

Automate

The Computrols Building Automation Newsletter

In This Issue:

Computrols Year in Review

Energy Efficiency Measures
for Winter

Custom LED Controls Shed New
Light on The Future of Office
Illumination

Computrols' Manufacturing Moves
to New Facility

Computrols at the Podium

7 Tips for Selecting a Building
Automation System

Computrols In the News

January 2017



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Editor's Note

Welcome to Computrols' Automate. Automate is a free newsletter dedicated to bringing you the latest in building automation technology, with a focus on Computrols Building Automation Systems.

In this newsletter, we will give you advice on saving energy during winter months, tips on selecting your next BAS, and catch you up on Computrols' news.

As we strive to make the Automate newsletter a useful and informative tool for all of our partners, customers, and contacts, we welcome any feedback you might have regarding its contents. If you enjoy reading Automate, we encourage you to forward it onto your colleagues and clients so that they might subscribe as well.

Thank you,

Andrew Mire

Vice President, Operations
Computrols

Computrols Year in Review

For Computrols, 2016 included the purchase of a new facility, growth in a number of new markets, and many other landmark events.

2016 was a landmark year for Computrols in many ways. We purchased a new facility for our headquarters and manufacturing, provided our customers with incredible energy savings, added new distribution partners, and a number of other noteworthy achievements. In case you missed it, here is quick look back at this past year.

New Facility

After many years of calling Rathborne Business Park home, Computrols has purchased a [new headquarters and manufacturing facility](#) just a few miles away in Gretna, LA. Since acquiring the building in March, Computrols' team members, including founders Roy and Kevin Lynch, have been rigorously working to renovate the warehouse and office areas. Renovations in the warehouse portion have been complete and manufacturing resumed at the new location in December. Renovations in the office space are projected to be completed in February of 2017.



New Projects

Of our many new projects this year, we found the most [resounding success](#) at 4000 MacArthur Boulevard in Newport Beach, CA. The goals of the owners of the building were to reduce the number of hot and cold calls, reduce energy usage, and maintain as much of their current system as possible. Computrols accomplished these these goals by first integrating to the existing Siemens system, allowing the existing infrastructure to be leveraged. Our team then retro-commissioned the buildings HVAC control and mechanical systems and implemented optimization strategies based on feedback from the newly installed system. In doing so, the Computrols team provided the owners with an ROI in less than three months!

Growing Southern California Branch

In the beginning of the year, Computrols further enhanced its footprint in Southern California by establishing an office at the Los Angeles Cleantech Incubator. We also hired a new marketing representative for the territory, Mike Soto. The new office and additional support came in response to landing a number of new projects in the region.



New Website

On May 19th of 2016, [Computrols launched it's new website](#). The new site brought a cleaner look and user friendly navigation, while allowing easy access to visitors on mobile devices.

New Service and Distribution Partners

2016 also brought new partnerships. Computrols teamed up with [F.E. Moran of Chicago, IL](#), Advanced Comfort Solutions of Cormorant, MS, and [IETCO of Malaysia](#) as distribution partners for Computrols building automation solutions. We are excited to add these great companies to our team and look forward to working with each of them.

Conferences

Computrols was all over the country this year exhibiting and speaking at industry trade shows. Computrols Director of Research & Development, Mike Donlon, spoke on the topic of [machine learning in HVAC controls](#) at both BOMA International (D.C.) and the Mid-Atlantic Buildings & Facility Management Show & Conference (New Jersey). The marketing team also exhibited at these two trade shows, taking home the award for the best pre-show marketing for the BOMA exhibition.

VP of Operations, Drew Mire, presented to the Louisiana School Facility Managers Association on new technology trends in building automation and how they affect K-12 Schools. This event was held a few hours away from Computrols headquarters in Marksville, LA.

