, federally mandated. Since possession or distribution of cannabis violates federal law, banks that provide services to legal cannabis companies face the threat of prosecution and assorted sanctions, such as loss of their federal depository insurance. As a result, many cannabis-related businesses are denied the ability to deposit cash, process electronic payments, or obtain loans and cash management services, consequently forcing these companies to transact on a cash-only basis. Of course, this failure of the legacy financial establishment to react to demand is creating the opportunity for new providers, from finance companies to physical security providers. At the present time, Heliospectra has not been impacted by these banking restrictions and has a banking relationship with a major national bank.

Another variable adding to the complexity of legal cannabis market is the local laws at the city, county and municipal level. Even when a state enacts legislation legalizing cannabis, cities, counties and municipalities have the right to exercise restrictions on cannabis activities, such as cultivation, retail or consumption. One particular area that this has been observed is in regards to zoning requirements, since zoning is set by local governments. This has restricted many businesses in the emerging cannabis industry on how and where their cannabis operations can be located, as well as the manner and size in which they can operate.

There is action being taken both in congress and the executive branch to clarify the legality of banks, as well as cities and municipalities doing business with the cannabis industry. In response to the passage of recreational cannabis use regulations in Colorado and Washington State, the U.S. Department of Justice Deputy Attorney General James M. Cole issued a memorandum, the 2013 Cole Memo, to all United States Attorneys providing updated guidance to prosecutors and law enforcement concerning marijuana enforcement under the CSA. The memorandum indicated that states with tightly regulated marijuana laws and oversight would be allowed to enforce their own laws. Moreover, the memo laid out eight top federal cannabis enforcement priorities, which acts as guidance to where cannabis enforcement resources will be targeted. It focuses on addressing the most significant threats in the most effective and consistent way possible. Those priorities include:

- Preventing the distribution of marijuana to minors
- Preventing revenue from the sale of marijuana from going to criminal enterprises, gangs, and cartels
- Preventing the diversion of marijuana from states where it is legal under state law in some form to other states
- Preventing state-authorized marijuana activity from being used as a cover or pretext for the trafficking of other illegal drugs or other illegal activity
- Preventing violence and the use of firearms in the cultivation and distribution of marijuana
- Preventing drugged driving and the exacerbation of other adverse public health consequences associated with marijuana use
- Preventing growing of marijuana on public lands and the attendant public safety and environmental dangers posed by marijuana production on public lands
- Preventing marijuana possession or use on federal property

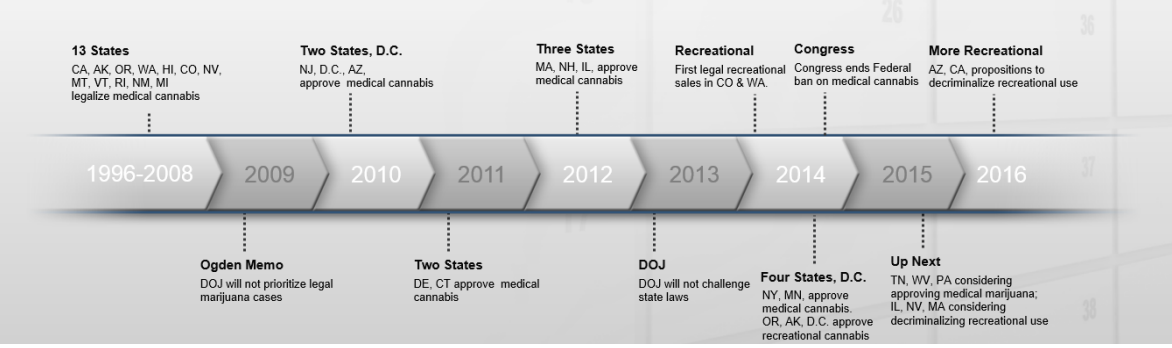
A more substantial development occurred on February 2014. The Obama administration gave banks a road map for conducting transactions with cannabis companies operating within state regulations, so these companies could have an equal level of access to financial services as traditional businesses. The move was designed to let financial institutions serve such businesses while ensuring that they know their customers' legitimacy and remain obligated to report possible criminal activity. However, there still remains nothing expressly protecting banks that work with state-legal, state-licensed cannabis businesses from prosecution.

The most encouraging news regarding the legal cannabis industry came on December 13, 2014, when passed the federal spending bill, which contains protections for medical marijuana and industrial hemp operations in states where they are legal. The spending bill includes an amendment that prohibits the Department of Justice from using funds to go after state-legal medical cannabis programs. If the bill is signed into law, it will bring the federal government one

step closer to ending raids on medical marijuana dispensaries, as well as stopping arrests of individuals involved with marijuana businesses that are complying with state law.

The bill protects medical marijuana programs in the 23 states that have legalized marijuana for medical purposes, as well as 11 additional states that have legalized CBD oils, a non-psychoactive ingredient in marijuana that has shown to be beneficial in some severe cases of epilepsy. This landmark passage marks the first time Congress has approved nationally significant legislation backed by legalization advocates and brings almost to a close, two decades of tension between the states and Washington over medical use of marijuana.

