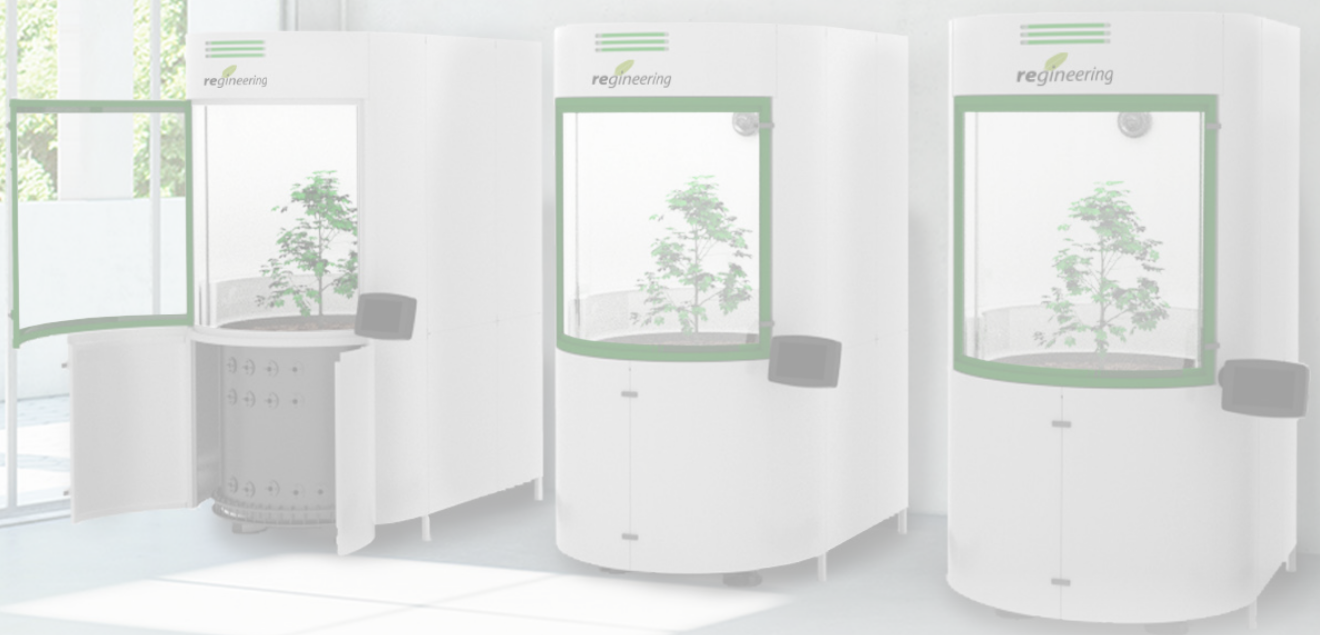




EnviroLab



Version: 1121/2023

EnviroLab

Biotope in a box

Outstanding engineering combined with beautiful design. That is our EnviroLab.



It integrates a weighable lysimeter, climate chamber with vegetation room and LED lighting into a compact stand-alone solution. It is easily controlled with a tablet or remotely from your desk. Inputs are made via an intuitive graphical user interface. Also time series from field measurements or computer simulations can be used for controlling the Envirolab. Assemble your biotope of soil, plants, and fauna according to your needs and control the environmental parameters according to your research questions.

A visualization tool enables data checks of measured values any time also per remote. Alarm functions prevent data gaps and measurement errors. The data can be stored locally or automatically on a server. The raw data can be individually processed and thus optimally adapted to the user's needs. The EnviroLab is low-maintenance and easy to use - an ideal research platform for all questions about our environment.