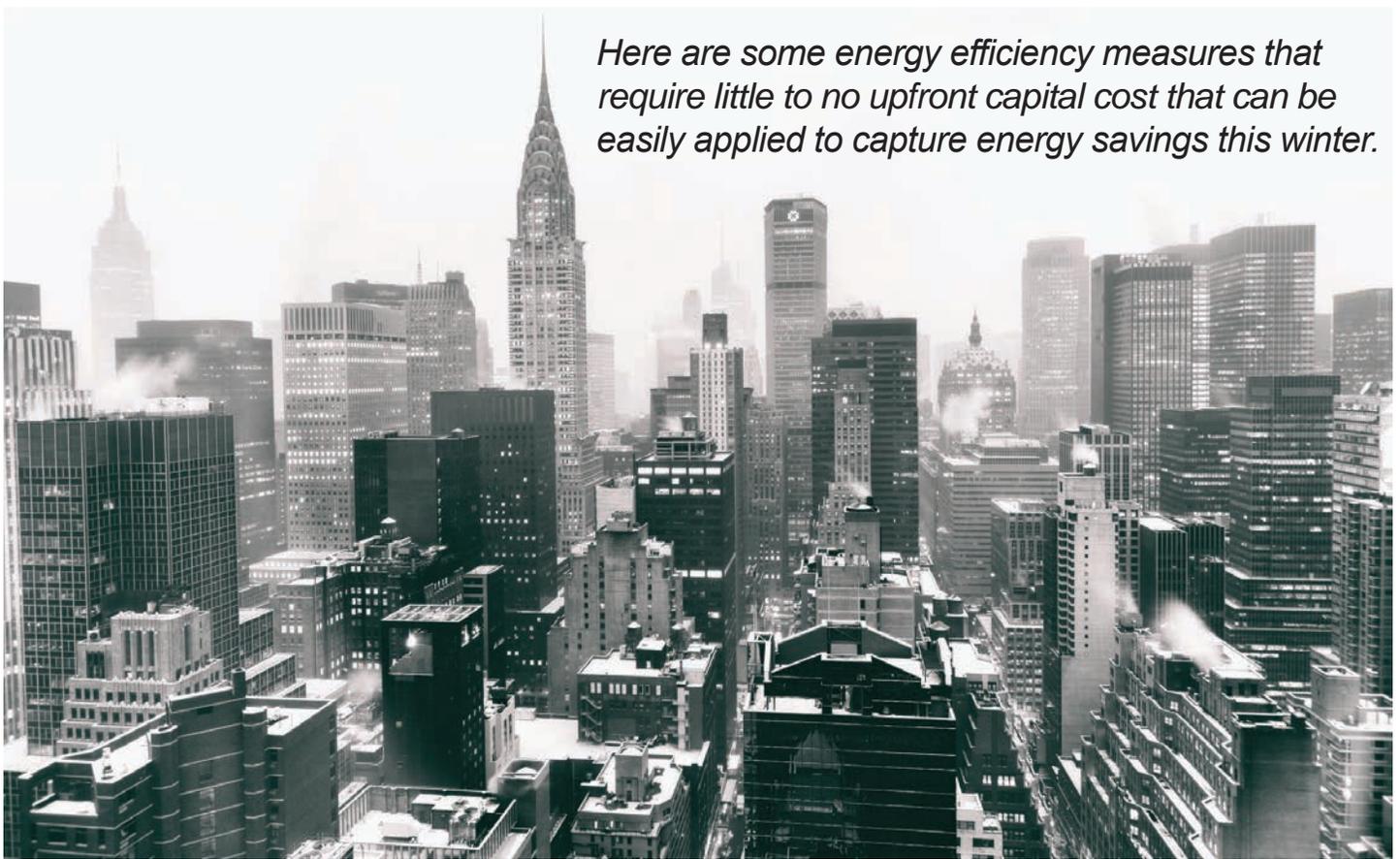
The Computrols marketing team also exhibited at the Net Zero Conference, Municipal Green Building Conference & Expo, LABBC Technology Showcase, and GreenBuild International, all of which were held in Southern California.