Chart 2: United State Legalization Timeline



Ancillary Businesses

As more states continue to loosen their cannabis laws, the demand for cannabis-related products and services is expected to grow rapidly. This rapid growth combined with the professionalization of the cannabis industry has spurred the emergence of cannabis-related niche markets. These ancillary markets include, but are not limited to, dispensary and cultivation consulting, technology, insurance, IT, security consulting, packaging services, legal counseling/consulting, merchant processing, and dispensary management. However, since the federal government still classifies cannabis as a schedule 1 substance, many traditional ancillary providers fear the reputational and legal risk of serving the cannabis industry. Ancillary businesses that cater to the legal cannabis industry are well positioned to benefit from the growth in the industry, since private cannabis producers and sellers often have difficulty acquiring these types of products and services from traditional venues. In addition, due to ancillary businesses operating in legal cannabis markets without physically handling the plant, they have less legal risk than companies directly involved in the production and sale of cannabis.

MARKET SIZE AND GROWTH RATES

United States

The total market for cannabis, legal and black market, is estimated to exceed the economic value of corn and wheat, which is why it is widely considered the largest cash crop in the United States. According to a report by the Associated Press in July, it is estimated that the value of the total

domestic cannabis market ranges from $35 billion to $50 billion. Even though it is illegal in most of the nation, the legal cannabis industry is among the fastest-growing markets in the United States, with it already being valued at approximately $1.43 billion for 2013. Furthermore, it is estimated that the market grew 77 percent, to $2.7 billion at the end of 2014. However, this could potentially be conservative due to undercounting of ancillary products and services. The long-term growth outlook for the industry is even stronger. Based on growth in the current market and more states moving to allow medical cannabis and/or making recreational use legal, it is believed the market will experience growth in excess of 700 percent to over $10 billion by 2018.

Chart 3: Annual Retail Sales by Industry

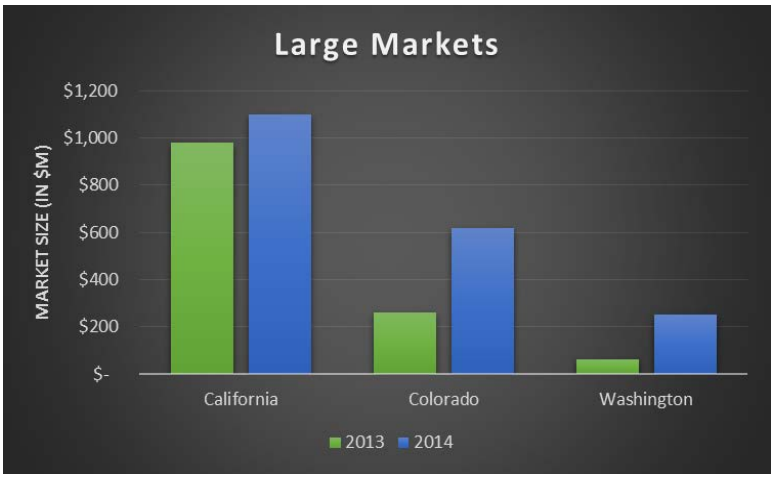
Annual retail sales by industry	
US Beer	$246 billion
US Wine	$34.6 billion
Vodka	$5.5 billion
Legal MJ	$1.43 billion
E-Cigarettes	$500 million

In comparison to other comparable markets, such as beer wine and vodka, the legal cannabis market is still small in terms of size. The small size is due to the market being immature, as well as cannabis still being classified as illegal on the federal level. However, legal cannabis is estimated to experienced experience growth of 77 percent in 2014, while the domestic beer market is increasing around 2 percent. The market's growth has severe constraints caused by the legal status of cannabis in most of the nation. If the government was to legalize the substance on a federal level, the legal cannabis business would have the potential to grow at a pace much faster than what is being experienced in 2014. Bloomberg estimates that if cannabis was legalized the US market potential would be between $35 billion to $45 billion.

Canada

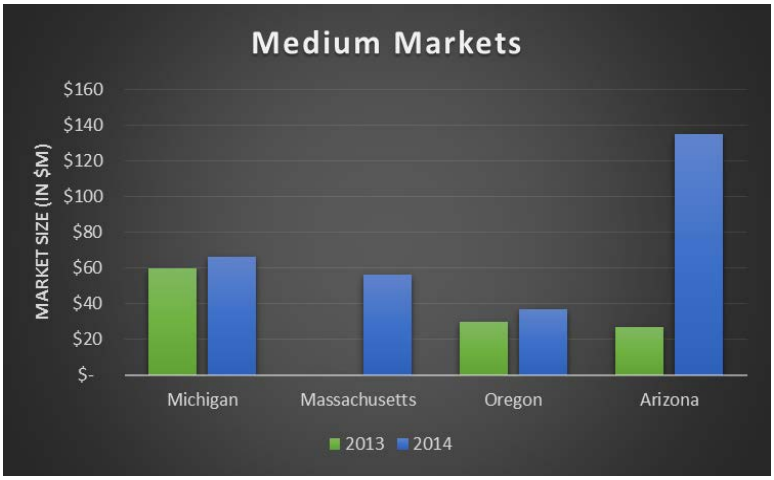
The market for medicinal use in Canada is estimated at $144 million in 2014, rising to $388 million in 2018 and expected to reach $1.3 billion by 2024. At the end of 2013, the department of Canadian health, Health Canada, reported that there were 37,359 patients who had medical cannabis licenses in Canada, up from 477 licenses in 2002. The government estimates that by the end of 2014 there will be a total of about 58,000 licensed medical users, projected to increase to about 450,000 over the next 10 years. This represents a compound annual growth rate of 24.5 percent in sales and 27.7 percent in registered medical cannabis patients. These estimates are likely to be conservative, since the Canada's MMPR law enables small businesses to export cannabis to legal jurisdictions throughout the world. As countries progressively migrate their policies toward deregulation, it will position Canadian companies to have a first mover advantage, allowing them to successfully supply the other countries' cannabis demand.

