



# Control Systems for Horticultural Facilities

# Why Argus?

## GROWER-FOCUSED DESIGN

For the expert grower with complex operations, we customize a system so you can manage your facility exactly the way you want – not the way we tell you.

## PLANT-CENTRIC TECHNOLOGY

Our technology is designed for harsh growing environments and uses proprietary control algorithms that automate growing processes and react to the needs of the plants - anticipating specific requirements, such as lighting, watering or feeding cycles.

## SHOULDER-TO-SHOULDER SUPPORT

We're with you every step of the way. Shoulder-to-shoulder, we work with you to develop a solution that fits exactly what you need.

## FUTURE-READY PLATFORM

For over 35 years, Argus has been at the leading edge of development of tools and applications for growers. Using cloud-technology, machine learning and artificial intelligence we are increasing the connectivity of systems and driving your productivity and profitability. We are your platform for the future.

## Our growers are **GROWING.**

**3,000+**

SITES WITH ARGUS

**12,000+**

GROWERS

**18,000+**

CONTROLLED ZONES

*We've been able to control crop specific setpoints and control parameters more precisely than ever before.*

– LivWell

*I'm blown away by the flexibility and amazed at what a powerful tool it is!*

– Lehman College Greenhouse

*Not only has our greenhouse temperature control improved but the system anticipates conditions to prevent costly temperature fluctuations.*

– Pan American Seed

*Argus hardware is easily adapted to the plethora of sensors and actuators required in a scientific installation such as ours.*

– University of Guelph

# Control everything.



Heating



Cooling



Lighting



H<sub>2</sub>O



Fertigation



Humidity



Airflow



CO<sub>2</sub>



Other variables

## EQUIPMENT OPTIMIZATION

- Monitored activity of devices: on/off cycles, total running times, maintenance reminders
- Monitored usage of energy and water relative to targets

## CONSTANT CONTACT

- 24/7 alarm monitoring of all critical conditions with quick detection of any deviations
- Automatic voice and email alerts
- Multiple alarm conditions and custom intelligent alarm models
- Custom monitoring solutions

## COMPREHENSIVE DATA ACQUISITION

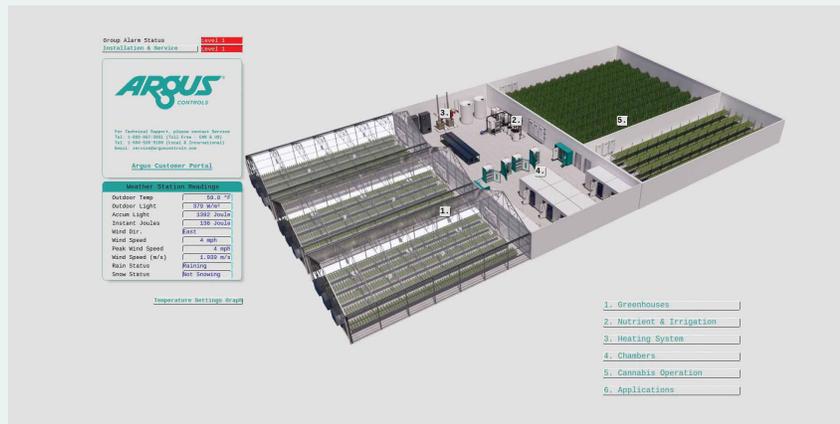
- Extensive data logging and graphing capabilities
- Data channels can be recorded at high resolutions with prefiltering options
- Quickly review and analyze your data with integrated multi-overlay graphing tools

## CONTROL & AUTOMATE

- Precision climate control
- Intelligent lighting control
- Tracking for system security and audits
- Advanced irrigation and fertigation
- Argus hardware and software has GMP approval

## TITAN 900 SOFTWARE

The Titan 900 software offers an enhanced user experience with innovative visual controls and value added features - such as enhanced graphs, API, and smart reporting. The refreshed user interface uses colour and layout strategies that can be customized to suit individuals' need for style and information. Our software is designed to de-clutter the interface, optimize visualization of your facility's data, and focus your attention on what is important to you.



TITAN 900's fully customizable screens provide a detailed view of your facility



Argus FOCUS enables you to analyze your results batch-by-batch and develop actionable insights

## ARGUS FOCUS

An innovative software solution for cultivation optimization that provides you the information and tools you need to plan, assess and then steer your crops to better outcomes.

- All your important cultivation data in one place
- Record and repeat your best practices
- Know what's happening to your crop in real-time
- Identify exactly what to improve
- Develop a library of plans that can be easily replicated

## ARGUS LIVE

With a live view of your operation, you can monitor, analyze, and run your facility in real time, giving you full control whether you're at your desk or on the move. It is a safe, secure, and powerful enhancement to the most advanced environmental control system on the market.



Argus Live can be used on tablets, phones, and PC

### SMART & INTERACTIVE DASHBOARD

Customize your Argus Live dashboard to ensure you can access the most essential information of your operation.

