

Aurora is ...

... a smart plant cultivation lamp for industrial applications. Optimized LED-boards and custom electronics made it possible to develop a highly efficient grow lamp with individually controllable LED bands from infrared to ultraviolet. With a completely configurable app, it is possible to set an individual light spectrum over a daytime course or to simulate different climate and vegetation zones. So, the exact light requirements of plants can be completely covered. By using microcontrollers in each lamp with WIFI and Bluetooth, the lamp will connect itself with others. They are either connected to the internet, controlled over a website, and receive over the air updates or offline over an App. A few pre-installed profiles are available in the app and can be used, with the option to create new profiles and share them. The prototype is currently being tested in the SWAG system (swagsystem.space). The demonstrator version is being planned for a plant growth climate chamber at ZHAW LSFM in Wädenswil. Additional features such as Time of Flight sensor for plant growth measurement or cameras for observation and disease detection are planned. Once fully developed, Aurora standardizable lights can be implemented wherever precisely designed light profile is required: R&D, the pharmaceutical and biotechnology industries, as well as vertical farms.

1. What problem you are solving?

The plant cultivation lamps used in the industry today are mostly energy-inefficient depending on the type, usually have a fixed preset spectrum, and can only respond to the individual needs of plants to a limited extent. There is a need for new types of lamps that are energy-efficient, durable, smart, and easy to replace, as well as enabling individual light adaptation to the requirements of a wide variety of plants. At present, the market does not yet offer an optimal lamp for cultivating various crops. This is where aurora jumps in. We created an optimal lamp for every plant.

2. What is the solution, including the value proposition?

A highly efficient, smart, ecological and customizable lamps for the industrial cultivation of plants.

There are already lamp manufacturers worldwide who offer individual functions in their lamps. However, there is no supplier who offers a completely adaptable lamp with all functions, which Aurora combines:

- Nearly unlimited spectra mix
- UV & IR ranges included
- App and Network remote control
- Over the air updates
- Changing lightspectrum over a defined light period and day
- Growing plant data library

3. Where is the innovation?

- Fully dimmable
- Full day-sun course
- Different climate zones
- Various height profiles
- Weather simulations (from cloudy to shady)
- Deep SPECTRA (UV 200 NM - IR 1400 nm)

Due to the modular design of the lamp, components can be replaced or repaired very easily. A lamp module consists of 90% recyclable aluminium and 5% self-printed housing parts. Only the highest quality and state of the art materials and diodes were used in the design to create a unique product built to last a lifetime. With the extended lamp version, different cameras, such as visual or UV/IR cameras can be integrated. With a time of flight sensor the distance from the plant to the light source can be determined and with an electronic suspension the distance can be adjusted fully automatically to ensure always optimal distance and accurate light intensity. This effect can up to a certain extent also be achieved by adjusting the light intensity by the lamp itself.

4. Who is the target customer?

- 1 Private customers: 1% of the population are home-grower. This results in a potential customer share of 90'000 people in Switzerland who could buy one or more lamps.
- 2 Professional plant nurseries: Currently there are around 700 CBD nurseries in Switzerland and over a thousand normal plant nurseries. It can be assumed that these plant nurseries would buy larger quantities of plant lamps.
- 3 Research & Development Institutions: In Switzerland, there are various research institutions such as Agroscope, which have already expressed their interest in our lamps.
- 4 Global Horticulture: Professional nurseries have an enormous demand for lighting, which gives them an advantage over their competitors.

The demand for economical and ecological lighting will increase steadily in the future, as not only horticultural crops but also vertical farms experience growth. In addition, there is the need for networkability and complete integration into existing systems, which is being driven by IOT (Internet of Things) and Industry 4.0 and is already integrated as standard in Aurora.

5. When do you plan to establish a start-up and launch the product/service in the market?

Q3 2021 to found Aurora and market launch of the first product.

6. How many people are on the team, and what is their background?

Remo Oberholzer, CEO & Product development

- can. Bsc. Natural Resources and Sciences, ZHAW LSFM (2021)

- P03 SWAG, Igluna 2020, Co-Leader & Light management by Aurora | swagsystem.space
- Founder Powerload.ch
- Electrician EFZ

Philipp Osterwalder, CFO Marketing & Sales

- Ex. Bsc. Natural Resources and Sciences, ZHAW LSFM (2021)
- Co-Founder 1LIMS (2018), Product development & Lab 4.0
- P03 SWAG, Igluna 2019 / 2020, Teamleader | swagsystem.space
- Lab technician, R&D Food
- Medical laboratory technician, human diagnostics

Michael Blickenstorfer, Network specialist & Front- and Backend

- System engineer
- P03 SWAG, Igluna 2020, System engineer; Climate management & Sensors

Peter Allenspach, Freelancer QM, QC, R&D

- Electronics technician
- Bsc. Electrical engineering and information technology (HSLU)

7. What are your plans during and after the GRS program?

During the GRS program we will receive a lot of coaching and develop all the tools we need for a fully functional start-up. Meanwhile, we will develop the prototype v1.0 by the end of 2020, and we will evaluate and request partners to build a network to work with in the future. Then the company will be founded, and the official market launch will be announced. We will build the supply chain, production, quality management and quality control, as well as logistics and distribution. Thanks to GRS we will have the opportunity to make the product marketable in a timely manner and to develop a solid basis for a company.