



# Control Systems for Horticultural Facilities



# FULL FACILITY CONTROL

Argus Controls' software and hardware provide a powerful, integrated solution for managing your entire horticultural facility from greenhouse and physical plant operations, to fertigation systems, grow rooms & growth chambers, nurseries, and propagation zones – 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.**

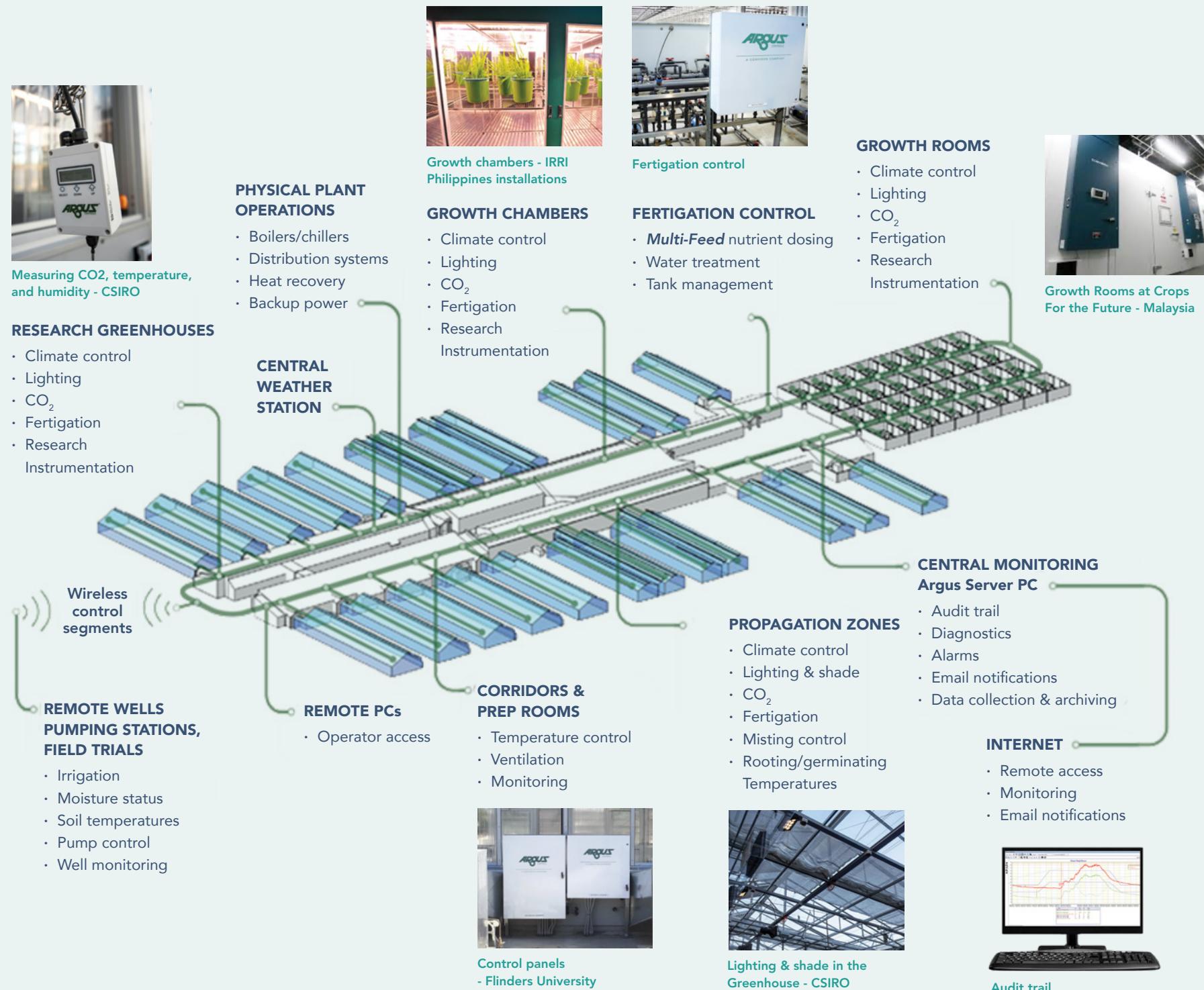
*With over thirty-five years of experience, Argus is a pioneer in equipment automation.*



