



heliospectra

REVOLUTIONARY LIGHT SYSTEM FOR PLANTS

www.heliospectra.com

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Company



- Heliospectra started early 2006
- Strong background in plant research
- 8 employees
- Has raised Euro 1.7M in financing via business angels and local venture capital
- Working closely with Swedeponic/Santa Maria
 - **Europe's** largest producer of fresh herbs
 - 12 hectares of greenhouse area in Sweden, Belgium, UK, Poland and Portugal (30000 lamps)

Greenhouse Market Opportunity



HPS – High Pressure Sodium Lamps

- 1 lamp per 4 sq.m
- 400-600 Watts per lamp
- 3500 hours per year usage per lamp (Sweden)
- Typical greenhouse contains 700-1500 lamps
- Similar to lamps used in street lights

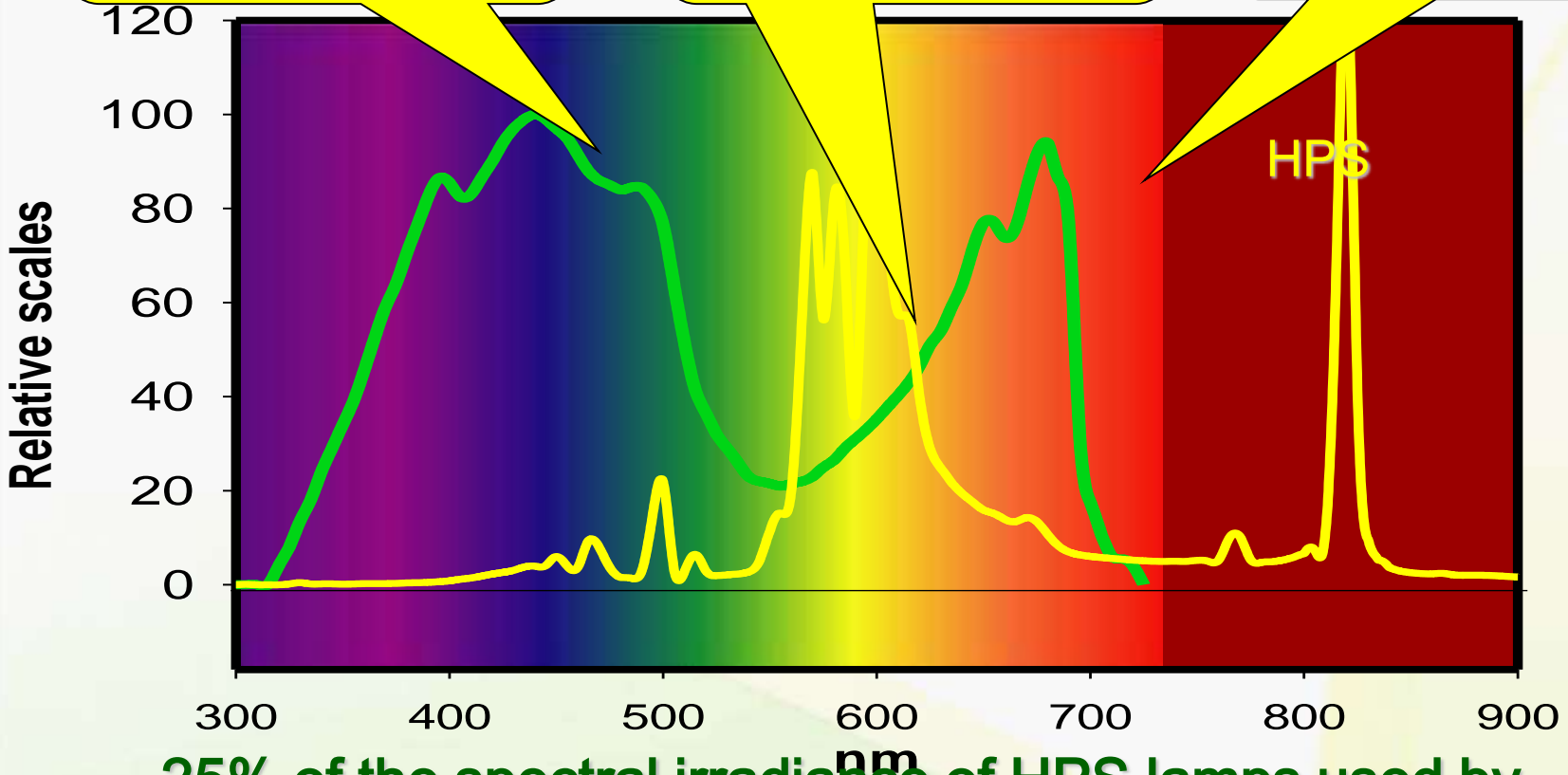
- 56 million HPS bulbs world wide (excluding China). Holland alone has 8 million
- World greenhouse industry expanding, need to produce more food and closer to home
- Plant Factory market in 2009 at \$127 million dollars is anticipated to reach \$3.8 billion worldwide by 2016.