Chart 4: Market Size (Large Markets)



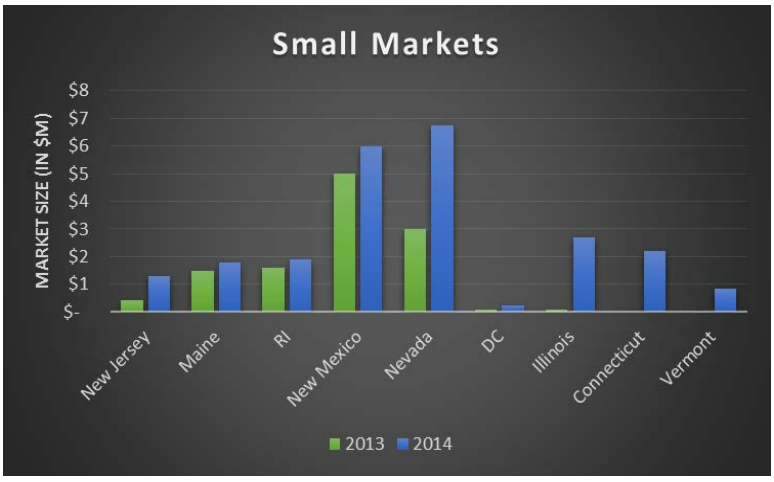
Source: Arcview Market Research

Chart 5: Market Size (Medium Markets)



Source: Arcview Market Research

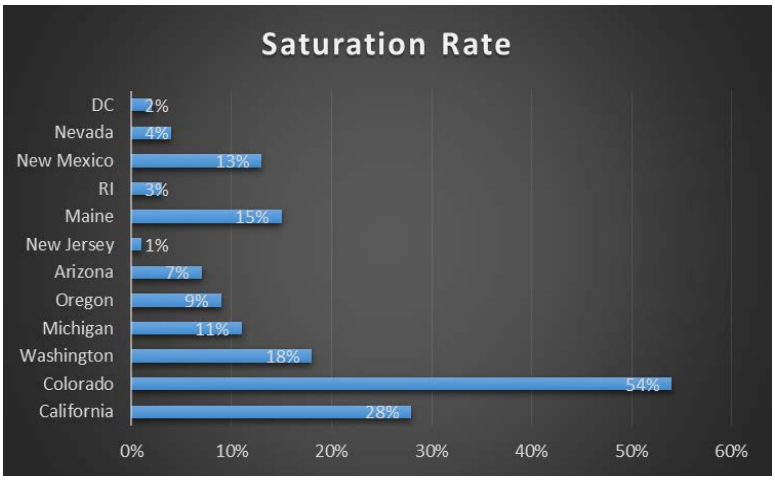
Chart 6: Market Size (Small Markets)



Source: Arcview Market Research

Many states' legal cannabis markets have seen significant growth over the past year. The industry will experience rapid growth as new states begin adopting favorable legislation in regard to medical and recreation cannabis use. One strong indicator of future growth potential in a specific market is the saturation rate, percentage of the customer population who are actively purchasing legal medical cannabis, relative to the potential patient population who qualify to make those purchases. With low saturation rates in a majority of the nation's medical cannabis markets, there is a very favorable environment for high growth.

Chart 7: Saturation Rate by State



Source: Arcview Market Research

The result of this spectacular growth is that industry leaders are experimenting with new technology, lighting and growing methods to ensure premium quality to the consumer while optimizing profits. Per a July 2014 report from High Alert Capital Partners, estimated production costs per pound of cannabis in Greenhouse operation were $117.58 in the United States. Lighting cost comprised 15% of the cost directly and another 15-20% of the Material and Equipment cost.

Figure 3: Lighting an Important Cost in Greenhouse Operations

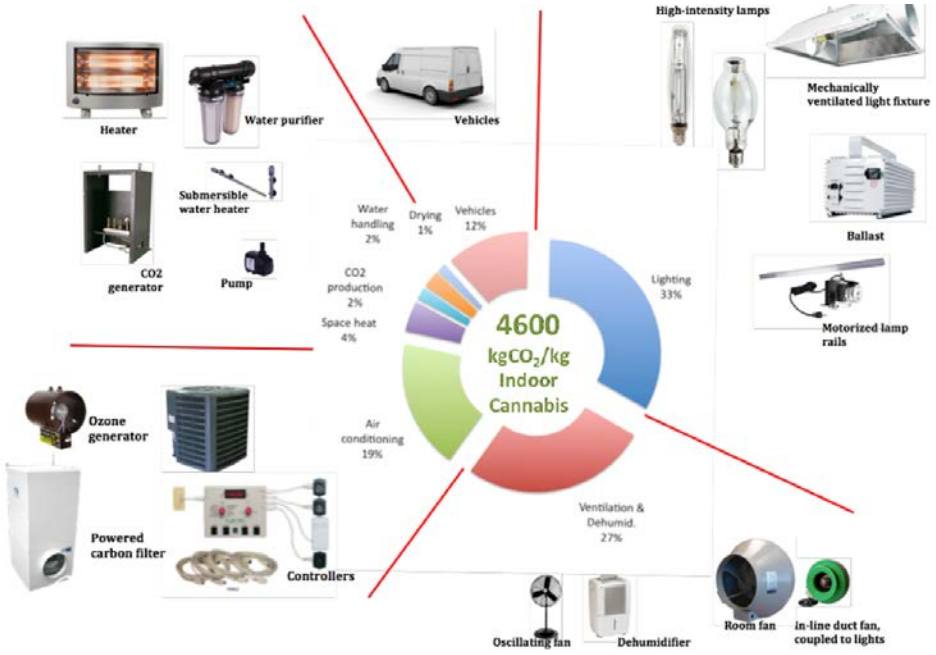
Greenhouse operation estimated production costs per pound

