



# CONTROLLED ENVIRONMENTS

For Plant Research, Phytopharma  
& Cannabis Production

EUROPE





CONVIRON

### GEN1000 Reach-In

Single chamber uniquely adaptable to four different applications:

- Plant Growth
- Arabidopsis
- Tissue Culture
- Incubation
- Entomology

Precisely designed airflow and lighting configurations for each application.



## REACH-IN CHAMBERS

For applications requiring precise control of environmental parameters provided within flexible and space-efficient chamber designs.



GEN1000 Reach-In

## PROVIDING SOLUTIONS

### For Plant Research, Phytopharma & Cannabis Production

Convion's controlled environments provide precise, uniform, and repeatable control of critical environmental parameters including temperature, light, humidity, CO<sub>2</sub> and other gases. All environmental conditions can be remotely programmed, monitored and analyzed with accuracy and convenience. Numerous other options are available to meet your requirements, such as:

- Extended temperature range
- Increased growth height
- Air and water cooled refrigeration
- Fluorescent, HID and LED lighting
- Dehumidification
- HEPA filtration



Walk-In Rooms

### WALK-IN ROOMS

For larger scale, higher throughput applications that demand uniformity of environmental conditions throughout a larger growth space.



Convion Growth House™

### CONVIRON GROWTH HOUSE™

For applications that require the capacity of a greenhouse with the precision of a growth chamber.



Custom Room with LED lights

### CUSTOM SOLUTIONS

Our team of designers and engineers specialize in custom designing controlled environments to meet your unique research, production and facility layout requirements.

Established in 1964, Convion is the world's largest supplier of controlled environment systems. Applications include:

- Tall and short plants
- Incubation, germination
- Seed storage
- Tissue culture
- Entomology
- Phytopharma Production
- Cannabis Production



# INTEGRATING TECHNOLOGIES For High Performance Facilities

## ADVANCED CONTROL SYSTEMS BY ARGUS

An advanced control system is critical to translate your expertise into action accurately and reliably. Acquired by Conviron in 2013, Argus (Canada) has over thirty years' experience specializing in the design and manufacture of integrated control systems for greenhouses and plant growth chambers and rooms.

Argus offers proven solutions for plant-centric central management of entire research and production facilities, including growth rooms and building systems. In addition to precision temperature and humidity control, Argus offers:

- Sophisticated programs for managing light intensity, photoperiods and CO<sub>2</sub>
- Precision hydroponic feed recipes tailored for each plant using advanced irrigation scheduling and the Argus Multi-Feed nutrient injection system
- 24/7 monitoring of all equipment and facility conditions with local, remote alarm annunciation and custom email alerts to allow rapid response to alarms
- Monitoring of crop conditions and development with integrated camera imagery
- Tracking of all production parameters over time with extensive data acquisition and graphing capabilities
- Secure remote system access via LAN/Internet
- Comprehensive remote service and support



Argus Control System



LED Lighting Solutions



Argus Multi-feed Injectors



Automated Plant Imaging System

## LIGHTING SOLUTIONS

### Optimizing Spectrum and Energy-Savings

The selection of lighting depends on your requirements for light spectrum and energy-usage. Most Conviron plant growth rooms and chambers have primary and secondary lighting or a mix of types – fluorescent, halogen incandescent, high pressure sodium, metal halide and ceramic metal halide, and LED – to deliver a range of intensity from 100 to 1,400  $\mu\text{mol}$ .

As an exclusive distributor for Valoya (Finland), Conviron offers continuous wide spectrum LEDs that have been developed specifically for high volume plant growth applications and can reduce energy consumption by nearly 40% compared to fluorescent T5. Conviron also integrates LEDs from other manufacturers to provide you with LEDs most suited to their application.

## STREAMLINING WORKFLOW AND IMPROVING CONTROL

### Controlled Irrigation

Conviron's automated irrigation systems eliminate the inaccuracies of manual watering of plants. "Flood and drain" systems for trays or drip systems for individual plants are available depending on the plant requirements and size of growth room.

### Automated Nutrient Supply

Argus Multi-Feed injectors offer advanced fertigation capabilities including full single-element dosing options and on-the-fly delivery of multiple stock concentrates regardless of the system flow rate. The same dosing equipment is capable of delivering numerous recipes, which can be modified to suit changing environmental conditions. Fully integrated with the Argus control system, Multi-Feed injection systems enable you to simply dial in a precision feeding program for every crop.

