



## Last Quarter Capture

Last quarter was exciting for Surna as we launched a new sensors, controls and automation platform.

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## CONGRATULATIONS

**ILLINOIS!** YOU'RE HISTORIC FOR BEING THE FIRST STATE TO LEGALIZE CANNABIS THROUGH THE STATE LEGISLATURE!

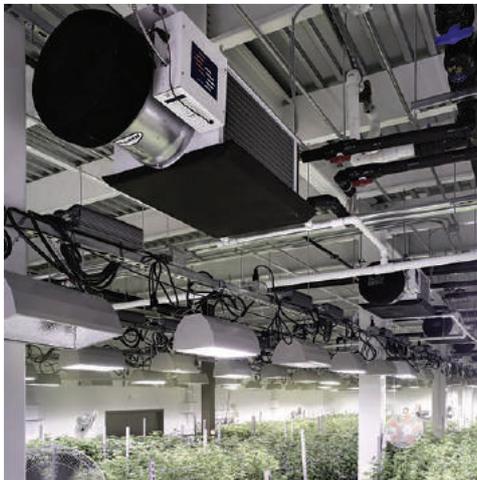
# Chillin' with Surna

SPRING 2019

## In the Grow

What to ask a controls and automation vendor when getting a quote.

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## 60 Seconds with... Brandy Keen

Brandy Keen answers questions posed on surna.com blogs as well as from questions sent to us via [info@surna.com](mailto:info@surna.com).

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# Newsletter



# LAST Quarter Capture



We are very happy to have announced our sensors, controls and automation platform release the beginning of April, the SentryIQ™. The platform is an intelligent approach to controlling and monitoring a cultivation facility and includes a user dashboard to interact with the system. Go to our website to learn more. <https://surna.com/products/controls/>.

There's so much going on at Surna, it will be hard to catch everyone up in one newsletter. We exhibited in trade shows and spoke at several events. Jon Koslowski, our Global Sales Manager and Sr. Technical Advisor, spoke at the NCIA Seed to Sale show in Boston; Brandy Keen, our Co-founder and Sr. Technical Advisor spoke at CannaCon in Seattle and at the Calgary Cannabis & Hemp Expo. Troy Rippe, Director of Engineering, joined Brandy and Andrew Lange, Chief Technical Officer with Agrios Global Holdings on a panel at the Cannabis Conference in Las Vegas. Look for Jon at the upcoming CannaCon Detroit where he'll be speaking about ways to grow a consistent, high-quality crop.

A few months ago we spent some time at Durango Cannabis Company where the owner, Nic Borst, was kind enough to give us a tour and an interview. Durango Cannabis Company uses Surna equipment for their climate control and we were thrilled to see his beautiful harvests. That's him in the upper right hand picture, showing us some babies in the nursery. Thank you Nic for your gracious hospitality! [See the case study here.](#)

In May, Jamie English, our Director of Marketing, attended NCIA's Lobby Days. She came back inspired by the dedication of so many cannabis industry entrepreneurs. During the two day event, over 250 NCIA members met with nearly 300 congressional offices to lobby the important issues facing the industry.

We have a lot more coming this year, so stay tuned.

June  
**21-22**

**CannaCon**

**Detroit, MI  
Booth 212**

A wealth of opportunities await Michigan—one of the largest cannabis marketplaces in the United States.

July  
**22-24**

**Cannabis Business Summit & Expo**

**San Jose, CA  
Booth 522**

Award-winning cannabis conference & trade show, hosted by the industry's only national trade association, returns to San Jose to celebrate six years of bringing together the industry's best.

August  
**17-18**

**CannaGrow**

**Palm Springs, CA  
Booth 435**

Intended for cannabis growers, grow managers, extractors, and grow enthusiasts to explore the latest cannabis cultivation technology, tools, and techniques.

Upcoming  
**Events**

September  
**4-6**

**MJBizCon Int'l**

**Toronto, ON  
Booth 504**

Gain business intelligence from industry leaders, experience networking opportunities, and connect with cannabis licensed producers and 125+ exhibitors.

September  
**27-28**

**CannaCon**

**Oklahoma City, OK  
Booth 612**

Following its legalization of medical cannabis, the business of legal cannabis is now in full swing in Oklahoma. Join us at the Cox Convention Center in Oklahoma City.

October  
**5-6**

**West Michigan Cannabis Expo**

**Grand Rapids, MI  
Booth TBD**

Cannabis industry leaders, policymakers, entrepreneurs and newcomers will convene to discuss best practices in emerging topics and brush up on policy issues.

# In the Grow

## WHAT TO ASK A CONTROLS AND AUTOMATION VENDOR

It's pretty easy to find a vendor for your controls and automation, but they're not all the same. Controls can mean a lot of things including sensing, monitoring, storing, controlling and machine learning. Automation is often defined as combining all of these things into a single computer system.

First, understand what level of control you need. Once you know that, here's a handy list of questions for you.