	United States	Canada	Uruguay
Materials and Equipment	$90.00	$90.00	$90.00
Lighting	$17.59	$22.15	$25.83
Labor	$8.07	$8.07	$4.20
Structure	$1.90	$1.90	$1.90
Land	$0.024	$0.027	$0.020
Total cost per pound	**$117.58**	**$122.15**	**$121.95**

The use of artificial lighting in a greenhouse allows for enough supplemental lighting to achieve higher yields, compared to the High-intensity lamps, which have traditionally dominated indoor cannabis growing. Furthermore, the electric-use impacts of large indoor commercial grow

operations using this method of advanced LED lighting is significantly reduced both in terms of electricity consumption and carbon footprint.

According to an independent study from Lawrence Berkeley National Laboratory, indoor cannabis production may account for 1% of US electricity consumption or approximately $6 billion annually. This is equivalent to the power used by 2 million average US homes. The environmental footprint is massive with CO2 production equal to 3 million average cars.



COMPETITION

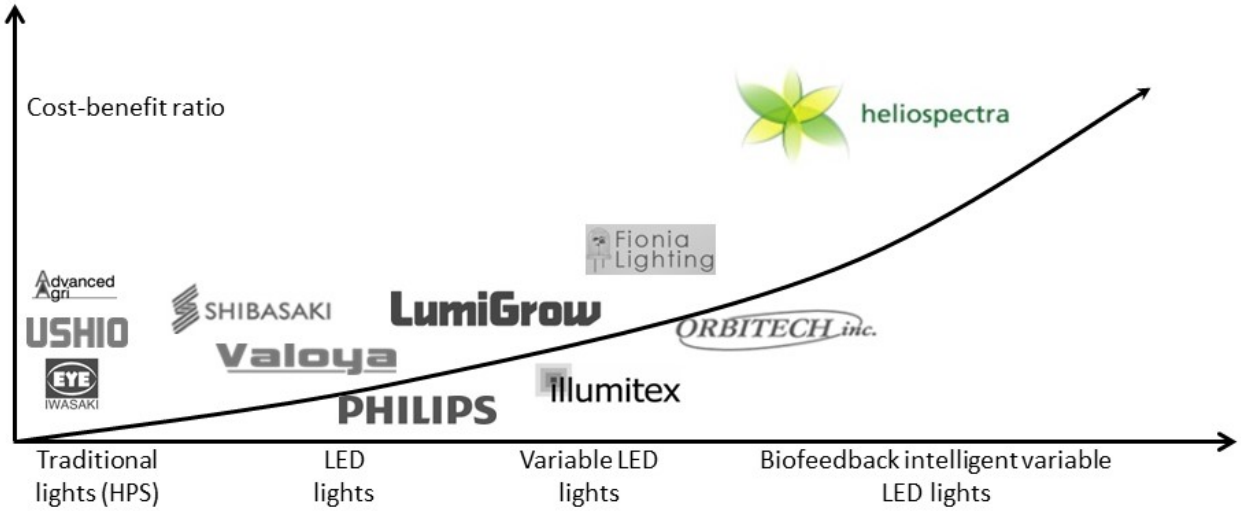
There are many companies providing LED lighting solutions for cultivation but none of the technologies are as comprehensive as Heliospectra's. The competitive landscape is fragmented from highly diversified firms (Philips - which recently sold their lighting division to Go Scale Capital) to smaller niche players trying to capture a share of the market.

It is important to note that Heliospectra provides a comprehensive, commercial solution that is comprised of one or more luminaries, a variety of specialized sensors and sophisticated software controlling all these lighting fixtures. Heliospectra's patented systems-centric approach and superior engineering, separate the Company from its competition, with the LX60 producing as much light as its HID/HPS counterparts – an industry first for LED.

As the industry gains more traction in the commercial agriculture market, an increasing number of companies are expected to enter this market to produce LEDs. Heliospectra's intellectual property lies primarily in the software and control of luminaires, as well as integration with plant specific sensors, which means unlike competitors, the Company is not strictly dependent on hardware sales.

