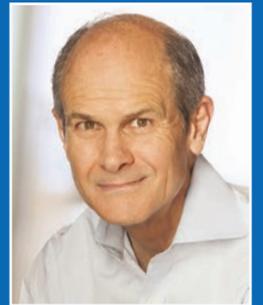




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WORKING IN CONCERT TO SUPPORT NEW DATA CENTER DEVELOPMENTS

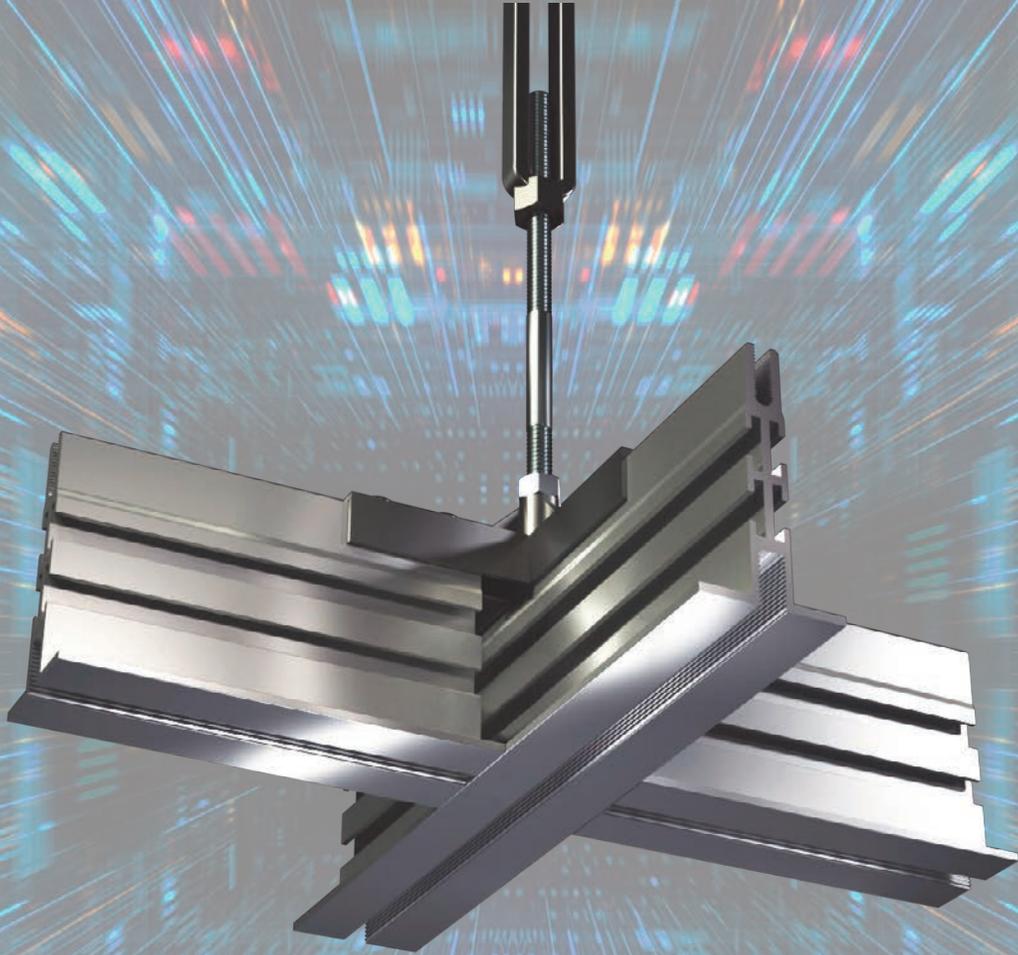
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2014

As a service to assist our valued members in staying informed about our dynamic industry, 7x24 Exchange is pleased to publish 7x24 Exchange Magazine, offering articles by leading professional experts on current and future trends, best practices, and the state of our industry. Please note that the opinions and views expressed in these articles are those of the individual authors themselves, and do not necessarily reflect the views of 7x24 Exchange or any of our members.



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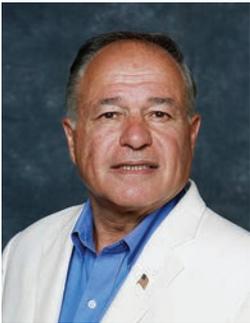
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Robert J. Cassiliano

2021 was the year of the comeback for the Mission Critical events industry as 7x24 Exchange conducted conferences in San Antonio in the Spring and Phoenix in the Fall. 2022 will take it to the next level with increases in conference attendance and sponsorships as industry professionals look forward enthusiastically to onsite events.

For some time, industry professionals have been concerned over the number of Mission Critical events being conducted throughout the United States. This is a very valid concern which includes conferences with conflicting dates, a company's willingness to pay for attendance at multiple events, and the lack of quality networking due to dispersed attendance. 7x24 Exchange International's Board of Directors decided to address this issue by purchasing the assets of CAPRE Omnimedia.

The mission critical industry will benefit from this transaction as it consolidates the data center events industry professionals attend making for more efficient and productive opportunities for networking, information sharing, and sponsorships. CAPRE held 15-20 regional conferences per year which will now generate increased attendance and sponsorships for events conducted by 7x24 Exchange's 28 chapters. This chapter benefit combined with consolidating industry events are the primary reasons for the asset purchase.

The goal of 7x24 Exchange conferences is to provide attendees with quality education, networking, and information sharing all in an environment designed for a memorable experience for attendees and guests. 7x24 Exchange is committed to providing value to members, conference participants, and their companies.

The theme for the 2022 7x24 Exchange Spring Conference being held at the JW Marriott Orlando Grand Lakes in Orlando, Florida from June 12-15, 2022, is End to End Reliability: "Impact of COVID". Conference highlights are as follows:

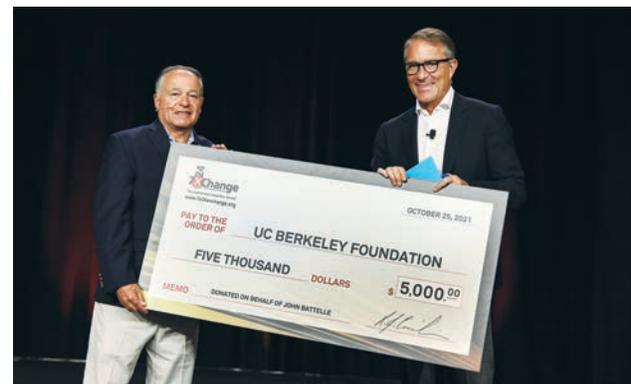
- Sunday evening Welcome Reception
- Conference Keynote: "Confronting Reality: Leading Ahead of Disruption" by Geoff Colvin, Senior Editor-at-Large, *Fortune*, and *The New York Times* Best-Selling Author
- Keynotes by Aligned Data Centers, Switch and Enchanted Rock
- Talks from Compass Datacenters and Schneider Electric, Schweitzer Engineering Labs, and the US Department of Defense
- Panel on COVID and Its Impact on Data Center Construction and Equipment Procurement – participants include EYP, DC Box, and Vantage Data Centers
- Talks from ASHRAE / Mission Critical Global Alliance / Uptime Institute
- Panel on Sustainability and Reliability – participants include Evoque / Kohler / Salute
- Panel on COVID and Climate Crisis = Better Data Centers – participants include Burns McDonnell, JM Gross Engineering, Open Compute Project, and Wyoming Hyperscale White Box
- 7x24 Exchange WiMCO Panel: Intentional Recruiting & Development: Building the Future of Data Centers Today – participants include Caterpillar and Miller Electric
- WiMCO Networking Reception sponsored by Meta
- Exchange Tables on specific topics at Tuesday lunch
- Tuesday Sponsored Event "An Evening at Universal Orlando Resort"

The program content is designed to provide value to conference participants and their companies by focusing on important topics of the day. Impact of COVID on the data center industry, sustainability, and recruiting talent are highlighted at this year's Spring event.