HPS = Wrong light spectral distribution

Plants make good use of BLUE light

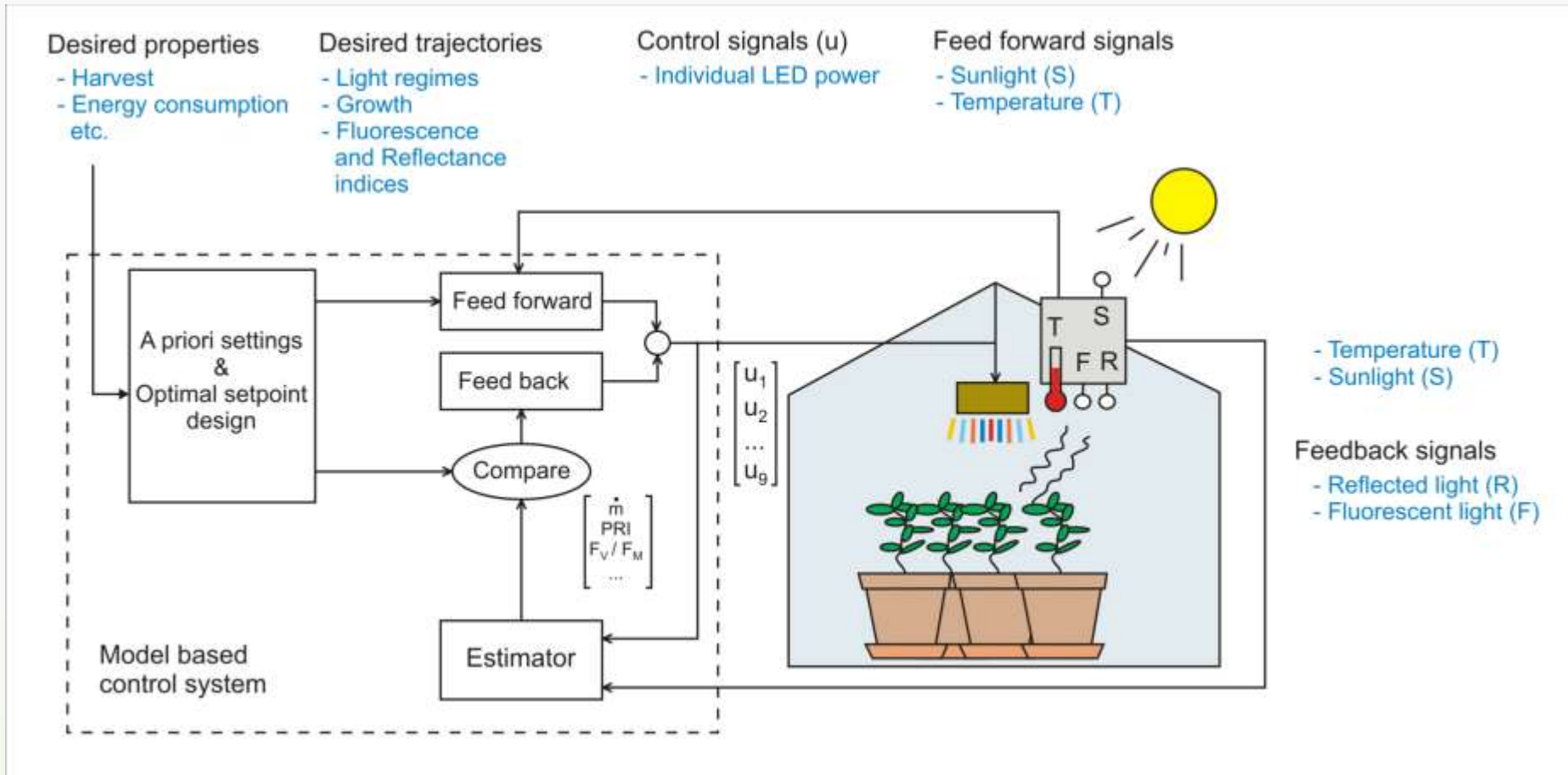
Poorly uses green and yellow light

Plants make good use of RED light



25% of the spectral irradiance of HPS lamps used by plants. A greenhouse needs heat but preferably by the plant roots and not at the roof (heat rises).