Looking Forward to 2017

As 2017 gets off to a quick start, the Computrols team is looking forward to another year of growth and continuing to produce the world's best building automation system. This year, our Research & Development team is projecting to release a new version of Computrols Building Automation Software, as well as the highly-anticipated LX Control Board. We also expect to see considerable expansion in our new home office as well as our branch and dealer locations throughout the country.



Energy Efficiency Measures for Winter



Here are some energy efficiency measures that require little to no upfront capital cost that can be easily applied to capture energy savings this winter.

Energy and water conservation deliver a wide range of advantages, including cost-related benefits, ancillary savings, infrastructure improvements, reduced pollutant emissions, improved energy security, and, in some cases, increased productivity.

For both savings and revenue, energy use becomes a vital place to look.

A March 2009 article in the New York Times noted an increasing trend among large corporations to hire a Chief Sustainability Officer (CSO). SAP, DuPont, and Flowserve are just a few companies mentioned who already have CSOs. These C-level officers are usually responsible for saving energy, reducing carbon footprints, and developing “greener” products and processes.

For them, the big task is to [tie energy usage to cost and to control both](#). Tying the energy data that is acquired from machinery, processes, and building to electric rates allows them to see what savings

are possible. The key is to control energy use in the most effective way for the individual business. This encompasses its operation, facility structure, and processes, as well as being heavily affected by the time of the year.

Now that we are in the winter months, many CSOs, chief engineers, and facility managers are carefully assessing and analyzing their HVAC systems to reduce monthly energy expenditures. Here are some energy efficiency measures that require little to no upfront capital cost that can be easily applied to capture energy savings this winter:

1. Minimize direct cooling/heating of unoccupied areas by system zone controls or occupancy sensors or by turning off fan-coil units and unit heaters.
2. Employ heat recovery from exhaust air and processes for preheating or precooling incoming outdoor air or supply air.

3. Use waste heat (e.g., hot gas, return air heat, return hot water) as an energy source for reheating for humidity control (often air is cooled below the dew-point temperature to remove moisture and then must be reheated to the desired temperature and humidity).
4. Eliminate simultaneous heating and cooling through mixed returns.
5. Lower heating and raise cooling temperature setpoints to match the ANSI/ASHRAE Standard 552 comfort range.
6. Many commercial and industrial facilities use fossil fuel-fired boilers to produce steam or hot water for space heating or for process heating. Boiler efficiency improvement through oxygen/air optimization. If it were possible to reduce the percent of air to 10% without changing the stack temperature rise, the efficiency could increase to about 81.6% which represents a decrease in fuel usage and costs of about 5%.
7. Operate boilers at their peak efficiency; shut down large boilers during summer and use smaller boilers.
8. Preheat combustion air, feed water, or fuel oil with reclaimed waste heat from boiler blowdown and/or flue gases.
9. Adjust boilers and air-conditioner controls so that boilers do not fire and compressors do not start at the same time but satisfy demand.

The above energy efficiency measures not only save money on utility costs, maintenance, and operation expenditures, but also provide necessary data for future savings. This data can be collected via building automation systems and analyzed with the help of engineering and/or machine learning features.



Custom LED Controls Shed New Light on the Future of Office Illumination

At first glance, these lights seem more or less ordinary, but below the surface lies massive potential - the ability to learn.

A set of custom-made, surface-mounted LED lights have recently been installed in Computrols' new manufacturing facility in Gretna, LA. At first glance, these lights seem more or less ordinary, but below the surface lies massive potential - the ability to learn. While the concept of adaptive lighting is not exactly revolutionary, the efficiency in which it is employed is rapidly advancing.



The lights were conceived and created by Computrols' own research and development hardware engineer, Thomas Bordenave. The fixtures use COB-type LEDs (that is, Chip On Board) which are essentially multiple LED chips packed tightly together into one lighting module, which draw a fraction of the power normal bulbs pull. The advantage of COB LEDs is a considerable thermal resistance change, higher energy savings, longer bulb life, and noticeably better light distribution from standard LED and incandescent lighting. With consistently low heat generation, these lights will also reduce the cost of cooling the space. The bulb life of these tiny LEDs is also a significant factor, in terms of efficiency. Bulb burnout, assuming the lights were used twenty-four hours a day, seven days a week, would occur at just over five years. Compare that to standard LED lighting, which burns out in just over one year (incandescent and florescent lights

don't come anywhere near these time periods). Even then, Mr. Bordenave has designed the lights so that replacing a burnout is actually possible, since most COB lights require an entire fixture replacement. With Bordenave's setup, an engineer would only need to exchange the COB module (LED clusters), reducing long run costs.