I look forward to seeing you at the Spring Conference in Orlando, Florida!

A handwritten signature in black ink that reads "Bob". The signature is fluid and cursive.

Bob



Bob Cassiliano presents conference keynote, John Battelle, with a donation to the "UC Berkeley Foundation" on his behalf.



WORKING IN CONCERT TO SUPPORT NEW DATA CENTER DEVELOPMENTS

by Chris Curtis

Environmental stewardship is at the forefront of all local and state regulations and development decisions – as it should be. It tops the list of priorities for data center developers and operators, too, but that fact flies a bit under the radar on the local level. Sustainability is a business priority that needs to become a communications imperative to support the industry's continued growth.

BAD NEWS GETS RATINGS AND SELLS PAPERS

A decade ago, *The New York Times* released an exposé-style article depicting the potential negative effects of data centers on the environment. One sentence from this Sept. 22, 2012 article titled “Power, Pollution and the Internet” sums it up nicely, “A yearlong examination by *The New York Times* has

revealed that this foundation of the information industry is sharply at odds with its image of sleek efficiency and environmental friendliness.”

It goes on to detail a host of harrowing claims such as:

- Data centers waste 90% or more of the electricity they pull off the grid.
- Data centers rely on banks of generators that emit diesel exhaust.
- Large data centers contain banks of huge, spinning flywheels or thousands of lead-acid batteries.

Hundreds of reader comments ensued. There were a few letters to the editor in defense of data centers following this scathing rebuke, but nothing packs a punch like a year-long “investigation” and front-page news. It was a big reputational hit early in the industry's unfolding.

TURNING THE TIDE

If a top-tier news outlet has written an article heralding advancements made by the data center industry to protect the environment, we haven't seen it. *The New York Times* article seemed to spur community leaders, everyday citizens, regulators and government officials toward predisposition to resist new data center developments, regardless of environmental accomplishments and site-specific commitments. This was a turning point where onerous restrictions became mainstream and site selection and project development became infinitely more complex.

Our industry's impact on the environment is a critical issue, and one that data centers and all 7x24, critical infrastructure providers take extremely seriously. We have a shared goal of creating and maintaining a more sustainable future. Environmental

concern and commitment guide the way we design, construct and operate data centers. Yet, the fear narrative looms large and is a consistent, shared obstacle faced when it comes to developing new projects.

So, how do we share the advances our industry has made with respect to sustainable, environmentally neutral operations? One key is, singing from the same song sheet.

OUR HYMN

We wouldn't complain if a top-tier news outlet wanted to write a lengthy, front-page article on how the data center industry has spurred massive investments in renewable power generation; how seldom back up power is tested or used and the move toward lithium-ion batteries to minimize use of diesel-powered backup generators; or how the airside cooling systems available now mean no water is wasted. But it hasn't happened.

In addition to talking about those technical advancements that benefit the environment, we can build greater

awareness of the upsides by consistently balancing the narrative and seeding positive messages about our industry's contributions toward a carbon neutral future. Consistent communication is key to being heard and we have plenty to croon about.

Virtual capability contributes to lower carbon emissions

The pandemic changed everything. We will henceforth rely infinitely more on virtual meetings, streaming entertainment and digital learning tools. If the events of 2020 weren't enough to reinforce the significant role of technology in our businesses and schools, the delta, lambda and omicron variants of COVID-19 underscore the ongoing need for connectivity at the drop of hat.

While it's been tough for the travel and hospitality industries, all of the many meetings gone virtual equates to significantly less carbon emitted by planes, trains and automobiles. A comprehensive new survey of the effects of the pandemic on the atmosphere, using satellite data from

NASA and other international space agencies, revealed that:

- Carbon dioxide emissions fell by 5.4% in 2020.
- Pandemic-induced drops in NOx quickly led to a global reduction in ozone.
- Methane in the atmosphere dropped by 10% (according to one study).

All of the virtual work and entertainment our society tapped into over the past two years would not have been possible without healthy and robust data streams.

A boon to renewable energy development

Most data centers have moved to exclusive use of renewable energy, delivering the large-scale, ongoing contracts needed to build more renewable generation capacity, and invest in renewable power storage solutions and grid improvements. This industry has driven the demand needed to expand green energy solutions and capacity.



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Localized benefits

Data centers aren't 25-story, hulking buildings with throngs of workers creating congested city streets. While the acreage can be significant, it's usually a low-rise building in a far-flung place that is visually unobtrusive.

Developers today are making impressive commitments to protect, improve and enhance areas around campuses by protecting or improving wildlife habitats, building hike and bike trails, planting pollinator plants to support growing bee populations, and improving water treatment and storm water drainage to fortify cities against extreme weather.

In addition, the tax revenue a data

center can bring to the city offers the potential to meet city needs without raising taxes for its citizens. In 2019, data centers contributed more than a quarter billion dollars in tax revenue in Loudoun County, a U.S. data center hub.

On the unseen side, investments in power and fiber optic networks are a huge benefit to local residents. Bandwidth and the ability to serve growing data infrastructure needs also makes it possible to attract larger employers in search of new markets to establish operations.

These mission-critical facilities are not a threat to the environment. They're

enablers with real, significant benefits to communities and the environment, addressing the needs of our rapidly evolving world in an environmentally responsible way. There are a lot of reasons to welcome data center development done right.

Data centers will continue to play a key role in our future, providing the foundation for the data driven capabilities and applications changing the way we work, learn and communicate. Let's see if we can't chip away at negative perceptions by being more vocal and consistent, and break down some barriers to responsible data infrastructure development in the process.

Chris Curtis is Senior Vice President of Development & Acquisitions at Compass Datacenters. He can be reached at ccurtis@compassdatacenters.com.

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3 REASONS TO INVEST IN YOUR CRITICAL POWER

by Steve Vechy

Power failures and critical system outages are often front page news. New York City subways were recently impacted by one such system failure, possibly due to lead acid or nicad batteries – causing a major disruption for millions of daily commuters. And then there was the Arizona explosion in 2019 that caused significant injuries to nine first responders, all as a result of an imperfect large battery installation. Stories like this are unfortunately commonplace, and this is too often due to a lack of investment in critical power (also known as reserve power).

From my experience working 30+ years in the critical power industry, there are three main reasons that it's now prudent to make meaningful investments of time, resources and

manpower into back-up systems. I'm going to run through each reason, but first it might be helpful to describe a strong, top-performing critical power system.