Product variations

Dimensions EnviroLab	Width:	1.5 m
	Depth:	2.0 m
	Height:	2.85 m
	Weight:	approx. 800 kg (without lysimeter & liquids)
Dimensions atmosphere space	Diameter:	1.35 m
	Height:	1.5 m
	Surface:	1.54 m ²
	Volume:	2.3 m ³
Dimensions lysimeter cylinder	Diameter:	1.13 m*
	Depth:	1.0 m
	Surface:	1 m ²
	Volume:	1 m ³
	Weight:	200 kg (without soil) approx. 2.200 kg (with soil)
	Material:	stainless steel (1.4301)

Atmosphere	EnviroLab Forest Green	EnviroLab Ocean Blue
Air temperature simulation	✓	✓
Air humidity simulation	✓	✓
Lighting	✓	✓
Lighting simulation (dimmmable by channel 0-100%)	2-Channel LEDs, 2500µMol/m ² s	5-Channel LEDs, 2500µMol/m ² s
CO ₂ simulation	-	✓
CH ₄ simulation	-	optional
N ₂ O simulation	-	optional
O ₃ simulation	-	optional
Irrigation system and simulation	-	✓
Input parameter control via graphical user interface	✓	✓
Input parameter control via time series input	-	✓
Camera	-	✓

Product variations

Soil	EnviroLab Forest Green	EnviroLab Ocean Blue
Soil temperature simulation (lower boundary)	✓	✓
Matric potential simulation (lower boundary)	-	✓
Control lower boundary condition	Free drainage with tipping bucket (Resolution: 100g)	LBC-pump with aliquote sampling device
Lysimeter weighing system	✓	✓
Matric potential sensors	1x TEROS32	4x TEROS32
Water content sensors	-	4x TrimePico32
Root tubes	-	✓
AWAT-Filter	-	✓
Control based on Industry standards with PLC and full remote control	✓	✓
Easy data visualisation	✓	✓

You need an individual tailored solution?

We design, plan and realise it with you in close cooperation.

Simulation options

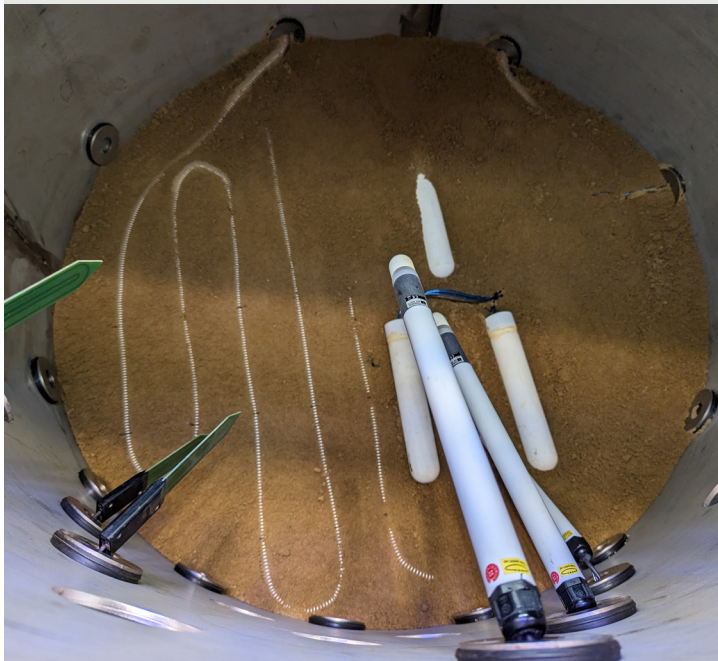
Climatisation parameter atmosphere

Air temperature*:	+2°C up to +50°C
Accuracy air temperature:	±1K
Gradient air temperature:	max. ±5K/H
Air humidity:	45% - 90%
Accuracy air humidity:	±5%
Gradient air humidity:	max. ±5K/h

Cooling brine must be provided on site.

Seperate cooling machine on request.

GasPort to sample gas samples or directly connect a gas analyser.



Lower boundary control (hydraulic)**

Special ceramic cups with 1bar air entry point

Leachate tank: 50 L volume

Resolution leachate balance: 1,0 g

Accuracy leachate balance: 10 g

Soil temperature control system

Temperature at the bottom of soil column from +2°C to +20°C***

Cooling brine must be provided on site. Seperate cooling machine on request.