Name	Business Description	Market Segment/ Product category
USHIO Lighting—Edge Technologies	USHIO America, Inc. a specialist in industrial light sources. Its primary product focus is on discharge and halogen lamp technology	Diversified HPS
IWASAKI	Iwasaki Electric, EYE, a worldwide supplier of lighting products and industrial systems	Diversified HPS
ORBITEC	ORBITEC's LED Lighting Systems provides solutions for biological research, plant growth and supplemental greenhouse lighting	Variable LED Lamps
illumitex Focused Lighting Solutions	Illumitex is a manufacturer of precision LEDs and LED lighting fixtures	LED Lamps
LumiGrow	LumiGrow, is a provider of smart horticultural lighting solutions	Variable LED Lamps
Fionia Lighting	Fionia Lighting is a Danish based provider of LED Lighting for horticultural lighting	Variable LED Lamps
PHILIPS LUMILEDS	Philips is a diversified technology company present across many industries including energy efficient lighting solutions and new lighting applications,	HPS and LED Lamps
Valoya	Valoya provides LED lights for installations in growth chambers and growth rooms, multilayer cultivation, interlighting, conveyor applications with moving lights or conveyors and high intensity greenhouse lighting.	LED Lamps

HELIOSPECTRAS POSITIONING



Level of capability

Low ◔ High ●

Type of product	heliospectra LX60	ORBITECH inc. Sunbow Science Research Lamp	Fionia Lighting FL300	LumiGrow Pro 650	PHILIPS GreenPower LED flowering	Illumitex Eclipse NeoSol	USHIO EYE HPS
Lifetime	●	●	●	◑	◑	◑	◔
Costs / unit	◔	◑	◔	◔	◔	◑	◔
Plug & play	●	◕	●	◕	◑	◕	◑
Wavelength spectrum	●	◑	◑	◑	◔	◕	○
Electric efficiency	●	●	●	◕	◑	◕	◔

- Heliospectra's unique patent pending technology positions it above the competition, delivering an unrivalled performance
- Orbitech is a direct competitor, but offers a less cost efficient solution, which is custom made and built-on-demand
- Many competitors focused on horticulture lighting offer less flexible solutions (e.g. Valoya, LumiGrow)
- Large players like Philips are offering low-tech LED solutions which are less dynamic (e.g. control of wavelength)
- Traditional light bulbs manufacturers like Osram, GE, Iwasaki (Eye) or Ushio offering only non-LED-based solutions such as HPS, Mercury or MH lamps

SELECTED FINANCIAL DATA

Heliospectra has audited financials since the company was started. This is a requirement by Swedish Law.

Group's profit and loss account *Amounts in thousands of kronor (SEK)*	2014 July-Dec	2013 July-Dec	2014 Jan-Dec	2013 Jan-Dec
Net turnover	1,247	289	3,110	486
Other operating income	768	550	1,217	722
	2,015	**839**	**4,327**	**1,208**
Operating expenses				
Commodities	-1,127	-194	-2,484	-301
Other external costs	-7,667	-2,294	-20,030	-8,444
Staffing costs	-5,641	-2,266	-11,097	-6,919
Depreciation and amortization	-1,652	-1,343	-3,617	-2,685
Earnings before interest and taxes	**-14,072**	**-5,258**	**-32,901**	**-17,141**
Operating margin	**neg**	**neg**	**neg**	**neg**
Total financial items	4	-8	-769	24
Profit/loss before tax	**-14,068**	**-5,266**	**-33,670**	**-17,117**
Tax				
Profit/loss after tax	**-14,068**	**-5,266**	**-33,670**	**-17,117**

Group's cash flow analysis *Amounts in thousands of kronor (SEK)*	2014 July-Dec	2013 July-Dec	2014 Jan-Dec	2013 Jan-Dec
Cash flow before changes in operating capital	-12,416	-3,923	-30,053	-14,432
Changes in operating capital	-3,211	-847	-2,615	4,776
Group's cash flow	-15,627	-4,770	-32,668	-9,656
Cash flow from investment activities	-1,902	-7,593	-5,904	-7,619
Cash flow from financing activities	98	9,963	41,168	19,946
Cash flow for the period	**-17,431**	**-2,400**	**2,596**	**2,671**
Cash and cash equivalents at beginning of period	**23,575**	**5,931**	**3,531**	**860**
Cash and cash equivalents at end of period	**6,144**	**3,531**	**6,127**	**3,531**

Ratios	2014 July-Dec	2013 July-Dec	2014 Jan-Dec	2013 Jan-Dec
Turnover per share, SEK	0.1	105	0.3	152
Profit/loss per share after tax, SEK	-1	-662	-2	-2,150
Operating margin, %	neg	neg	neg	neg
EBITDA, KSEK	-12,420	-3,915	-29,284	-14,456
EBITDA margin, %	neg	neg	neg	neg