### Space-Efficient Benching

Conviron provides various shelving and benching solutions, including rolling benches with integrated irrigation trays, expanded metal tops, or solid tops mounted on the bench.

### Plant Imaging

The Conviron Growth House™ is easily configured to work seamlessly with commercially available imaging and automated plant handling and production systems.

# EUROPEAN REGION

## MAJOR INSTALLATIONS

### DENMARK

University of Aarhus  
6 Reach-In

### UNITED KINGDOM

John Innes Centre  
11 Walk-In  
Macaulay Institute  
6 Reach-In  
National Institute of Agricultural Botany  
21 Reach-In  
Rothamsted Research  
10 Reach-In  
Sainsbury Laboratory  
6 Reach-In, 37 Walk-In  
University of Cambridge  
8 Reach-In, 16 Walk-In  
University College Dublin  
22 Reach-In, 8 Walk-In  
University of Hertfordshire  
8 Reach-In  
University of Sheffield  
20 Reach-In, 16 Walk-In

### FINLAND

Finnish Forest Research Institute  
4 Reach-In, 14 Walk-In  
University of Joensuu  
13 Chambers

### GERMANY

Heinrich-Heine-University  
6 Reach-In  
Humboldt-University of Berlin  
11 Reach-In, 6 Walk-In  
Martin-Luther University  
12 Reach-In  
Max Planck Institutes  
18 Reach-In, 3 Walk-In  
Ruhr University Bochum  
15 Reach-In  
Senckenberg Nature Research Society  
6 Reach-In  
Technical University of Munich  
19 Reach-In, 3 Walk-In  
University of Bayreuth  
9 Reach-In  
University of Bonn  
6 Reach-In  
University of Heidelberg  
25 Reach-In  
University of Hohenheim  
6 Reach-In

### HUNGARY

Agricultural Biotechnology Centre  
6 Reach-In  
Hungarian Academy of Sciences  
8 Reach-In, 8 Walk-In

### SPAIN

CIB Biological Research Centre  
6 Reach-In  
University of Córdoba  
6 Reach-In  
Gothenburg University  
5 Reach-In, 1 Walk-In  
Lund University  
6 Reach-In  
Swedish University of Agricultural Sciences  
12 Walk-In  
University of Stockholm  
4 Reach-In, 3 Walk-In

### SWITZERLAND

Federal Institute for Forest, Snow and Landscape Research  
12 Reach-In, 2 Walk-In  
Swiss Federal Institute of Technology  
14 Reach-In, 18 Walk-In  
University of Zurich  
6 Reach-In, 5 Walk-In  
Zoology Institute  
6 Reach-In

## OTHER INSTALLATIONS

### AUSTRIA

University of Vienna

### BELGIUM

Gent University  
Katholieke University  
University of Liege

### DENMARK

University of Copenhagen

### UNITED KINGDOM

Alice Holt Research Station  
Bournemouth University  
Cambridge University  
Harper Adams University  
Horticulture Research  
Liverpool John Moores University  
Scottish Agriculture College  
Scottish Crop Research Institute  
University of Essex

University of Glasgow  
University of Wales  
University of York  
West Scotland College

### FRANCE

UMR 211-Bioemco  
University of Paris  
University of Technology

### GERMANY

Bremen University  
Federal Ministry for Food and Agriculture  
Fraunhofer Institute  
University of Bremen  
University of Duesseldorf  
University of Rostock