Hope Valley Nursery - Western Australia

## CONTROL AND AUTOMATION

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



Department of Agriculture and Fisheries, Queensland Government

## 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



## 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

## PERFORMANCE TRACKING & EQUIPMENT OPTIMIZATION

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

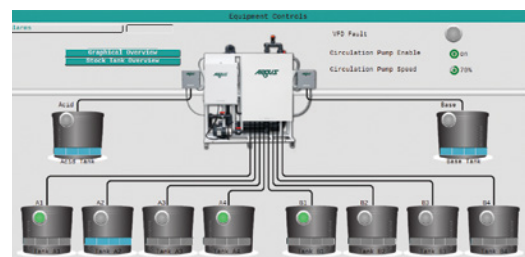


Different crops controlled by an Argus system

# AUTOMATED IRRIGATION

## IRRIGATION MANAGEMENT

- Intelligent, demand-based irrigation strategies
- Water source and storage tank level management
- Evapotranspiration modelling
- Water conservation strategies
- Water quality monitoring and control
- Crop moisture status monitoring
- Water treatment and drain recycling



Controlling irrigation using the Argus Titan Software

## NUTRIENT CONTROL

- Full single-element dosing options are available as well as standard A/B style stock tank applications
- Programming and operations are managed seamlessly by the Argus fertigation management software
- Can produce up to 64 distinct user specified recipes



Nutrient control

# LIGHTING CONTROL

## OPTIMAL PERFORMANCE

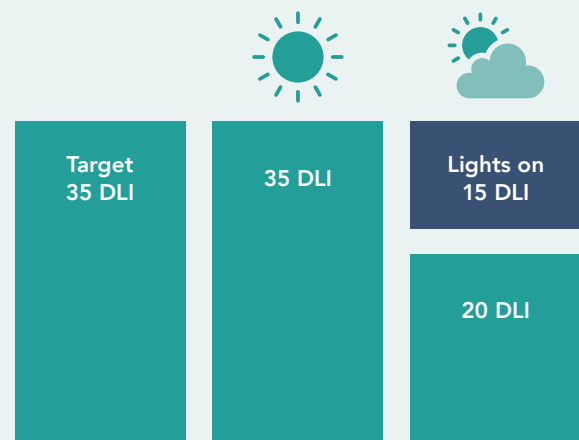
- Photoperiod start/end time settings can be absolute (time of day) or relative (tied to dawn or dusk)
- Cyclical lighting settings for energy efficient photoperiod control
- Time windowed supplementary light control
- Light sensor-based operation
- Light level and light duration proving times
- Light 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



Lighting Control in the Greenhouse

## 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

# LINE VOLTAGE INTERFACING

Argus can provide custom engineered combination panels containing the Argus Titan control hardware along with prewired power distribution and line voltage relays matched to the controlled loads. This allows for a space saving, 'all-in-one' design and minimizes on-site installation.