Mr. Bordenave is currently implementing [complex controls for these lights](#) as well. The lights are already dimmable, which is an old energy-saving tactic. What makes these special, though, is the controls that will allow the lights to detect human movement and adjust accordingly. During times when there is little or no activity on the floor, the lights will dim automatically to reflect this change in use. This functionality may have countless future uses, including recording areas where workers congregate most and adjusting to those patterns.

They also have the ability to be connected to a wireless network, allowing all lighting controls to be manipulated remotely.

While these controls are not currently implemented into the lights, Computrols' R&D team intends

to have them fully integrated in the near future. With the recent move to a new, larger facility, the company has gone to great lengths to ensure that the addition reflects the energy efficiency Computrols is known for, and the lighting is no exception.

Computrols' Manufacturing Moves to New Facility

With the additional space, Computrols has also purchased supplementary equipment for our circuit board assembly line.

After purchasing what will serve as Computrols new world headquarters in March of 2016, we have now completed our renovation of the manufacturing area. With an estimated 30,000 square feet of open warehouse space, Computrols construction team has closed in about a third of that space to serve as our production facility.

With the additional space, Computrols has also purchased supplementary equipment for our circuit board assembly line. The new machinery will allow us to nearly double our current manufacturing capacity.

Over the past few weeks, our production team has begun packing, moving, and reassembling their equipment without manufacturing skipping a beat. Brothers and co-founders Roy and Kevin Lynch have been instrumental in driving the new construction and moving process.

Here are some photos of the move in process and a shot of the new facility.



Computrols at the Podium

Computrols was all over the country this year exhibiting and speaking at industry trade shows.

Over these past few months, Computrols' experts have presented at multiple industry conferences around the country.



Computrols Vice President of Operations, Drew Mire, presented to the Louisiana School Facility Managers Association (LSFMA) at their fall conference on October 20th. The LSFMA is made up of facility managers from K-12 schools throughout the state of Louisiana. The aim of the organization is to give their members an opportunity to network with like-minded professionals and learn about what they can do to better their campuses.

The LSFMA fall conference was held at the Paragon casino in Marksville, LA, where 40+ members gathered for educational sessions and networking. In the final session of the day, Mire spoke about trends we are seeing in technology and how they are affecting the operations of K-12 schools. In doing so, he covered everything from LED lighting to the latest advancements in school security systems.

Just a few weeks later, Computrols Director of R&D,

Mike Donlon, presented at the 11th annual Mid-Atlantic Building & Facility Management Show & Conference (MABFM). This event featured over 200 exhibitors and nearly 400 attendees at the Garden State Exhibit Center in Somerset, NJ.

The topic of Donlon's presentation was machine learning in HVAC controls. He first took his audience of facility engineers through an introduction to machine learning, giving a number of examples of where we see machine learning in our daily lives.



He then went on to explain how machine learning is being applied in the latest technology in HVAC controls. Donlon closed with his vision of where the building automation industry is going technologically, highlighting some of the R&D projects Computrols has in the works.

The Computrols marketing team also exhibited at the MABFM tradeshow, where it showcased the simplicity of Computrols Building Automation Software. Their demonstration included the use of an LX controller which is due to launch in early 2017.

7 Tips for Selecting a Building Automation System



Selecting a new BAS? Read this first.

Recently, FacilitiesNet published the article titled "[7 Tips For Selecting a Building Automation System](#)." The piece walks readers through considerations that they should take into account when replacing their current BAS, including how facility managers will interact with the system. We found the article to be helpful and related to our own recommendations. Below, we have addressed each of their recommendations from Computrols' perspective.