A good critical power system must be both reliable and resilient, meaning they need to be both built to reliably respond to low-impact, high-frequency typical power system outages, and built to handle low-probability, high impact events such as natural disasters and extreme weather events. We unfortunately live in a changing world in which these events have become more and more frequent, which means that many of my clients are seeing more intense and more regular system failures.

If your system is built for day to day reliability, but not for resilience in the time of crisis or disaster, you're deeply at risk. A single high-impact event can devastate a power grid, leading to power gaps and blackouts that can have catastrophic consequences – possibly including loss of life.

So, what's leading to this changing landscape? Why do we need to invest in our critical power, now more than ever?

1. Because our weather is becoming more and more unpredictable, leading to disastrous weather events and natural disasters that wreak havoc on power systems. Nearly 1 in 3 Americans experienced a weather disaster this summer. Hurricane Ida is a recent example of one such

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weather event. Nine days following the storm, 430,000 Louisianans were still suffering in the humid September heat without power to their homes and businesses. The reality is, we're living on a planet battling extremes – heat, cold, storms, wildfires – all of these events can take their catastrophic toll on a back-up power system at any time.

2. Because there's more demand on our global power grid than ever before, thanks to population growth, climate change measures and emerging renewable power sources. While there is still a great deal of debate about whether the Earth is actually overpopulated, I think we can all agree that our global

population of eight billion people, combined with our collective carbon footprint and fast-moving technological innovation is making its impact on our use and overuse of power. As we utilize more power, in more ways, more often, we see the consequences (system failures).

3. Because lack of attention, awareness and preventative measures always ends up causing problems, no matter what industry or field you're in, and critical power is no different. In just the same way that any good accountant would recommend routine bookkeeping and careful maintenance of expenses, or in the same way that a doctor would advocate for preventative care and

regular check-ups, I must advocate for more consistent and focused attention and investment in critical power systems. For the reasons we've already discussed, and because it just makes good sense to care for your infrastructure.

Critical power is out of sight and out of mind until you have a problem. Then it's often too little, too late. Instead of waiting for a serious problem to arise, why not look at your back-up system now, put a plan in place for proactive management and maintenance, engage with experts and upgrade your system elements while everything is still functional. Taking this action may ultimately be what comes between your business, your clients and disaster.

Steve Vechy is Director of Engineering & Marketing at Concentric, LLC. He can be reached at steve.vechy@concentricusa.com.

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MAKING THE BUSINESS CASE FOR UPS

by Yaron Binder

Uninterruptible power supply (UPS) systems are generally thought of as insurance policies for companies and institutions with critical power requirements such as hospitals, research facilities, laboratories, data centers, manufacturers, healthcare, government, academic, research, and transportation facilities, providing reliable power supply.

Using UPS systems as more than emergency backup—and *monetizing their use*—makes a compelling proposition. Seeing these systems as assets and new revenue generators—with *no risk to backup capabilities*—introduces a new, strategic way of thinking about UPS capabilities.

At present, the most common method of providing backup power is the use of generators with UPS batteries. This method bridges the gap between the power interruption and the point in time when the generators produce a stable power supply. This is the traditional model that protects those with critical power requirements from grid failures. Typically, it can take between a few seconds to a few minutes

for a generator to reach appropriate production levels. If a generator is not in place, a longer battery backup solution will be needed to bridge the time until grid power is resumed.

However, grid failure or grid interruption aren't the only factors that need to be considered by energy users; there are a wide variety of commercial implications to think about, too. First, there are variations in tariffs throughout the day: power from the grid at peak times is more expensive. Secondly, in some countries, rates charged are based on the maximum consumption in a given period. For example, a manufacturer on a five-day week might have a disproportionate spike in power usage when operating multiple machines or devices at the same time, or when using a high power device infrequently. Power usage will be several times higher than the maximum consumption level for the rest of the week, but that increase in power consumption, even for a short period of time, will determine the tariff rate for the entire period.

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There is a way of ameliorating these challenges by using the existing UPS systems that are already installed. New, specialized software allows energy to be stored when charges are less expensive—to be used in place of grid power at times when charges are higher. This can be done automatically as part of normal operations whenever surplus battery capacity is available, while still ensuring that sufficient capacity is preserved for emergency backup if required.

Similarly, it is possible to draw energy stored in UPS batteries during low usage periods to supply extra peak power when needed, thus reducing or eliminating predictable spikes in consumption and reducing the overall tariff.

In addition to this, UPS batteries can be

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used to provide additional power for short periods of time in instances where energy cannot be sourced from the grid. Consider the case of a hospital that needed to install a new scanner. The inrush power requirement of the scanner was in excess of what the grid connection could provide, though its post-start-up operation was within the available capacity. The hospital's location also made it unfeasible to upgrade the energy supply. This is quite a common problem in cities around the world where infrastructure tends to be stressed.

With the new model of UPS application, the hospital can draw on its UPS power in the scanner's inrush phase to complement the grid supply until energy demand falls. Use-case scenarios such as these extend the limits of grid connection and enable the user to have access to more power than the grid can supply, while not taking away from the UPS system's emergency functionality.

ADDING SOLAR TO THE MIX

The next step in this evolution is to combine the increased capabilities of UPS systems with a renewable energy source.

Many companies and institutions with critical power requirements have already installed some level of solar energy generation as part of their wider carbon reduction goals in order to reduce energy costs. When the grid is on, solar power is used to supplement grid energy for operations and to charge UPS batteries. But what happens when the grid is down?

Companies may not realize that when this occurs, solar inverters need to be isolated from the grid, which can result in lost energy production. However, there are solutions that manage to overcome this issue. For example, SolarEdge's UPS backup solution includes hardware that isolates the inverters from the grid to maintain solar energy production while the grid is down, effectively creating a micro-grid.

UPS systems can also be utilized to help organizations improve their self-consumption of solar power. Energy usage does not always align with the energy generation of a PV system. As such, in order to overcome this inconsistency, energy can be stored in a battery for consumption at a later time instead of either limiting energy production or feeding it into the grid. Depending on which state you live in, this tactic

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of feeding excess energy back to the grid could add to your monetary gains from UPS and PV systems, further decreasing the ROI.

One way to achieve this is with a stand-alone storage system. However, it might be more cost-effective to add extra batteries to the existing UPS system and store the energy there instead. By adding batteries to the UPS system, this

otherwise wasted energy can be utilized at a lower cost than adding a separate storage system. In this way the UPS system acts as a hybrid system manager.

Crucially, this use of solar energy and batteries does not add risk to an organization's UPS provision. This is because the energy levels reserved for critical power are automatically monitored, regulated, and preserved. Beyond these requirements, using surplus solar energy can cut costs without adding risk: it maximizes self-consumption when the grid is on and provides backup power capabilities when the grid is down.

PUTTING IT TOGETHER

The integration of flexible PV and UPS solutions changes the whole dynamic of working with energy suppliers and using the grid.