### PERSONALIZED SETTINGS

Completely customize Argus Live to suit the needs of your operation, from personalizing the interface to controlling your facility's settings to keep your operation running smoothly.

### CUSTOMIZABLE DISPLAY

Configure each section to prioritize the information you want to see and select how you want your data to be displayed through visual tools like graphs, tables, dials, and gauges.

## OPTIMAL LIGHTING

- Photoperiod start/end time settings can be absolute (time of day) or relative (tied to dawn or dusk)
- Cyclical lighting settings for energy efficient photoperiod control
- Time windowed supplementary light control
- Light sensor-based operation
- Light level and light duration proving times
- Light accumulation override features to reduce energy costs and extend lamp life
- Minimum cycle on times to prevent short cycling of lighting equipment
- Additional overrides, limits, and operating logic as required



Greenhouse lighting optimization

## DAILY LIGHT INTEGRAL PROGRAM

- One of the many programs available on the Argus system
- Measures the Daily Light Integral (DLI) at the crop level
- Algorithmically predicts the available natural light as the basis for supplementary lighting control
- Delivers a standard DLI despite daily and seasonal weather variations
- Optimizes energy consumption and lamp usage



The Argus DLI program supplements the exact amount of artificial light required

## CUSTOM & PRECONFIGURED SOLUTIONS

TITAN provides a powerful, integrated controls platform for managing your entire horticultural facility.

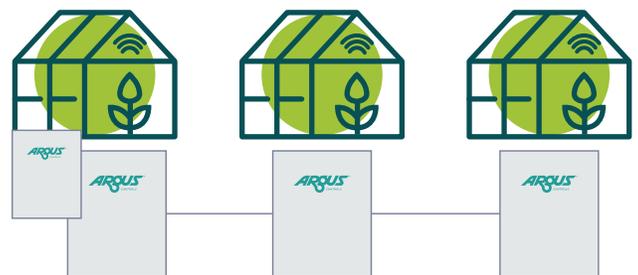
Choose fully custom TITAN solution or Argus PRIME – a preconfigured solution to get you growing fast.



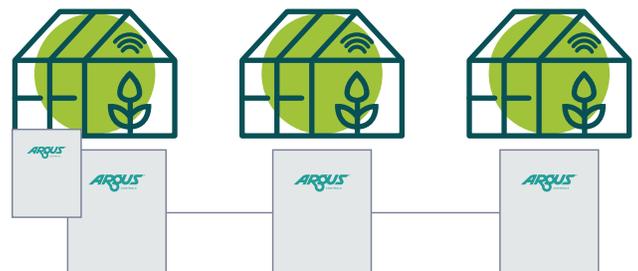
**Argus PRIME is ideal for growers that want an effective, out-of-the-box controls solution.**



*Simple solution gets you growing:*



*And is easily expandable in the future:*



# FULL FACILITY CONTROL

Argus Controls' software and hardware provide a powerful, integrated solution for managing your entire horticultural facility – all from your central command center, networked PC, or mobile devices. Argus Controls can act as the main control system in your operation or fully integrate into your existing Building Management System.



Measuring temperature, humidity, lighting and CO<sub>2</sub>



Fertigation control

Argus controlled greenhouses at University of California Davis



## GROWTH ROOMS

- Climate control
- Lighting
- CO<sub>2</sub>
- Fertigation
- Research Instrumentation

## FERTIGATION CONTROL

- *Multi-Feed* nutrient dosing
- Water treatment
- Tank management

## GROWTH CHAMBERS

- Climate control
- Lighting
- CO<sub>2</sub>
- Fertigation
- Research Instrumentation

## PHYSICAL PLANT OPERATIONS

- Boilers/chillers
- Distribution systems
- Heat recovery
- Backup power

## RESEARCH GREENHOUSES

- Climate control
- Lighting
- CO<sub>2</sub>
- Fertigation
- Research Instrumentation

## CENTRAL WEATHER STATION

Wireless control segments

## REMOTE WELLS PUMPING STATIONS, FIELD TRIALS

- Irrigation
- Moisture status
- Soil temperatures
- Pump control
- Well monitoring

## REMOTE PCs

- Operator access

## CORRIDORS & PREP ROOMS

- Temperature control
- Ventilation
- Monitoring

## CENTRAL MONITORING Argus Server PC

- Audit trail
- Diagnostics
- Alarms
- Email notifications
- Data collection & archiving

## PROPAGATION ZONES

- Climate control
- Lighting & shade
- CO<sub>2</sub>
- Fertigation
- Misting control
- Rooting/germinating Temperatures

## INTERNET

- Remote access
- Monitoring
- Email notifications



Climate control in the greenhouse



Argus controlled greenhouse produces 1,000,000 heads of lettuce per month with 80% less water.

Planted Detroit achieved an 80% reduction in watering time using Argus Controls.



Controlling lighting and shade curtains in the greenhouse



Founded in 1964, the 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. The CEL Group also includes Argus Controls, the leading supplier 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 plant-derived pharmaceutical industries in over 90 countries around the world.



[arguscontrols.com](http://arguscontrols.com)

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