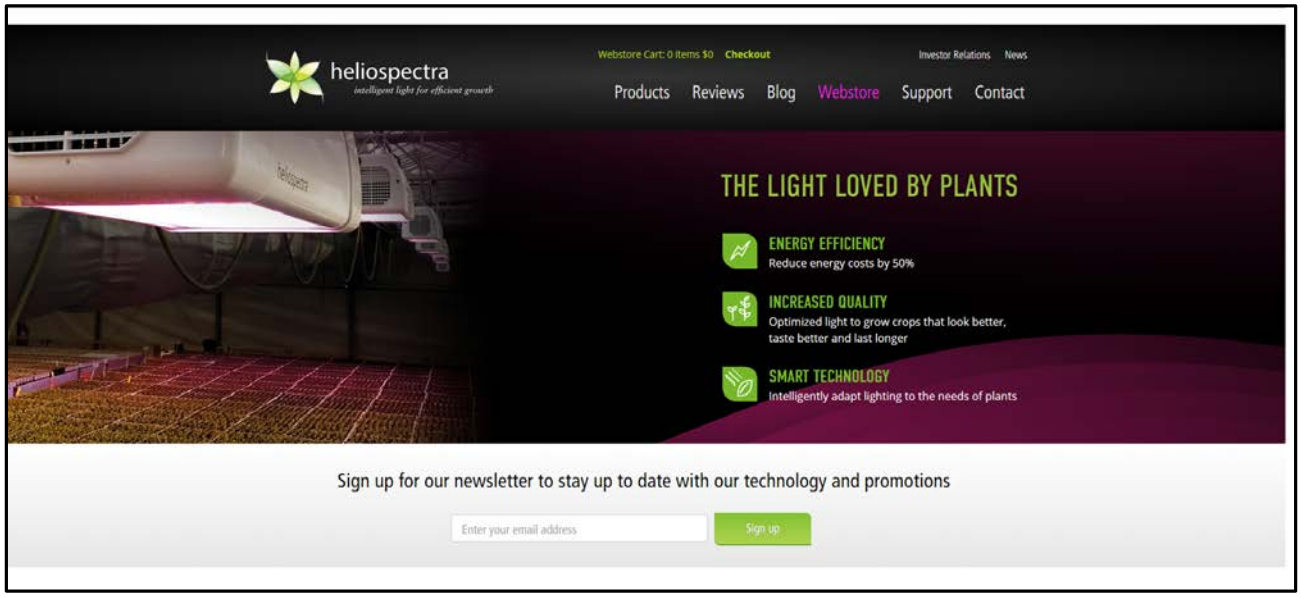
SELECTED FINANCIAL DATA

Group's balance sheet *Amounts in thousands of kronor (SEK)*	12/31/2014	12/31/2013
Assets		
Intangible assets	15,116	12,867
Tangible assets	1,990	1,951
Financial assets		2
Total fixed assets	17,106	14,820
Inventory	4,249	1,990
Current receivables	4,101	1,370
Cash and bank	6,127	3,531
Total current assets	14,477	6,891
Total assets	**31,583**	**21,711**
Equity and liabilities		
Equity	16,099	8,724
Long-term liabilities	9,728	9,752
Short-term liabilities	5,756	3,235
Total equity and liabilities	**31,583**	**21,711**

Changes in group's equity *Amounts in thousands of kronor (SEK)*	2014 Jan-Dec	2013 Jan-Dec
Opening equity	8,724	5,834
Net profit for period after tax	-33,670	-17,117
New share issue	666	244
Share Premium Reserve	40,379	19,763
Closing equity	**16,099**	**8,724**

Ratios	12/31/2014	12/31/2013
Number of shares, thousands	13,791	7.96
Equity/share, SEK	1	1,096
Solidity	51%	40%
Liquidity	178%	151%

WEBSITE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SMART TECHNOLOGY
Intelligently adapt lighting to the needs of plants
Sign up for our newsletter to stay up to date with our technology and promotions
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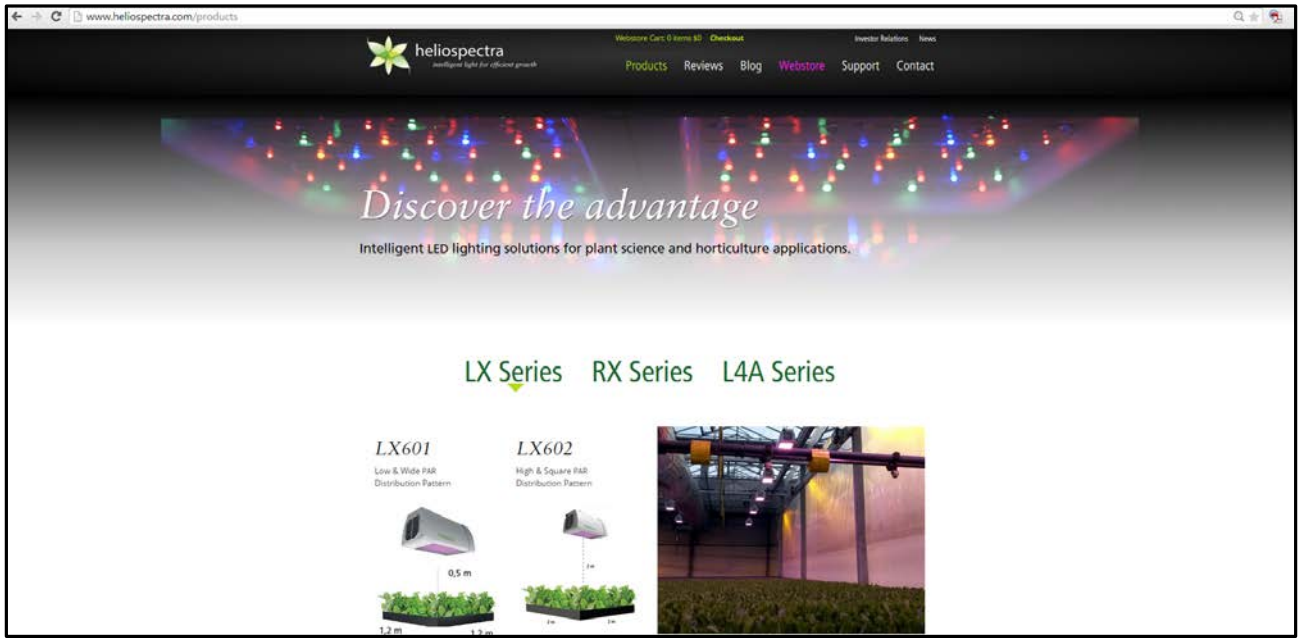
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LX602
High & Square PAR Distribution Pattern
0,5 m
1,2 m