An integrated PV and UPS system can add value and reduce costs, on top of providing users with energy protection. Longer backup times can be achieved, and the flexibility of allocating batteries to the solar and/or UPS sides of the

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system can deliver further efficiencies and savings, transforming a backup solution from a necessity to an asset.

THE IMPACT ON CRITICAL POWER

The solution integrates three important elements: backup, storage and PV. By joining UPS and PV solutions together, it improves the use of existing UPS resources, allowing users to reduce energy costs while also benefitting from uninterrupted power supply and battery backup. Full-integration of the solar PV system with existing UPS provision provides higher efficiency and further reduced costs.

As a manufacturer of both solar and UPS systems, SolarEdge is able to design the system components so that they seamlessly work together. A single controller manages both systems. As such, it knows how much solar energy is being produced, how much capacity must be reserved, and the exact prioritization of all applications, to provide seamless operation with maximum system availability and best total cost of ownership (TCO).

Those planning to install or renew a UPS system will always enquire about cost, and adapting to this new 'integrated' vision requires a new perspective. However, with a fully-integrated solar+UPS solution, ROI actually enters the conversation, which is typically not the case with traditional UPS systems.

The UPS batteries have an expected lifetime of 15-20 years. After an initial payback time, which depends on the tariffs and incentives, they are expected to create income for many years. With the cost of batteries continuing to fall, the future ROI will likely continue to improve.

Critical power is, and will always be, essential for certain organizations and institutions. As renewable energies, particularly solar energy, become a larger part of the wider energy mix, the vast potential it brings when combined with critical power applications, in terms of financial investment, uninterrupted operations, and of course sustainability objectives, can no longer be ignored.

Yaron Binder is VP Product Management. He can be reached at salesna.cp@solaredge.com.



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A CRITICAL APPROACH: ELEVATING A SAFETY CULTURE IN MISSION CRITICAL

by Desmond Clark

Safety is the top priority on every jobsite, but the challenge now is how to not only improve upon it, but also to instill it into the culture and get buy-in from every single person who walks onto the project site. It requires trying different approaches and a commitment to a safety-first mindset—one that goes beyond the jobsite and extends to overall care. JE Dunn's mission critical team recognizes that safety is more than an EMR score or other statistic; it's a culture shift and holistic approach that acknowledges emotional and mental health are large parts of overall health and safety. Employed on mission critical jobsites in recent years, the JE Dunn teams are seeing results with a shift in approach, technology, and claims management.

KEEPING A FINGER ON THE PULSE

Deployed as a pilot program a few years ago, fatigue-monitoring wearables provided valuable insights and data aimed at driving safety decisions on a daily basis. While widespread deployment of the program is still being reviewed, the insights gleaned extended beyond those project teams and contributed to the evolution of JE Dunn's comprehensive safety program

for mission critical. A key indicator the wearables identified was sleep quality in addition to quantity. The scores, though, were telling a deeper story and pointed toward other factors that could be explored and addressed to improve overall safety—including mental health. Leadership took that information and used it to expand JE Dunn's safety program on all mission critical sites to rethink resources, training, etc., to then implement a more holistic approach.

One of the first things we did was send out non-biased perception surveys to keep our finger on the pulse to pinpoint gaps in safety and where we could do better as a team. We wanted honest feedback about how our teams and trade partners felt regarding their relationships with the owner, whether they felt valued, etc., which helped us identify more ways to get our workforce in front of the owner to bridge that gap while showcasing their expertise. We also asked about teams' well-being, and

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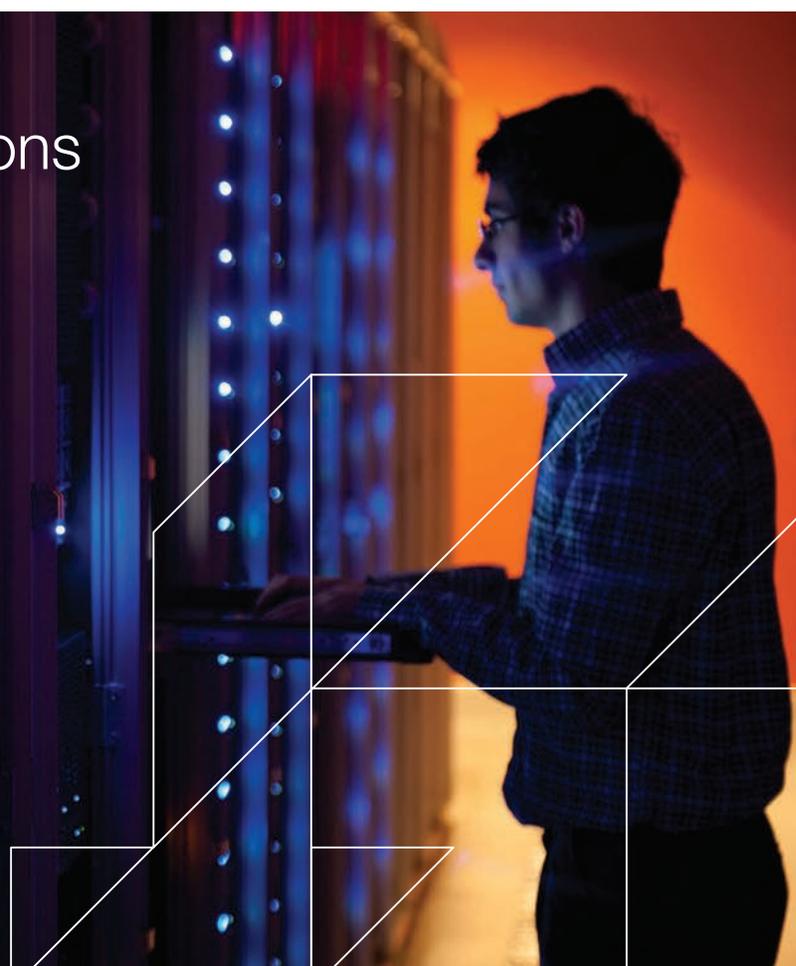
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what we found was that many people had high anxiety and worried about job security, health, and their families, among other things.

Because of these perception survey results, we researched mental health experts in construction to bring mental health sessions to our jobsites where a clinical psychologist talked about topics ranging from suicide within the construction industry to personal struggles. “The biggest thing we wanted to establish was that JE Dunn is a safe space, and that everyone’s voice will be heard,” said Vice President Chris Teddy. “Part of these sessions involved project management sitting in front of our craft workers and not only having open dialogue, but also showing vulnerability. The conversations were eye opening to everyone—owners

included—and went a long way into leveling the playing field, so to speak, when it came to issues everyone is facing and ensuring everyone felt valued.”

Improved mental health includes a clearer head for more attention to detail. The safety program also integrates technology to help direct focus should any mental slipups occur.

- **Fatigue Bands** – Much like an activity tracker, fatigue bands monitor sleep of workers each night. The bands report a fatigue score each day to indicate whether employees are work ready or if fatigue presents a potential risk.
- **Warning Lights** – Warning lights have been installed on forklifts as well as scissor lifts to create a visual marker

to indicate a safe distance to stand while working next to the equipment. They also shine ahead of the equipment to warn others as equipment is traveling.