*For a room temperature of 2°C, a brine of -2°C is required on site.

**Only with EnviroLabs with LBC-pump.

***For a floor temperature of 2°C, a brine of -2°C is required on site.

Simulation options



Gas simulation

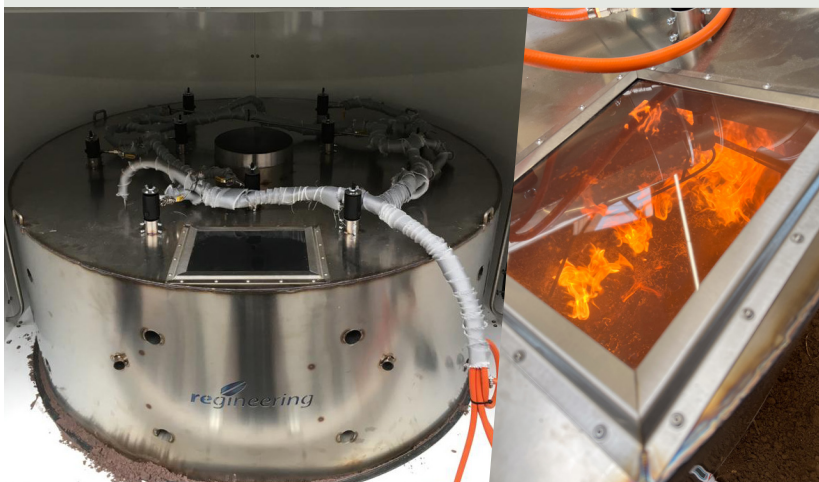
Special full space ventilation system with 360° distribution to guarantee homogeneous conditions for air temperature, air humidity and optional with simulation of various gases:

Carbon dioxide (CO ₂):	ambient up to 5.000 ppm
Ozone (O ₃):	ambient up to 1.000 ppb
Methane (CH ₄):	ambient up to 10.000 ppb
Nitrous oxide (N ₂ O):	ambient up to 3.000 ppb



Irrigation simulation

With the help of a watering ring or a spray nozzle it is possible to simulate different types of rain showers.



Fire simulation

Simulation of wildfires within the atmosphere chamber using a fire hood with a heat-resistant viewing window. Inflow of propane gas for controlled flaming of the plants. The exhaust pipe is equipped with a „spark shield“ to catch sparks and light ash. These can be removed from a collection container after cooling.

Functions and equipment

Sensor equipment

Lysimeter:

TEROS32 tensiometer for matric potential and temperature (10cm, 30cm, 50cm, 90cm)

TrimePico32 for volumetric water content, electrical conductivity and temperature (10cm, 30cm, 50 cm, 90cm)