CASE STUDIES

Gothenburg Botanical Garden

Heliospectra AB, the world leader in intelligent lighting technology for plant research and greenhouse cultivation, has delivered its new LX60 to Gothenburg Botanical Garden, one of Europe's largest botanical gardens. After five months of use, they can now report some exceptional results.

Last spring Heliospectra launched the LX60, a new kind of energy-efficient and fully controllable LED grow light, designed and engineered to replace traditional HPS and HID lamps. The lamp is a first step towards a complete biofeedback system, with sensors detecting how the plants are reacting to the light and the environment, then adapting the light to fit the plants' needs. The LX60 has already had great success throughout Europe, the USA, and Australia. Now Gothenburg Botanical Garden also reports its success with using the LX60.

> *Heat is one of the big issues. We therefore had quality issues with our plants under our old HPS lamps. The benefits we received with the LX60 breaks all records in terms of both plant survival and quality.* - Marika Irvine.

Gothenburg Botanical Garden, with its 175 hectares in central Gothenburg, is one of the largest botanical gardens in Europe. The cultivated part occupies about 40 hectares and there are about 16,000 species of plants. A large number of these are part of the scientific collections, including one of Europe's largest collections of onions and tubers, Alpine and the Dionysia.

- 100 percent of our Dionysia-cuttings survived and the aphid attacks have been minimized. Overall, these are exceptional results for our business, says Marika Irvine, gardener at Gothenburg Botanical Garden.
- The LX60 consistently receives high ratings by users. Gothenburg Botanical Garden sets incredibly high standards and is an important reference customer for Heliospectra. The fact that they are seeing such great advantages in using the LX60 is of course very positive for us, says Staffan Hillberg, CEO Heliospectra.
- During the winter months, it is important for us to add supplemental lighting. High Altitude Plants such as Alpine Perennials and Dionysia are very difficult to cultivate.

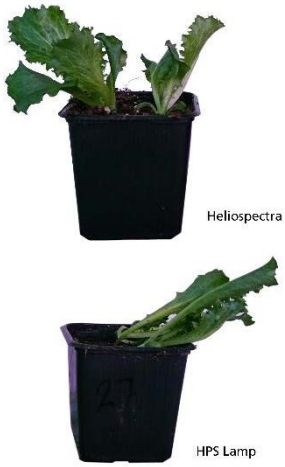
Spisa AB (formerly Swedeponic AB)

> *Ulf and Swedeponic (Spisa) was our first customer and is an important partner in Heliospectra's development. When our products live up to his requirements, we know we got it right - Staffan Hillberg, CEO of Heliospectra.*

In May 2014, Heliospectra AB a world leader in intelligent lighting technology for plant science and greenhouse cultivation, launched a new generation of intelligent lighting systems – the LX60 Series. The patented LX60 system, designed and engineered to replace traditional 1000W HPS and HID fixtures, is more effective, less expensive and more energy-efficient compared to previous products.

Shortly after the LX60's release, Heliospectra installed 21 fixtures at Spisa's greenhouse in Hejsta outside of Stockholm. Having received great results in comparison to previous lighting solutions, Spisa decided to increase their investment and bought another 21 fixtures in July 2014.

Feedback from Ulf Jonsson, founder and agronomist at Spisa, is "...the LX60 delivers what it promises. Overall, it looks very positive."



Founded in 1995, Spisa specializes in ecological salad and herbs and is now the market leader in Europe for this. Ulf Jonsson has been an important partner in Heliospectra's development of intelligent lighting technology for plant research and greenhouse cultivation since 2006. Today, Spisa remains a valuable partner - and customer.

> *For us it is of course important to constantly reduce our carbon footprint, minimize energy consumption while optimizing the quality of our products. The new LX60 is a part of this work and in the constant ambition - Ulf Jonsson.*

- Results compared to their former HPS lighting solutions has been dramatically, including improved plant vigor, taste, shelf-life, and overall quality of the plants.
- Further young plants survival rate has improved and waste has been reduced.

Pink House Blooms (Colorado cultivator)

Pink House Blooms is a Denver based cannabis cultivator, offering the highest quality medicinal and recreational marijuana. Colorado's heat in the summertime and frigid temps when the sun is resting behind the mountains in the winter has kept them on the cutting edge of cultivation technology.

While LED light fixtures' energy efficiency is widely recognized, Heliospectra AB has created an LED fixture that allows growers to create customized light spectrum recipes that may be able to shorten a cannabis plant's flowering cycle and even alter a strain's balance of active cannabinoids.

