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LemnaTec
MEMBER OF THE NYNOMIC GROUP

CANOPYAIXPERT

The Multi-Sensor Phenotyping System for Canopies

LemnaTec Customized Solutions for Phenotyping

Manufactured by LemnaTec, distributed in the UK and Ireland by **analytik**.

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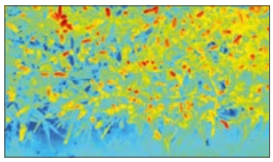
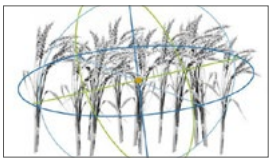
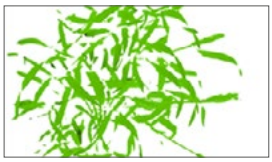
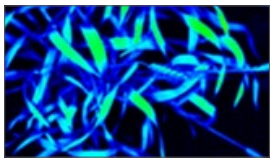
CANOPYAIXPERT

The Sensor-to-Plant Phenotyping System for Greenhouses and Growth Rooms

- Versatile instrument
- Broad range of phenotyping applications
- Plant-environment-interactions
- Genotype-phenotype-relations
- For research and breeding
- Imaging and analyses of plants in pots, containers, or ground soil
- Sensors moved across planting area
- Canopy-level data
- Plant-level data if plants do not overlap
- Multi-sensor phenotyping
- Advanced machine learning for feature extraction
- Database for plant data and metadata

Features

High-resolution plant phenotyping
Available for glasshouses and closed climate rooms
Experiment planning and automated measuring

Sensors unified in measuring head or sensor exchange system

Product Properties

Gantry system

- X-Y or X-Y-Z movement
- Full automation
- Scalable design for various room sizes
- Rapid data acquisition
- Flexible design of experiments

Sensor options – top view cameras

- Visible light/RGB camera module
- Near infrared (NIR) camera module
- Infrared (IR) camera module
- Chlorophyll Fluorescence Kinetics module
- Hyperspectral imaging module
- Multispectral imaging module
- Laser scanner

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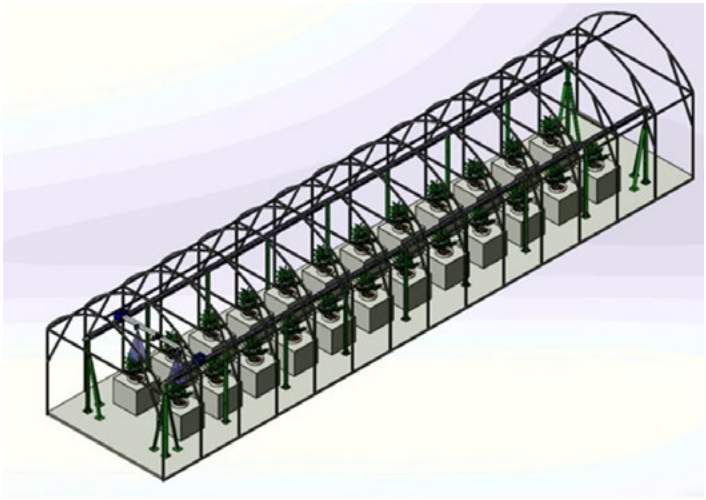
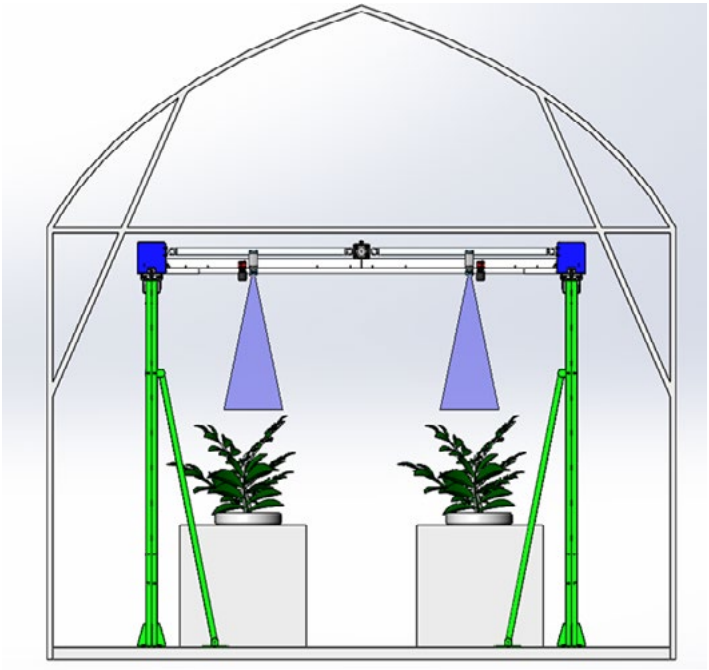
Modular Building Set with Three Application-Oriented Designs