- **Zoning** – Zoning allows or denies access to certain areas based on individuals’ training. This ensures that workers who are not performing a certain type of work or qualified for the work don’t have access to particular zones.
- **Badging** – Teams use badging to ensure only approved employees are allowed onsite and that they have gone through appropriate testing and training. This also allows leadership to identify who is onsite at any given time for head count in case of an emergency.



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CLAIMS MANAGEMENT

Knowing that incidents are an unfortunate hazard that comes with construction, we took a proactive approach to mitigate lost-time incidents to head them off before they become problematic. "Often times, we see what an employee may deem as a minor injury not worthy of treatment snowball into a much larger, lost-time recordable if left unchecked or untreated," said Teddy. "To head off those potential situations, we started providing on-call doctors at all mission critical jobsites. This gives our men and women the confidence of speaking to a trained doctor who can set them up with a work plan to better manage an injury before it results in lost time. Since

employing this, we have more first-aid incidents rather than recordables, which benefits everyone. Last year, we used our virtual doctor a total of 61 times. Of those 61 times, only 10 became recordables, which kept the remaining 51 at a first-aid site level—a significant savings in cost."

REAL-LIFE RESULTS

Looking at safety from a different, holistic angle was an approach not seen in mission critical construction—or much of the construction industry at all. The payoff? An industry-leading safety program for mission critical construction that permeates into the culture across the entire company. Some results are difficult to quantify, but the stories of the holistic training in

action speak for themselves. "We had a situation where a foreman noticed something was not quite right with one of his workers, and because of the additional mental health safety resources and training, he pulled the worker aside and identified a deeper issue. The superintendent and foreman went above and beyond to support him and gave him the time he needed while ensuring he was secure in his job. Those types of things never happened before we included mental health as part of safety," said Teddy. "We've had other general contractors reach out to ask what we are doing in our reimagined, more comprehensive safety program, so while there's more to learn and a number of ways to evolve, we know we are on the right track."

Desmond Clark is Safety Manager at JE Dunn Construction. He can be reached at desmond.clark@jedunn.com.



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THE GREEN DATA CENTER: IMPROVING DATA CENTER SUSTAINABILITY THROUGH OPERATIONS

by Lee Kirby

Sustainability is now a top-of-mind issue in data center management, as data centers consume an estimated 200 terawatt hours (TWh) each year. With digital transformation, the rise of human-induced climate change is at an all-time high and the growth of connected device workloads is only growing more. It must be our global imperative to focus on energy efficiency and reduce the carbon footprint. In the quest to make your data center more 'green', we share some solid strategies to help data centers more efficiently transition to more sustainable practices as an industry worldwide.

MAKING AN IMPACT THROUGH SUSTAINABLE DATA CENTER OPERATIONS

Salute Mission Critical, a global data center services company, shares an efficient delivery model that uses fewer people, optimizes processes and with fully integrated technology, can be a key solution to the increasing sustainability issue. In short, Salute helps data centers efficiently transition to more sustainable practices for the world's most sophisticated hyperscalers, colo providers and edge operators. With that experience, Salute has perfected a model to optimize

operations, reduce operating expenses, and minimize risk. The advantage of this model has an enormous commercial impact through enhanced cost savings and a societal impact through reduced energy consumption.

STEP 1: 3 TIERED RESPONSIBILITIES FRAMEWORK

The Responsibilities Framework below is the starting point to understanding and implementing a program that will drive positive outcomes.

- Company Responsibility – The company is committed to controlling its actions.

- Service Delivery Responsibility – The company will continue to drive optimization, flexibility, training and best practices to increase value.
- Global Responsibility – The company can help apply expertise and creativity to integrate sustainability across their data centers.

The key to success for sustainable operations is to define the partnership responsibilities between the various stakeholders. Once established, the transformation begins. Below are the steps to becoming a sustainable operator.

STEP 2: A HOLISTIC APPROACH TO BECOMING A GREEN DATA CENTER

The key to taking a holistic approach is one that encompasses the life cycle of the data center and manages all

systems, processes, and teams as an integrated ecosystem. An ecosystem that includes these elements:

- Data Center Lifecycle Analysis (LCA) – Incorporating a data center lifecycle analysis (LCA) helps make more informed decisions regarding design and operational activities that contribute to and can reduce a data center's environmental impact.
- Workforce Development – Appropriately resource, train and incentivize the workforce to embed sustainability across all job functions.
- Resource and Goods Optimization/ Prioritization – the 4 most important elements to resource utilization include:
 - Reducing electrical power generation from fossil fuels by way of geothermal, wind and solar energy

sources.

- Proactively reducing water consumption and understanding local water supply.
- Not throwing away decommissioned equipment, using certified recycling and leveraging sustainable goods/ personal protective equipment (PPE).
- Make informed decisions on predictive maintenance plans with a focus on thresholds, risk mitigation, and optimization of contractors.
- Audits - important audits include:
 - Dematerialization audit
 - Design and Planning Review
 - Full Emissions Audit
 - Scope 2 + 3 Greenhouse Gas (GHG) Emissions Audit



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- Local Requirement Consideration - work closely with local authorities and planning councils to be proactive in changes that may be enacted.
- Measuring Success - You can start with the top 5 most common metrics:
 - Data Center Infrastructure Efficiency (DCIE)
 - Power Usage Effectiveness (PUE)
 - Carbon Usage Effectiveness (CUE)
 - Water Usage Effectiveness (WUE)
 - Electronics Disposal Efficiency (EDE)
- With KPIs established, the next step

is to establish an effective real-time monitoring solution that immediately identifies deviations and supports key functions in the change management process.

- Goal Setting - Having goals associated with a sustainability road map can help facilities improve upon future sustainability implementation. As the industry learns more about different practices to become more sustainable, the goals can be adjusted to transform services and solutions.

Remember, the data center companies leading the sustainability charge will

bring these benefits to their customers first. Pioneering new sustainable strategies can be a competitive advantage and lower the costs for data centers and customers alike, all the while impacting the environment for future generations. Embracing change and optimizing traditional standards is critical for making the ethical impacts needed to turn the current trajectory around. It is up to us and if you do it right, sustainable operations can drive bottom-line results that will have a long-term economic and social benefit.

Lee Kirby is Co-Founder and Chairman of Salute Mission Critical. He can be reached at marketing@saluteinc.com.