Product Patent Pending



Priority Date: March 23, 2007

Int. Filing Date: March 20, 2008

Europe PCT, Japan, South Korea, China/Taiwan, Canada, USA, Russia

Customer Benefits



- Improved quality
 - Looks better
 - Tastes better
 - Premium pricing possible
- Can produce faster/slower coordinating supply with demand, reducing waste
- Environmental benefits
 - Significant savings in energy, over 50% possible
 - No need for mercury based HPS bulbs
 - Longer shelf-life, less frequent truck transports
 - Less light-pollution at night
- Quantitative improvements
 - biomass increase 37- 66%
 - growth increase 9- 14%
 - quality (leaf weight) 21-27% greater



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Product Evolution

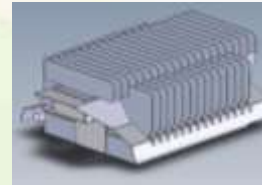
1-SPL
2007



2-Spiral
2009



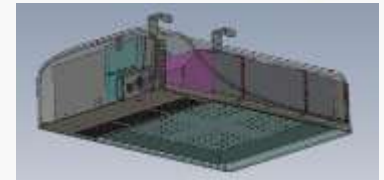
3-Test
2010



4-Helio1
2010



5-Helio1.5
2011



Growth Cabinets



Competition



- Market is about to start transition from traditional lights to LED
- Philips is doing experiments with growers
- Some smaller European players in Holland, Finland and Denmark. No real revenues.
- Most sophisticated competitor is US based Orbitec doing work with Nasa

Management Team

- Sylvain Dubé, VP and Founder, born 1955
 - Ph.D. & B.Sc, Plant Physiology (Biotechnology), Canada
 - Experienced in starting businesses
 - Indepth practical experience as crop technician and greenhouse operator
- Tessa Pocock, Director of Research, born 1958
 - Ph.D. & M.Sc. Plant physiology and Biochemistry, Canada.
 - Indepth practical experience as greenhouse technician and owner/operator of commercial greenhouse for over 8 years
- Kirk Clendinning, Director of Engineering, born 1957
 - More than thirty years of analogue and digital electronic design, as well as programming, project management and international standards committee membership. **IBM, Texas Instruments ...**
- Staffan Hillberg, CEO, born 1964
 - More than twenty years of experience in international high technology space as startup specialist, manager, venture capital and business angel investor and board member.
 - Apple Computer France/USA, Procera Networks USA, Bonnier Group ...
 - MSc Engineering, MBA INSEAD

New Funding

- Raising EUR 2 million
- Pre-money EUR 4 million
- Funds used for staff, marketing/sales, research and working capital

The future – Plant Factories



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Farming grows up

Growing food in vertical environments could be a solution to the world's exploding population and diminishing resources.

How a vertical farm could work

Vertical farms could use existing greenhouse technology to produce crops in the middle of cities. The plants would be grown in stacked layers, and the water and nutrients would be recycled. The plants would be grown in a controlled environment, and the temperature and humidity would be kept constant.

Advanced hydroponics

Advanced hydroponics allows for the production of crops in a controlled environment. The plants are grown in a nutrient-rich water solution, and the water is recycled. The plants are grown in a controlled environment, and the temperature and humidity are kept constant.

Transparent plastic replaces glass

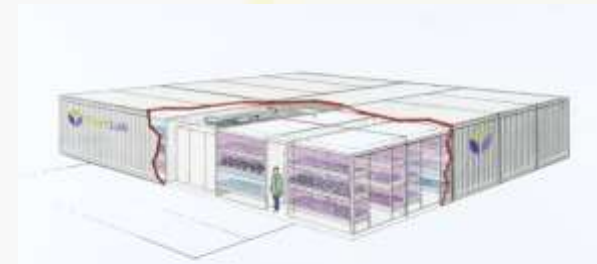
The building envelope is made of transparent plastic, which allows for natural light to enter the building. The plastic is made of a special material that is designed to filter out UV light, which can damage the plants. The plastic is also designed to be self-cleaning and to have a long lifespan.

Wastewater is treated onsite

Wastewater is treated onsite, which means that the water is recycled and reused. The wastewater is treated in a series of stages, including filtration, sedimentation, and disinfection. The treated water is then used for irrigation and other purposes.

Garbage gets recycled

Garbage is recycled, which means that the waste is converted into energy or other useful products. The garbage is collected and taken to a recycling plant, where it is sorted and processed. The recycled materials are then used to create new products, such as paper, plastic, and metal.



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