

„Die Hessen-Lampe“– Development of an energy-efficient Plant Light with Plasma-Technology for Horticultural Production

The aim of this project is the development of a high-efficient plasma light for horticultural production.

To make this technology useful for horticultural needs in greenhouses, light technique needs to be developed further by Consortial Leader Aurion Anlagentechnik.

There should be no flexible parts (no rotating lamp). The protection class should be IP 65 minimal (no external ventilator). The life expectancy should be 100.000 hours minimal. The light management is to adapt to the requirements of the greenhouse.

The operation mode of the lamp should be optimized by research into growing performance of different agricultural crops by the partner LLH (Landesbetrieb Landwirtschaft Hessen) and Hochschule Geisenheim University. Trials with plants in the greenhouse and in climate rooms should ensure the suitability for horticultural practice.

Hochschule Geisenheim University will carry out analysis of plant physiology to examine the sustainable improvement of inner and physical quality by the use of the new plasma light.

It will be expected that the new plasma lamp generates increasing growth and a better inner and physical quality per inserted energy.

Cost and thereby energy savings will be the result, which will amortize the high price of the system over a relatively short time.

Because of the extensive area of greenhouses in Germany and Europe there is a high market potential, which can be estimated at to € 1.5 M. per annum in Germany alone.

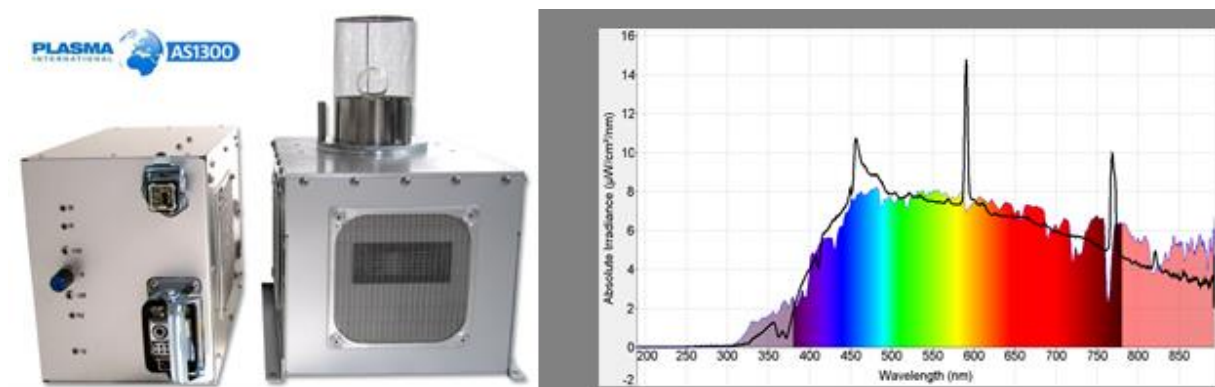


Fig 1: (A) Prototyp Plasmalight

(B) Lightspectrum A Class Lamp (black line) in comparison to natural light spectrum ($100 \mu\text{mol}/\text{m}^2\text{s}$)