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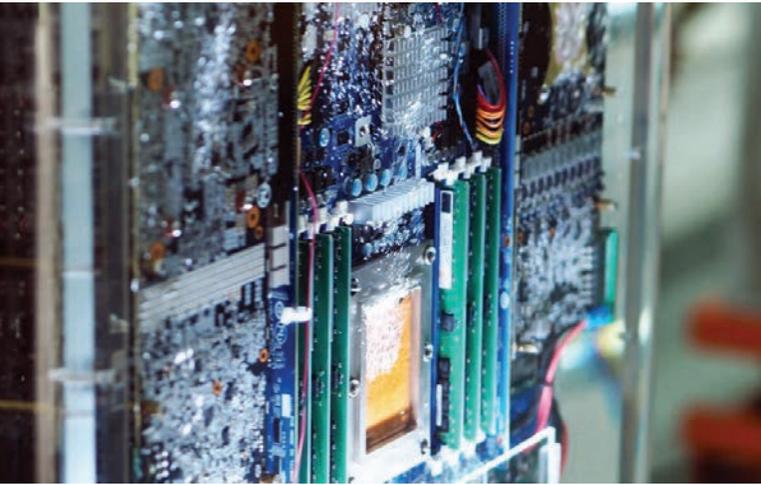
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DATA CENTER DYNAMICS:

Keeping IT Cool | Liquid

May 4, 2022



PRESENTING TOPIC:

Air-Cooled Data Center Campus vs. Two-Phase Liquid Immersion Cooled Data Center Campus

Many of today's data centers employ an air-based cooling system to keep the servers and equipment cool inside the data halls. Architects, engineers and operators are constantly seeking ways to innovate with data center design, to create even more energy, space, and resource-efficient ways of keeping data centers functioning at optimal levels. This study evaluates the use of both an air-based and a liquid-immersion-based cooling approach for hypothetical facilities managed by hyperscale operators. The selected direct evaporative cooling system (air-cooled) will be compared to a two-phase liquid immersion cooling system, with supporting electrical and technology typologies housed within an analogous architectural environment.

Presented By:

Page/ liquid^ostack

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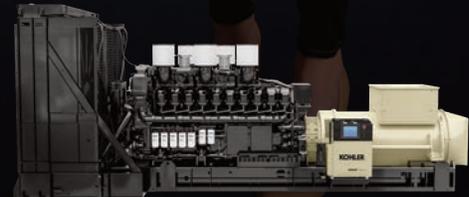
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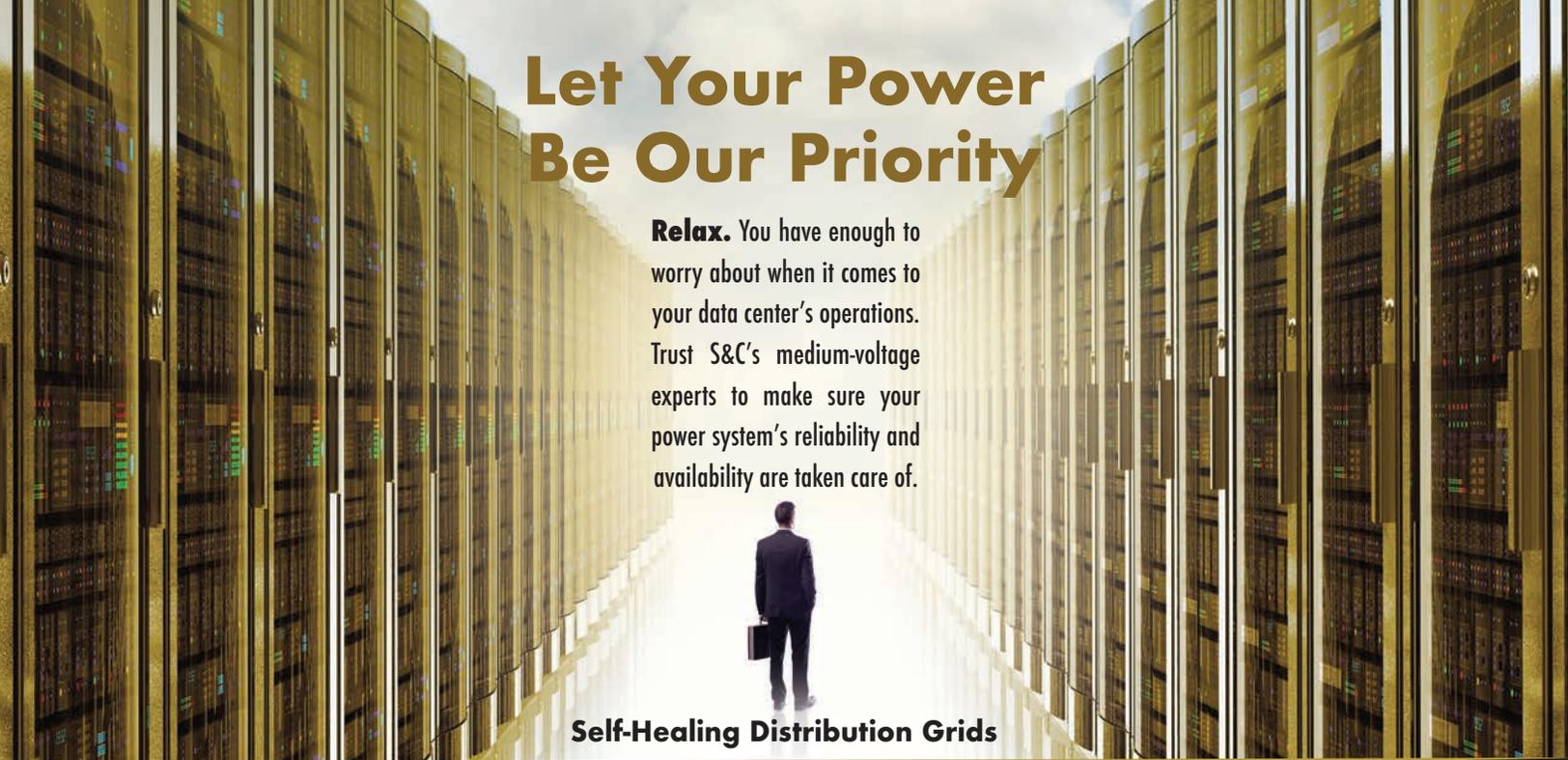
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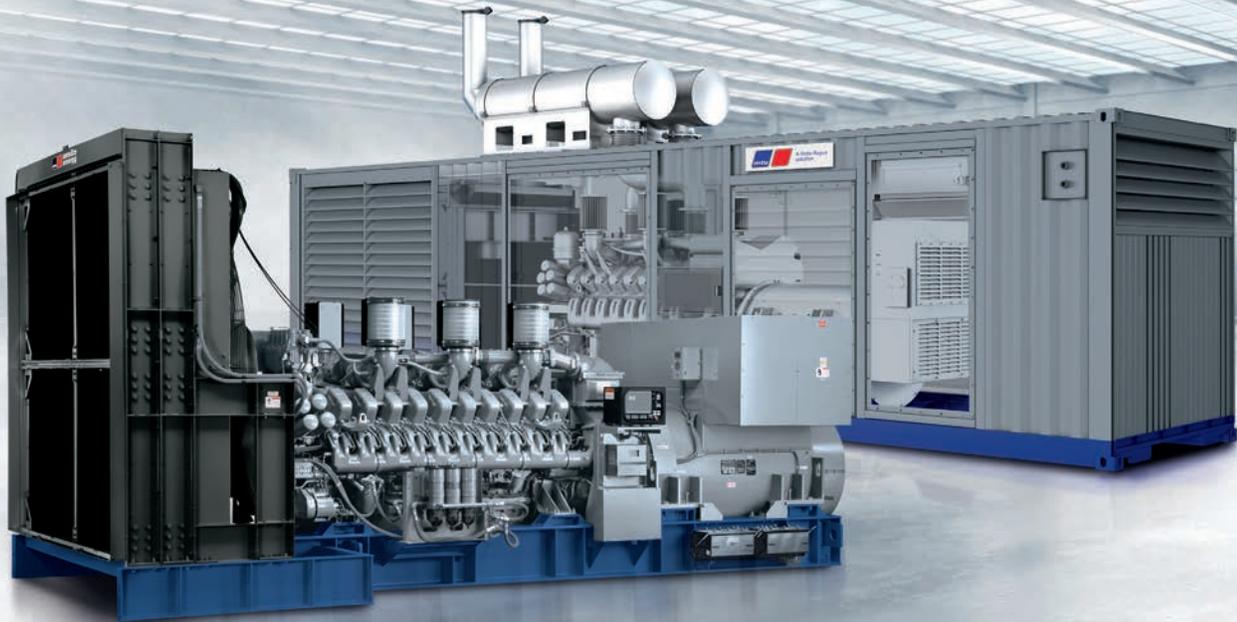
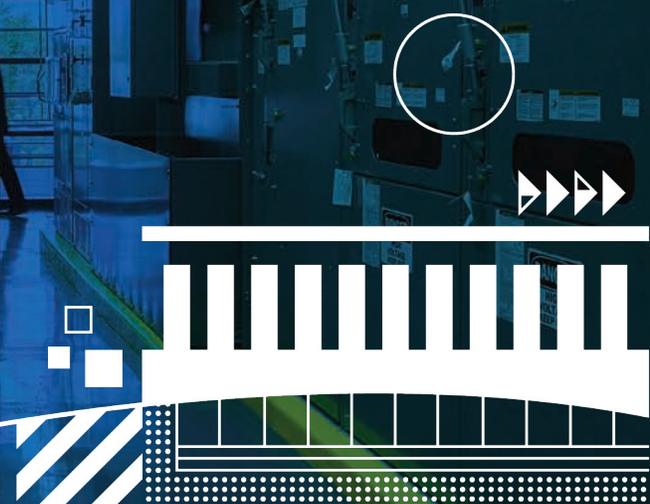
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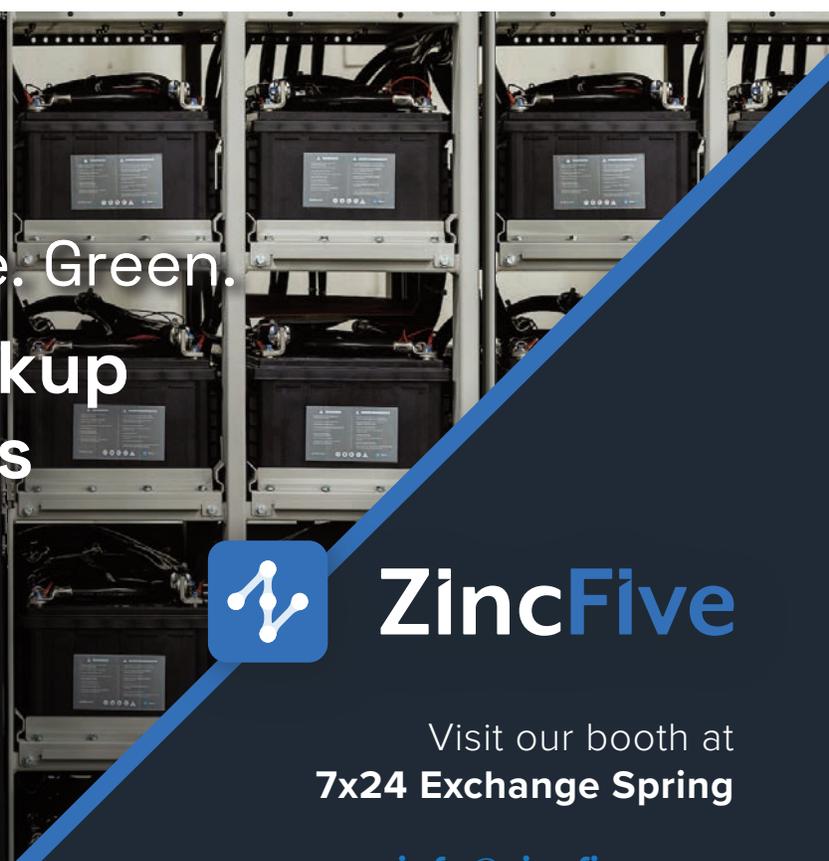
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DEADLINE: JULY 8, 2022