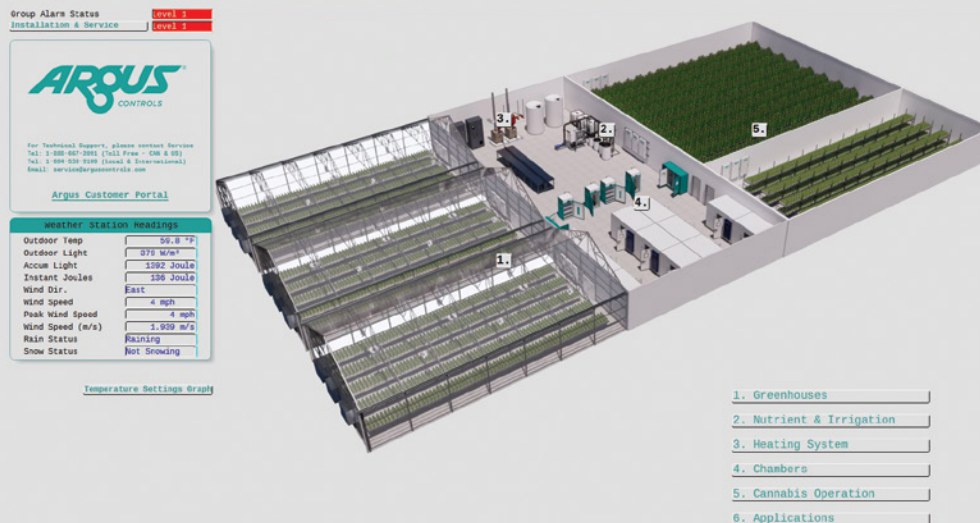


Argus Panels - CSIRO

# ADVANCED SOFTWARE

## TITAN 900 SOFTWARE

The Titan 900 software offers an enhanced user experience with innovative visual controls and value added features (such as intuitive visual controls, 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.



Fully customizable screens on the Titan 900 software for a detailed view of your facility

## 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 one of the most advanced environmental control systems 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.



# PLANT FOCUS

## A PLANT-CENTRIC SYSTEM FOR YOUR ENVIRONMENT

Argus Controls can easily be integrated to your existing Building Management System, adding features that are key to a plant growing environment. This will bring some key benefits to your operation:

- Growers can enter all setpoints, recipes, and schedules into Argus' screens
- Argus communicates seamlessly with BMS HVAC controls and setpoints/actuals visible on both systems
- Sensor readings are fully integrated and visible on both systems
- Integration of climate, light, CO<sub>2</sub>, irrigation, and nutrient delivery, all with a single modeling program
- Management of Daily Light Integral at the plant level
- Evapotranspiration Model to determine irrigation and nutrient requirements which results in maximizing nutrient uptake
- Scheduling of feeding and watering over the entire growth cycle with recipes for different plant types and growth phases

### Charles Sturt University



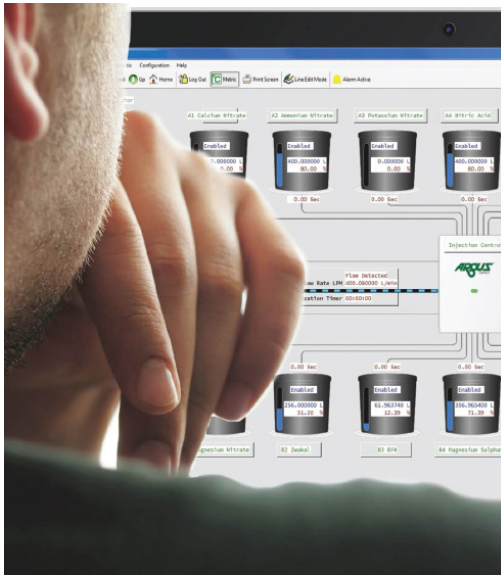
### CSIRO



# RELY ON US

Our equipment and our entire organization are designed to provide you with rapid response and full support whenever you need it.

- We partner with you to ensure proper installation, system commissioning, and operator training. In addition to routine assistance, we provide 24/7 after-hours, weekend, and holiday emergency support.
- Argus systems feature comprehensive self-monitoring of all control components and communications pathways, as well as extensive monitoring of controlled equipment and processes.
- In the event of emergencies, our flexible alarm annunciation options ensure that problems are detected early, enabling the most prompt response possible.
- Our systems are fully designed for remote support, so the location of your facility does not matter.
- In the event of a system-based issue, manual overrides are provided on most equipment relays to assist in troubleshooting, repairs, and emergency operation.



Argus provides 24/7 emergency support



**CEL  
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.



## CONTACT US

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