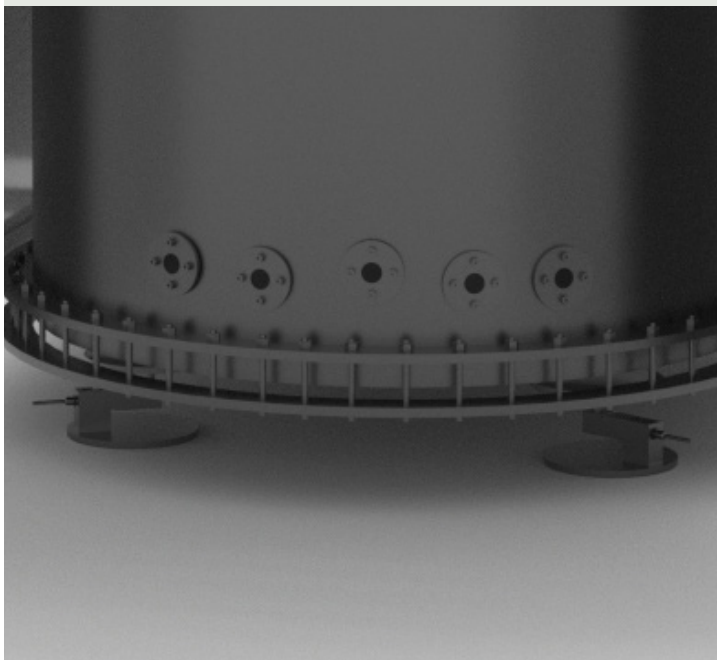
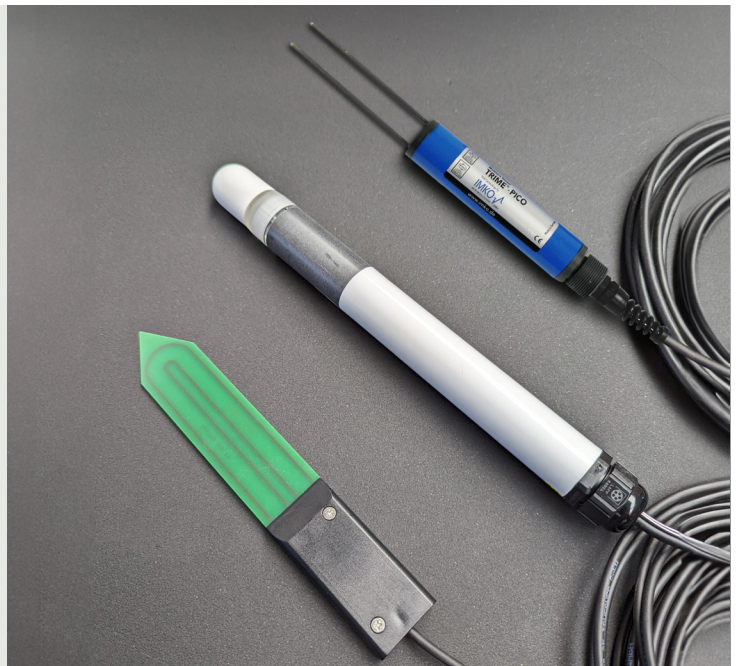
Additional sensors and other depth on request.

Atmosphere:

Air temperature, air humidity and PAR sensor

Root cam:

Root cam tubes with predesigned depths (20cm, 40cm, 60cm)