IMPACT OF COVID

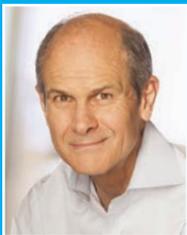
2022 SPRING CONFERENCE
END-TO-END RELIABILITY:
MISSION CRITICAL FACILITIES

June 12-15, 2022

JW Marriott Orlando Grande Lakes, FL

2022 SPRING CONFERENCE HIGHLIGHTS

The Spring Conference themed “End-to-End Reliability – Impact of COVID” will be held June 12-15, at the JW Marriott Orlando Grande Lakes in Orlando, FL. The Conference will feature compelling keynotes, high level speakers, concurrent sessions, a Women in Mission Critical Operations session and networking event, an Evening at Universal Orlando Resort and more...



Geoff Colvin, Senior Editor-at-Large for *Fortune*, and *The New York Times* Best Selling Author will kick off the conference with a keynote address on the topic **“Confronting Reality - Leading Ahead of Disruption.”**

Every day can bring harsh new surprises, economic and policy change, the competitor or new business model you never saw coming or game-changing technology. Competing in the friction-free economy has leaders worrying most about what they don't know. In his talk, Geoff Colvin leverages nearly 40 years at *Fortune* to arm audiences with valuable perspective on the trends driving business disruption, revealing how top leaders are confronting them right now. Economic growth, consumer demand, interest rates, taxes, employment costs – these issues are transforming the business environment daily, and Geoff provides unparalleled insights in terms you won't hear elsewhere. And while political winds may blow toward protectionism, the market trends powering the friction-free economy are technological and going strong, requiring swift and full attention. As a result, winning in business today demands extraordinary leadership acting on the best intelligence it can find. Geoff's message is optimistic and energizing: opportunity is more widely available than ever and there will be winners – why shouldn't it be you?



Our second conference day will open with a keynote **“How to Build to Scale with Sustainability in Mind”** by **Phill-Lawson Shanks**, Chief Innovation Officer at Aligned Data Centers.



The closing keynote **“Power Resiliency for Data Centers: Breaking Old Myths and Power Paradigms”** will be delivered by **Bill Kleyman**, Executive Vice President Digital Solutions at Switch and **Allan Schurr**, Chief Commercial Officer at Enchanted Rock.