1. *People are more important than technology. Buy-in from the operating engineers is crucial to a successful upgrade. It's important to involve operating engineers in the selection, design, and installation of the new BAS. Ideally, bringing the engineer to visit buildings with the prospective BAS installed will allow them to demo it first hand, without the manufacturer or installation contractor present.*

Keep in mind that a balance must be struck between the necessary sophistication and complexity of the BAS and the needs of the operator. Once all the design engineers and installers have gone home, the operator will be left to manage the system, to work out its inevitable quirks. The best performing systems are those where the BAS has been designed with the operators in mind.

Everything Computrols creates is done so with the end user in mind. Computrols builds simplicity into everything that we do while supplying the power and technology needed to operate a building efficiently. We offer the industry's only lifetime warranty on controllers we manufacture, making controller replacement as simple as possible in the event of equipment failure. Additionally, Computrols' flagship building automation software (CBAS) is intuitive enough for the end user to manage the system without technical support. We build our hardware and software so that our clients can be "self-performers," meaning that editing and creating schedules, troubleshooting, changing set-points and writing sequences of operations can be easily accomplished through CBAS.

We are happy to provide a reference list to any prospective customers and we always encourage our prospective customers to visit our current partners' buildings to see our system in action.



2. *BAS technology is evolving quickly, keeping pace with data network technology. Even the fastest BAS network infrastructure won't last for 25 years like a chiller. Instead, the cabling infrastructure of a BAS installed even five, and certainly 10 years ago, is likely already outdated. Software, firmware, hardware, and networking components all evolve over time, while products and lines of products become obsolete and can be unavailable for repair or replacement, as a new generation of BAS arrives every five to seven years. A building's capital plan should include gradual upgrades every few years to so that a full-blown, costly BAS overhaul isn't necessary every decade.*

Computrols understands that technology is ever-evolving. Instead of subjecting clients to constant upgrades due to planned obsolescence, Computrols believes in building long-term partnerships. Not only do we offer a lifetime warranty on all of our controllers, but we offer a buyback program for our old controllers when our clients elect to upgrade to our latest technology. While many competitors intentionally obsolete products in order to gouge existing customers, Computrols has never obsoleted a controller. In fact, Computrols even supports many of our competitors' legacy products. These are just a few examples of how Computrols delivers unprecedented, long-term value to building owners and operators.



3. *Not all network infrastructure is created equal. No one thinks about the network infrastructure when they look at a BAS. But that infrastructure is like a car's transmission: If it is not high quality and in good working order, it's not going to get you where you want to go. Buying the fastest/best backbone network infrastructure affordable today will provide the most flexibility for future incremental upgrades. For example, specifying CAT5E or CAT6 cable (today's highest speed Ethernet network) will allow the network speed to be increased down the road simply by changing the components on each end rather than having to change out all the cabling. Today's higher cable and network cost is incrementally small in relation to the costs of the labor and re-wiring that will be required to bring the BAS up to speed tomorrow.*

Computrols understands the importance of a network backbone. We were the first manufacturer in the industry to design and manufacture a controller with a CAT5 terminal on board. We are early adopters and pioneers in the industry, always looking to the future. Our next generation of controllers will look at technology trends to determine the best path for our future products. With that said, backwards and forwards compatibility is a huge part of what we do. We plan on staying at the forefront of tech while ensuring our future products can be used with legacy infrastructure / products.



4. *The front-end interface is the building block of a successful BAS upgrade. Just as all networks aren't created equal, neither are all interfaces. The front end of the BAS, or the hardware and software that the operator interfaces with on a regular basis, whether controlling the system from a remote terminal (more typical today) or from the BAS interface itself, is the single source of communication with the BAS. Things to look for include:*

- *Responsiveness. Network architecture and the front-end interface need to be as fast as an iPad. Software must refresh quickly. If it's slowed by delays, operators will stop using it.*
- *Quality of graphics. The visual presentation of the software and hardware should be appealing and intuitive.*
- *Programming Language. If the programming interface is presented only in code, the operating engineers are going to be hesitant to make any changes, but if they're presented with object-oriented language, it's much easier to make the necessary changes and adjustments. That being said, a more sophisticated operating engineer is likely to make tweaks to any programming interface. Know the limits of your operating engineer when choosing the programming language.*

Remote mobile access computing, or the ability to use the Internet to connect to a building's BAS from a remote location through a secure portal, provides an additional front-end interface option for the building operator. While this may not be ideal for every building, it can provide an added level of flexibility and reliability for any BAS.