Weighing system lysimeter

0,5 m² lysimeter surface

3 pcs. load cell á 500 kg

Resolution lysimeter balance: 5 g / 0,01 mm

Accuracy lysimeter balance: 50 g / 0,1 mm

1 m² lysimeter surface

3 pcs. load cell á 750 kg

Resolution lysimeter scale: 10 g / 0,01 mm

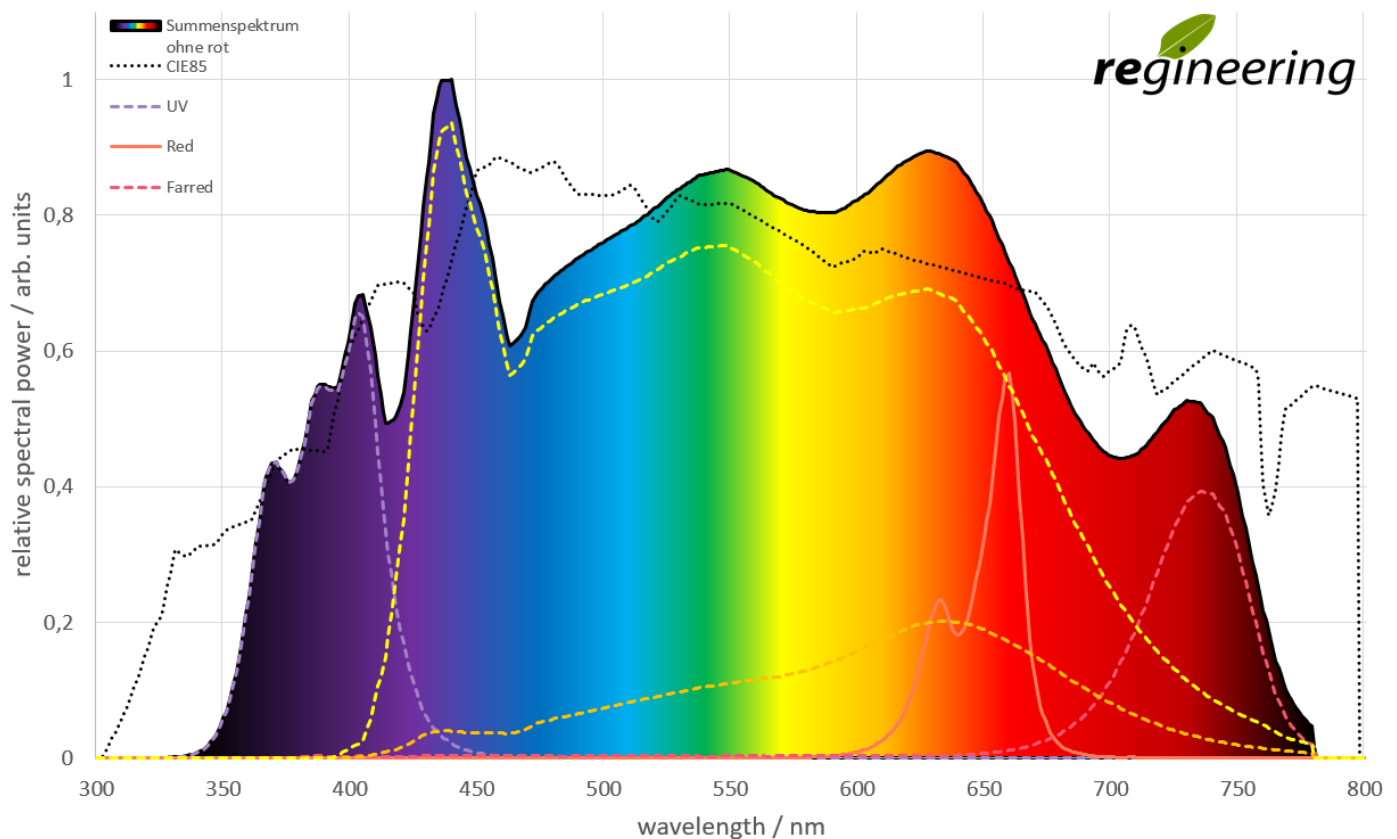
Accuracy lysimeter scale: 100 g / 0,1 mm

Functions and equipment

5-Channel Light Management System (LIMAS)

CW	6500K	Each channel is separately flicker-free dimmable (0 - 100%)
WW	2700K	Light intensity 2500 μ Mol/m ² s in 1,5 m distance to soil surface with
UV	365 + 385 + 405 nm	extra channel especially for improved plant growth
Red	630 + 660 nm	Higher intensity with >2500 μ Mol/m ² s on request
Farred	730 nm	Programmable day/night cycles

Example of sun-like spectral power distribution with 5-channel spectrum:



Due to the in-house production of the lighting system, custom designs for special requirements are possible at any time. Please contact us if required.

Interested?

Contact us:

regineering GmbH

Am Dörrenhof 13A
85131 Preith
Germany

Tel.: +49 8421 93766 0
Fax: +49 8421 93766 69

Mail: sales@regineering.com
www.regineering.com

JR-AquaConSol GmbH

Steyrergasse 21
8010 Graz
Austria

Tel.: +43 316 384545 0
Fax: +43 316 384545 99

Mail: lysimeter@JR-AquaConSol.at
www.jr-aquaconsol.at

**You need an individual tailored solution?
We design, plan and realise it with you
in close cooperation.**



Required power supply: 380V / 16A
Max. power consumption: 8kW
Cooling brine supply: Inlet -4°C, Outlet 6°C
Water supply: Deionised water (humidification) and irrigation water.