### GREECE

University of Thessaloniki

### ITALY

University of Milan

### POLAND

Adam Mickiewicz University

### PORTUGAL

University of Tras-Os-Montes

### SPAIN

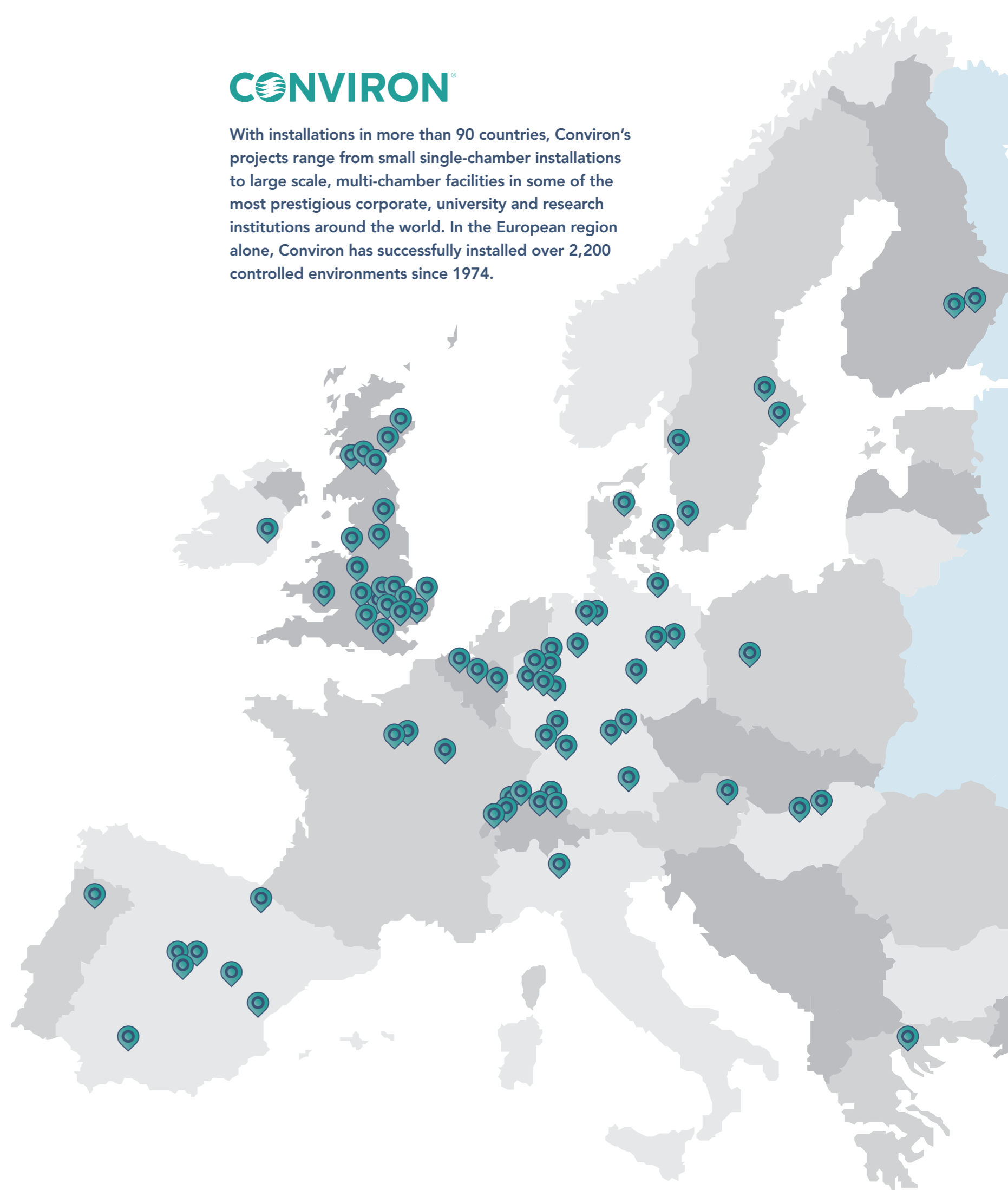
Spanish National Institute for Agriculture, Food Research and Technology  
Technical University of Madrid  
University of Castilla  
University of Navarra  
Valencian Institute for Agricultural Research

### SWITZERLAND

Friedrich Miescher Institute  
University of Lausanne  
University of Neuchatel

# CONVIRON®

With installations in more than 90 countries, Conviron's projects range from small single-chamber installations to large scale, multi-chamber facilities in some of the most prestigious corporate, university and research institutions around the world. In the European region alone, Conviron has successfully installed over 2,200 controlled environments since 1974.







## GROUP OF COMPANIES

Founded in 1964, CEL Group of Companies (CEL) comprises Conviron Canada, Conviron USA, Conviron Europe and Conviron Australia together forming the world's leading designer and supplier of controlled environments for plant growth. CEL Group also includes Argus Controls, one of the leading suppliers of plant-centric environmental controls and automation systems used in greenhouse and indoor growing facilities. Together, Conviron and Argus provide technologies to our clients in the plant science research, commercial horticulture, and phytopharmaceutical industries in over 90 countries around the world.



**CONVIRON**<sup>®</sup>

**ARGUS**<sup>®</sup>  
CONTROLS

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