The LemnaTec CanopyAIxpert is available in three models and can easily be customised to your needs.

Model Type 1, Y-Z Moving Carrier System

Model type 1 is a system for non-scanning cameras mounted in fixed positions on the carrier system.

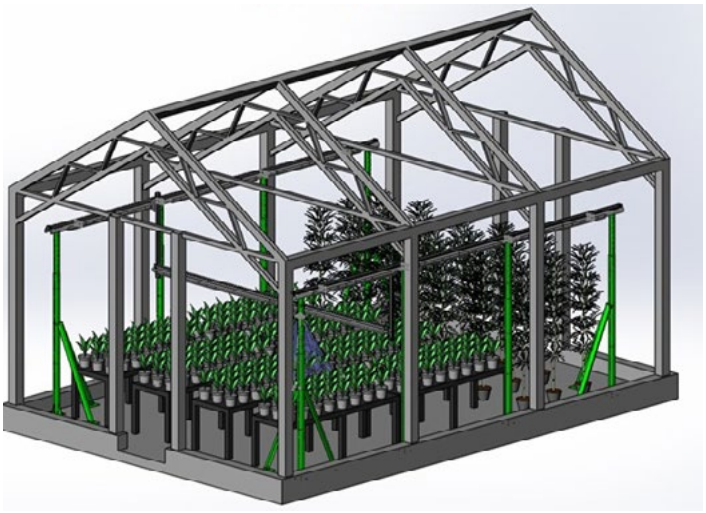


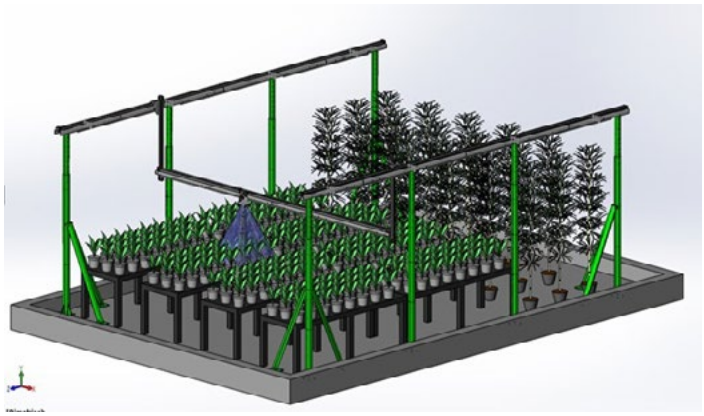


- Carrier system installed on adjustable framework in greenhouse
- Top-down working method
- Moveable X-Axis based on timing belt drive
- Length up to 25 m
- Suitable for non-scanning cameras (e.g., RGB, IR)
- Y-Axis up to 8 m length. (Optional)
- Z-Axis up to 2 m length. (Optional)

Model Type 2, X-Y-Z Moving Carrier System

Model type 2 is a system for scanning and non-scanning cameras mounted as exchangeable sensors on the carrier system. It works in combination with the LemnaTec Sensor Exchange Station System. The system has an adjustable Z-axis for different sensor types and different plant heights. The sensor and the Y-axis are moved together in Z-direction to adjust imaging height and prevent collisions with taller plants.