> *Most shops are bound to what growers are breeding. There is no technology that allows us to balance THC and CBD. If these [Heliospectra] lights allow us to lower the THC and still bring out the CBD, that's going to be the greatest thing. - Ryan Wankel, cultivation manager at Pink House Blooms.*

Due to this reason, Pink House is currently experimenting with twelve of Heliospectra's LX60 grow lamps to emulate outdoor growing conditions closer to the equator, where the CBD-rich strains of cannabis originated. By manipulating the light spectrum to match certain geographical solar patterns, owner Elliot Klug and his horticultural team hope to breed medical strains with reduced THC and higher CBD.

- Klug and his team report that they have harvested equal or greater yields under the LX60, when compared to yields under the high-pressure sodium lamps they have used in the past.
- More importantly, they have also managed to reduce the flowering cycle of their plants by up to 14 days by manipulating exposure to certain wavelengths of light. Over time, this reduced flowering cycle could lead to substantial cost savings.

SUMMARY OF WHITE PAPER

A Study of Quantitative Lamp Spectra and Hydroponic Lettuce Growth

University of Akron Research Foundation

Key Participants: Tim Madden, President Biodynamicz, Roger Buelow, President Light for Life, Dr. Richard Hansler, Lighting Innovations Institute, John Carroll University; Cleveland , Ohio. Wil Hemker, The University of Akron Research Foundation (UARF); Akron, Ohio. Ruth Zito, Horticulturalist NuLight ,LLC,

Objective:

The objective was to compare a reference greenhouse food plant crop's productivity when grown in like hydroponic environments, when the artificial light source is varied. In this case 4 commercial light sources Gavita, iGrow,Lumigrow and Heliospectra, representing all three segments HPS lamps, inductive fluorescent and LED grow lamps were tested.

Materials & Methods:

The hydroponic lettuce growing was conducted in a controlled indoor environmental lab, using Nutrient Film Technique (NFT) hydroponic channels to grow out the lettuce crop. A baby gem romaine lettuce variety,(Lactuca sativa: v. Green Star), was used with a targeted maturation size 170 grams or six ounces, and grown out for a forty five (45) day duration.

- Measurements: comparative energy consumption, intensity at plant canopy, plant growth rate that was measured as fresh wet weight per head at harvest time, and dry weight.

- Plant quality was observed throughout the growing process on a subjective basis, plant sugar quantity (brix) and sensory qualities (bitterness, appearance, flavor, texture and overall acceptability) were compared after harvest for each lamp evaluated.

Results:

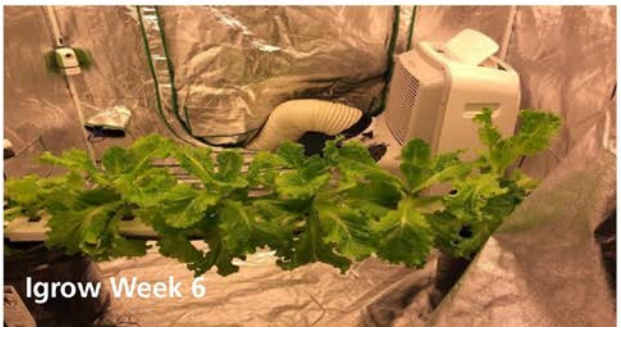
After forty five (45) days, the observed growth rates for the lettuce varied between each light source. The Heliospectra 600w, Lumigrow 300w, and Gavita DE 1,000w had measurable higher biomass accumulation while the iGrow 400w Bloom had a lower biomass but visible larger leaf, less compact, and broader surface. The plants morphology had two distinct characteristics. Lumigrow, Gavita and Heliospectra had greater density and were more compact with a thicker leaf as compared to the iGrow. The iGrow had greater leaf and stem stretching with decreased leaf thickness. Increased lateral branching was more prevalent with the Heliospectra, Lumigrow and Gavita lights.

Light Source	Wet Weight	Dry Weight	% Chg	Brix	Taste/Texture
Heliospectra	6.0 oz.	2.2 oz.	63.3%	6	9
IGrow	6.2 oz.	2.1 oz.	66.1%	3	7
Lumigrow	4.8 oz.	1.9 oz.	60.4%	4	6
Gavita 1000W	10.0 oz.	2.6 oz.	74.0%	3	7

Brix testing results showed that Heliospectra had a rating of 6 which is in the average range. Lumigrow, iGrow, and Gavita 1000W were below average rating for the Brix test. The sensory qualities for Heliospectra ranked the highest with deep dark green coloring of the leaf, sweet taste, crisp texture, and good liveliness. iGrow ranked average with light green leaf coloring, soft tender leaf texture and mild taste, Gavita had good leaf coloring but bitter taste and average liveliness and last was Lumigrow with dark green leaf color, crisp texture but less than average bitter taste.

Conclusion:

This comparative leafy green lettuce crop growing study found that the Heliospectra AB series LX 60 LED lamp grew the tastiest and most attractive lettuce for all five lamps.



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Risk of Prosecution for Cannabis-Related Companies**.** If you are considering investing in a company that is connected to the cannabis industry, be aware that cannabis-related companies may be at risk of federal, and perhaps state, criminal prosecution. The Department of Treasury recently issued guidance noting: "[T]he Controlled Substances Act ("CSA") makes it illegal under federal law to manufacture, distribute, or dispense cannabis. Many states impose and enforce similar prohibitions. Notwithstanding the federal ban, as of the date of this guidance, 20 states and the District of Columbia have legalized certain cannabis-related activity

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