Considering that Computrols builds simplicity into all of our hardware and software, it's no surprise that our front-end interface is built with building engineers in mind. We strive to manufacture the most reliable hardware and intuitive software on the market, because we want each property to be autonomous when operating its BAS.

CBAS offers live values for all points on the system, meaning that system data updates automatically without the operator needing to refresh. CBAS also offers both a graphic and text view so the system operator can choose how they view the data, and graphics can be created in 2D or 3D based on the end user's needs. Regarding programming language, Computrols utilizes if/then logic instead of traditional coding in CBAS. An example of if/then logic in CBAS could be, "IF outside air is 85 degrees, THEN start the chiller." This is yet another way that Computrols builds simplicity into our solutions.

Finally, Computrols offers CBAS Web, the web-based version of our flagship software. CBAS Web enables the operator to access the BAS remotely from any web browser, creating more flexibility for building engineers to view and manipulate the system on the go.



5. *There are varying degrees of openness. Most of today's BAS systems are called "open," but this term is very misunderstood. In an "open system," the BAS device and network share a common communications protocol, like BACnet or LonWorks, with other building automation systems. Most BAS, though, especially those made by large equipment manufacturers, have proprietary software on the front end or come packaged in a proprietary bundled delivery system. This means that a limited number of technicians and contractors can modify or upgrade the BAS, making it more difficult to switch both systems and servicing vendors.*

Additionally, the product lines that the big companies are going to be the most competitive on will be those that solidify their position in the building long term. While these systems will be functional, what's saved upfront by bundling the software and equipment at the time of the upgrade may be lost in future options. Typically, the larger brand name BAS will also have different tiers of systems. They will often license out a lower version or previous generation of their systems to smaller contractors for less.

Being an educated consumer means knowing what your building's needs are, as it may be better to go with systems that are less or more open, depending on the personnel working with your BAS or previous experience with certain vendors and manufacturers.

Computrols' products are able to natively communicate with our industry's open protocols, as well as many of the industry's proprietary protocols. This enables us to provide truly integrated solutions to customers that are looking for an alternative to their current BAS. Our products can communicate via industry-standard protocols such as BACnet, MODbus and LonWorks, but the ability to communicate with some of our competitors' "legacy" products offers a more affordable, integrated solution.



6. *Once installed, the system must be maintained. BAS rely on sensors to operate. Once they sense something, they respond to the variable, either temperature, humidity, flow rate, status, pressure, or another digital measurements. Therefore, the system only operates efficiently when its sensors are calibrated. The problem is that no one calibrates their sensors. Even when vendors promise calibration on a*

maintenance contract, it is rarely done. While it is possible for the operating engineer to calibrate them, this skill must be learned and added to the operator's current maintenance regimen. It's critical to be diligent in making sure that all items on the service contract, including calibrated sensors, are executed properly on an annual basis. If not, the incremental cost to upgrade down the road could be much higher because things aren't working or haven't been maintained.

Computrols understands the importance of complete system maintenance on a regular basis. While Computrols does not manufacture sensors, we do offer maintenance on all end devices. We customize our maintenance agreements on a case-by-case basis, ensuring each facility is getting what it needs to run efficiently. We also provide service reports following each visit, so we are fully transparent regarding what work is being executed.