- Carrier system installed on adjustable framework in greenhouse
- Top-down working method
- X-Y-Z-Gantry system based on linear axes
- X-Axis up to 8.5 m length
- Y-Axis up to 8 m length
- Z-Axis up to 2 m length
- Suitable for static and scanning sensors (e.g., RGB, IR, hyperspectral cameras, 3D laser scanner ...)
- Sensor exchange station optional for fully automated operation with different cameras/sensors

Model Type 3, Compact X-Y-Z Moving Carrier System for Climate Chambers

Model type 3 is a system for scanning and non-scanning cameras mounted as exchangeable sensors on the carrier system. It works in combination with the LemnaTec Sensor Exchange Station System. It is a compact system that particularly fits into climate-controlled chambers.

- Carrier system installed on adjustable framework in greenhouse
- Top-down working method
- Suitable for climate-controlled chambers
- X-Y-Z-Gantry system based on linear axes
- X-Axis up to 8.5 m length
- X-Axis for wall mount or on pillars
- Y-Axis up to 8 m length
- Z-Axis up to 2 m length
- Suitable for static and scanning sensors (e.g., RGB, IR, hyperspectral cameras, 3D laser scanner ...)
- Sensor exchange station optional for fully automated operation with different cameras/sensors

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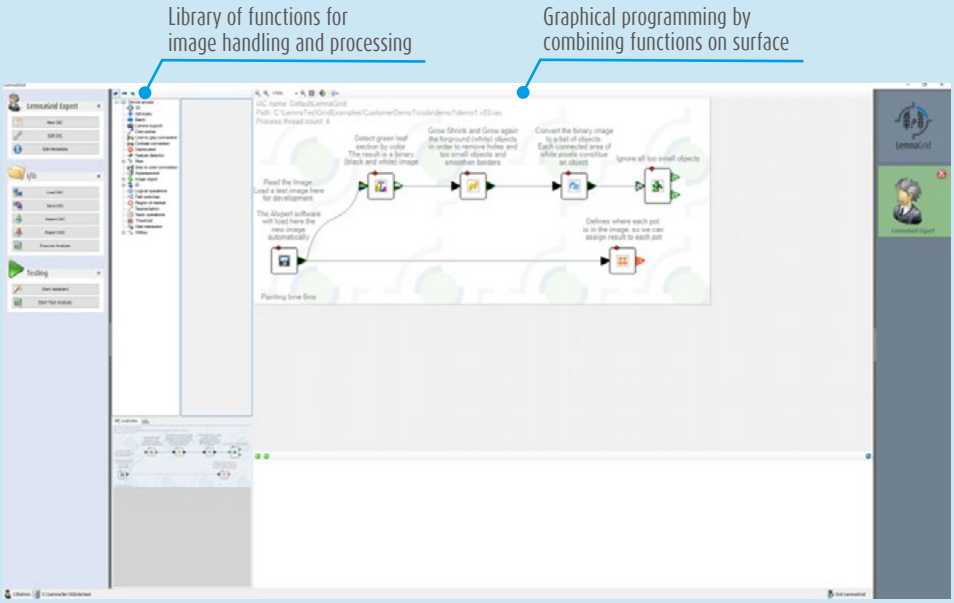
Software

The CanopyAIxpert is delivered with a comprehensive software package. The software provides all possibilities of system control so that users can provide sample information and program a complete workflow for the samples. Users can define the samples loaded into the system, and give information such as species, genotype, treatment, or other grouping parameters. For all available cameras, users can determine which imaging principles are used with the loaded samples – full set or selected sub-set – and make the essential settings such as exposure, white balance, and more.

After imaging all data are stored and accessible for image and data processing. With LemnaGrid, we provide a user-programmable image processing toolbox that allows for analyzing the recorded image data. LemnaGrid comprises a large library of functions to handle, analyze, and process various types of image data. By combining functions on a graphical surface, users can establish analytical workflows.



In addition, we offer the development of customized analyses for user-generated images, including machine learning procedures.

The LemnaAIxplorer enables access to and visualization of all images, analyses, and related data. Tabulating and plotting functions are available together with image browsing. All data can be exported as CSV files or directly delivered to standard data bases.