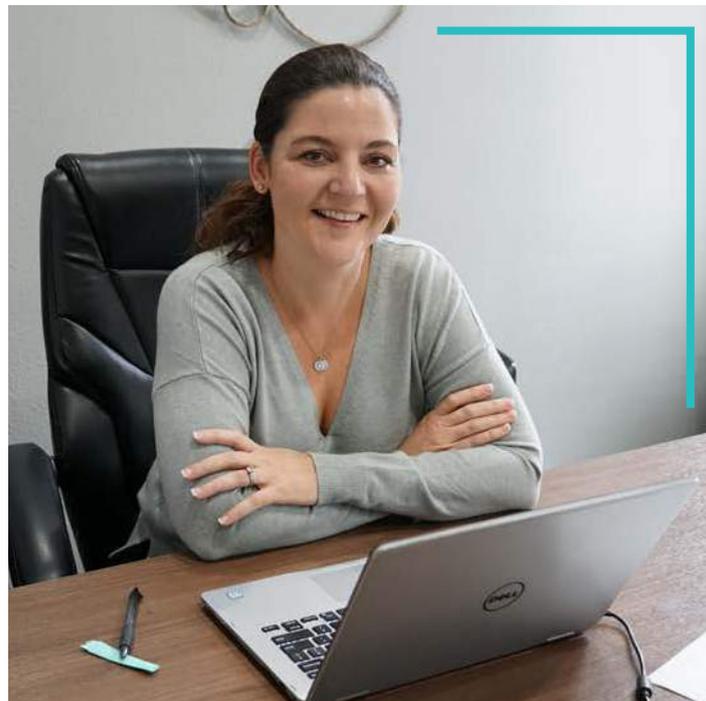
- How many cannabis grow facility projects have you been involved in?
- Of those facilities, was your scope full automation with closed loop control of end devices or just sensor and monitoring with notifications for human inspection and troubleshooting?
- Of those facilities, what building systems (i.e. HVAC, fertigation, lighting, CO<sub>2</sub>, life safety, plant tracking) have you had experience with sensing and direct control?
- If achieved through software integration, what communication types are available to your front-end dashboard (i.e. Modbus, BACnet, Lontalk)?
- What are the different ways I can access my dashboard (i.e. phone, tablet, computer)?
- How does your system react and reboot in the event of a power failure? Is human intervention required to get back online?
- Where will my data be stored long term and in what format so I can compare one harvest to another to identify operational efficiencies and cause and effect relationships over time?
- Will your proposal include any system level controllers or does it assume software integration to controllers of other systems?
- For the integration above, what information do you need from the systems manufacturers to ensure there are no scope gaps or overlaps in your proposal?
- Are you including life safety components (i.e. alarming, ventilation) with CO<sub>2</sub> controls?
- If you are including your own system level controllers, who is responsible for specifying and supplying the sensors needed, and how would you go about implementing specifically engineered sequences of operation unique to my grow?
- Who is responsible for the installation and wiring and what does that scope entail?

**How do I calculate how much cannabis I can yield in my room?**

First, you'll need to calculate the square footage (SF) of canopy you'll have in that room, as you'll have some aisle and access space. If you're using rolling tables where you have only one aisle at the end of the room and a single rotating aisle between tables, you should figure that at least 10% of the room won't have canopy coverage. Reduce that canopy SF for a room with fixed tables and aisles between every row, and increase it in tiered grows by a factor of how many levels you'll have, to get the total canopy square footage. Avoid the trap of thinking you'll match your best ever harvest numbers on your first run, and assume your first harvest will be your worst harvest. Ideally, by the end of the first year you'll have your recipe dialed in, any facility issues addressed, and your strains chosen, but don't expect manufacturing processes to be dialed in any sooner than that. This assumes a competent and reasonably experienced cultivation team—if you're entering into this without relevant cannabis cultivation experience, yield optimization could take even longer. Although there is a possibility that a competent and skilled cultivation team can exceed these estimates, for the sake of managing cash flow, you should conservatively plan for 17–23 grams per SF of canopy for your first harvest. By the time your recipe is dialed in and your processes are optimized, you should be able to standardize at 40–50 grams per SF of canopy. Some of our clients do as well as 80–90 grams per SF of canopy, but this is after several years of research, meticulous data collection, and the ability to fine tune a recipe for each cultivar.

**Can you explain the relationship between temperature and humidity as it relates to dehumidification in my facility?**

I could go on about this for days but I'll try to keep it short. Dehumidification in cultivation facilities generally happens in two ways—condensation and absorption. Absorption is a method where moisture is absorbed into a desiccant media, which is then heated to facilitate release of that moisture outside the facility. Although we spec desiccant more and more often, particularly in colder temperatures or very large-scale applications, condensation is still the most common method, where air is cooled to below the dewpoint temperature, causing water in gas form to condense into liquid where it can be drained away. Generally speaking, any air conditioning system is going to dehumidify as a byproduct of cooling because the coils in the cooling system are cooling the air that passes over the coil to below the dewpoint temperature in the space. Stand-alone dehumidifiers work similarly, although they inject heat back into the air stream (both the sensible heat that they removed from the room as a



byproduct of the dehumidification process, and the latent heat that was converted to sensible in the process). Vapor pressure deficit (VPD) and transpiration rates aside, adjustments to the temperature in the space has an impact on your facility's humidity in 2 key ways:

1–Dewpoint temperature. Dewpoint temperature (the temperature at which saturation reaches 100% and water condenses from gas to liquid) changes based on the temperature and relative humidity (RH) in the space. The lower the temperature, or the lower the humidity, the lower the dewpoint temperature. The lower the dewpoint temperature, the less dehumidification you will get out of your dehumidification equipment. This is why you see a performance curve on most stand-alone dehumidifiers, as their published output ratings are usually based on AHAM standards of 80°F and 60% RH. As soon as one of those parameters changes, the output of the equipment changes as well, so it's important to take the operating conditions into account when selecting this type of equipment.

2–Relative humidity vs. Absolute humidity. Absolute humidity is the amount of water present in the air. Relative humidity is the percentage of saturation and is the relevant value when you're looking at the parameters that are ideal for your cultivation facility. The warmer the air, the more molecules of moisture it can hold. What this means is, the cooler you keep your rooms, the higher the RH will be, even when the absolute humidity remains constant. The higher the temperature, the lower the RH, even when absolute humidity remains constant. (Keep in mind that increasing temperature will usually also promote faster transpiration, which will then increase the humidity....but that's a discussion for another day).



## CONTACT US

We would love to hear from you!



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