7. *To get the best results, commission before and after the BAS installation. One reason it can be intimidating to plan a BAS upgrade is the design-build model of the project, as each contractor sells and installs systems for one or a few manufacturers exclusively. While there are benefits to the single-source responsibility inherent in this model, it can lack objectivity. For even when competitively priced, building automation systems can differ in their services, software, hardware, interface features, and sequences of operation.*

An independent energy audit and existing building commissioning can help isolate and identify areas that could be improved with a BAS upgrade. These services will help identify which BAS features will benefit the facility most, based on existing systems, current building operators, local climate, and more, while putting some real numbers to a desired return on investment. Ultimately, obtaining a third party expert opinion can arm the facility manager with knowledge of the facility's needs and requirements and therefore, how to make a real apples-to-apples comparison of BAS options.

Setting realistic expectations up front means that everyone will understand the operational goals of the new or replacement BAS. This knowledge can help craft the appropriate request for proposal (RFP) and allow the facility manager to explore upgrades to supporting equipment, which can be accomplished more cost effectively prior to BAS implementation to substantially increase the benefits of the new automation system. For example, upgrading the VFDs, pumps, air handler, or components of these systems before the implementation will allow the building to get the most benefit from sophisticated algorithms and sequences.

Commissioning the BAS system after it's been installed and the operators have been trained on it will provide the insurance that the time, money, and effort spent on the new implementation has paid off. Because it's easy for something to go wrong with the dampers, actuators, sensors, and overall sequences of operation, testing these areas to make sure the system is programmed correctly and executing functions appropriately can be the difference between a successful implementation and an inefficient new or upgraded BAS.

Remember that a BAS is a computer program with electronic operators doing what a human would otherwise do manually. Therefore, the BAS will only be as good as the equipment it's controlling and the people controlling it. Being a highly effective BAS buyer means understanding this principle and knowing the building and its operators well enough to meet all their needs and operational goals, beginning with the RFP process through installation and future maintenance.

Choosing a new BAS is no easy task. Balancing facility needs with the realities of operating in an economically-friendly way is difficult, and with a number of different companies offering similar solutions, choosing the right BAS can seem like a monumental task. While most of the big-box companies are simply trying to sell the newest product, Computrols is focused on the solution.

For facilities looking at an alternative to their frustrating BAS, choosing Computrols is an investment towards your building's long-term efficiency. Our lifetime warranty on controllers is simply unmatched; we

stand behind our quality for as long as the building has Computrols' controllers. By offering the highest-quality hardware on the market, we save customers the cost of upgrading equipment throughout the years. By offering the most simplistic software on the market, we eliminate the need for costly maintenance agreements. By creating a system with the end-user in mind, we eliminate on-going stress and frustrations for building engineers caused by a system with planned deficiencies.

We invite you to give us a call when planning your next BAS project. We have partners from coast to coast that have experienced the Computrols difference, and we would love the opportunity to earn your business.



Computrols In the News

[Looking Beyond Basic BAS](#)

For decades, building owners and managers have relied on building automation systems (BAS) to control HVAC systems, lighting, etc., in order to keep occupants comfortable and reduce energy consumption. Today's BAS can do so much more. They collect massive amounts of data as well as offer energy procurement and management, monitor equipment remotely, control performance, and more.

Ones to Watch: Technology

Our VP of Operations, Drew Mire, was recently featured in New Orleans CityBusiness' Ones to Watch: Technology.



neworleanscitybusiness.com/blog

Ones to Watch: Technology

ONES TO WATCH | Technology

Fox Mire Bisinger Lopez Ramos Wellman Bisinger

Drew Mire
vice president of operations
Computrols

Drew Mire has been with Computrols since 2008. Along with running the day-to-day operations of the company, he also secures strategic partnerships and develops new avenues for the company's growth. His passion, drive, and knack for the industry have brought him through a number of different roles with the company from his beginnings as a technician. His background has given him experience from the ground up which has proven to be invaluable in his current position. Not only is he able to speak to the overall value of building automation strategies, but he can also assess technical challenges and provide solutions.

In his time with Computrols, Mire has grown the number of branches and dealers, helped the company expand into international markets and secured Computrols' foothold as a leader in the building automation industry. He received his bachelor of science degree in business management from the University of New Orleans.