Additional presentations will be delivered on compelling mission critical industry topics:

- Less Talk, More Doing: Sustainable Data Centers by 2030
- COVID and Its Impact on Data Center Construction and Equipment Procurement
- WiMCO: Intentional Recruiting and Development: Building the Future of Data Centers Today
- Pandemic Continued Impact of Data Center Costs: How to Apply the Strategic Operation Planning in the Future
- Panel: Sustainability and Reliability: Operating Lessons Learned for Unordinary Times
- ASHRAE: Hardware Evolution: Most Radical TC9.9 Change Yet
- Why Adversaries are Focusing Control Systems Networks to Create the Impact of Their Choosing
- COVID + Climate = Better Data Centers

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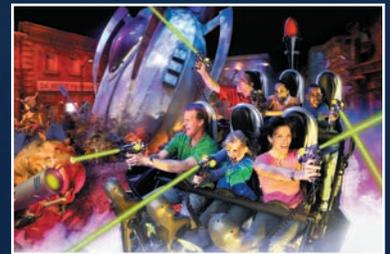
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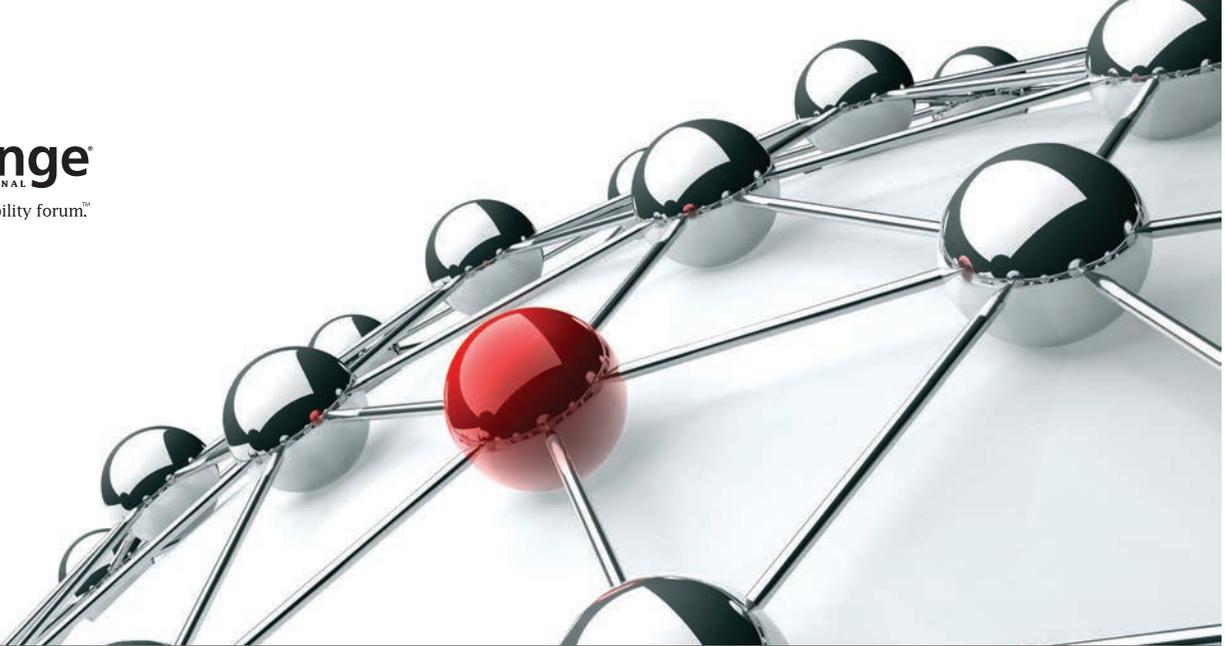
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As the leading knowledge exchange in the mission critical space, 7x24 Exchange recognizes the importance of increasing the engagement and participation of women in the industry. This understanding has led to the development of 7x24 Exchange WiMCO (Women in Mission Critical Operations) which will focus on:

- Recruiting women into the 7x24 Exchange organization
- Supporting WiMCO initiatives at the Chapter level
- Promoting mission critical opportunities for women
- Providing leadership opportunities through the community



2021 Fall Conference WiMCO Session Speakers. *Left to right:* Carrie Goetz, Principal/CTO, StrategITcom; Melissa Chambal, US LATAM & Canada Technical Manager, CNet Training; Juli Ierulli, Global eCommerce Growth Manager-Electric Power Division, Caterpillar, Inc, and Vice President / National WiMCO Committee Chair, 7x24 Exchange International; Nancy Novak, Chief Innovation Officer, Compass Datacenters

Take a look at what's happening with WiMCO 
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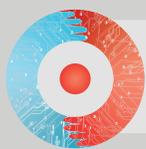


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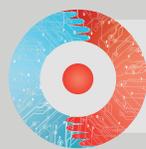
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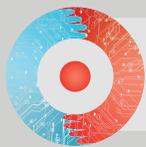
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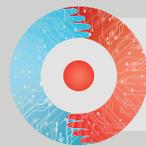
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INTERNATIONAL DATA CENTER DAY

Powered by 7x24 Exchange International

2022 INTERNATIONAL DATA CENTER DAY RECAP

By Denman Wall, Sr. Director, Interactive Services, 7x24 Exchange International

March 23, 2022 marked the celebration of the 4th International Data Center Day. Launched in the fall of 2019, the celebration is designed to create awareness of the data center industry and to inspire the next generation of talent. It provides the industry with an opportunity to open its doors and show, in a collaborative effort, what data centers are, why they are so important to our connected world, and the wide array of career opportunities that are part of the data center industry.

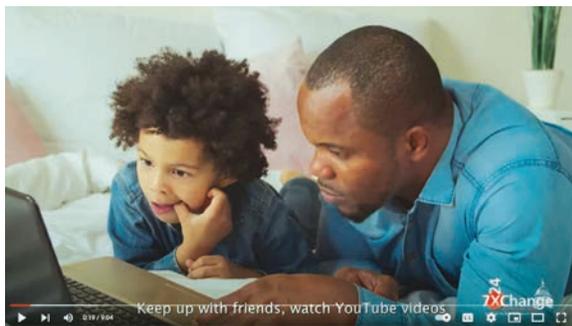


THIS YEAR, ORGANIZATIONS FROM ALL OVER THE GLOBE SHOWED THEIR SUPPORT OF THE INITIATIVE IN A VARIETY OF WAYS.

Data Centers and other tech firms gave in-person tours to students, created videos and rich content highlighting their celebration. They shared them on social media and re-posted and liked 7x24 Exchange's posts.

[WATCH THE YONDR VIDEO](#)

WANT TO SHOW YOUR SUPPORT THROUGHOUT THE YEAR? BE SURE TO POST YOUR EVENTS ON SOCIAL MEDIA AND TAG US WITH #INTLDATACENTERDAY



WATCH THE GREATER WASHINGTON DC CHAPTER VIDEO

7X24 EXCHANGE CHAPTERS ALSO PARTICIPATED BY HOSTING EVENTS AND CREATING SPECIAL RICH MEDIA CONTENT.

Standing out, the 7x24 Exchange Greater Washington D.C. Chapter created a video featuring K-12 students learning about what data centers are all about.

The 7x24 Exchange Greater Philadelphia Chapter along with International Data Center Day Signature Sponsor Netrality hosted three high schools in their Philadelphia data center. Students enjoyed an educational presentation followed by a visit to tenant Nerd Street Gamers, a national network of esports facilities and events that power competitive opportunities for gamers.



Netrality Event with Greater Philadelphia Chapter



Student from Canada coloring a cloud image



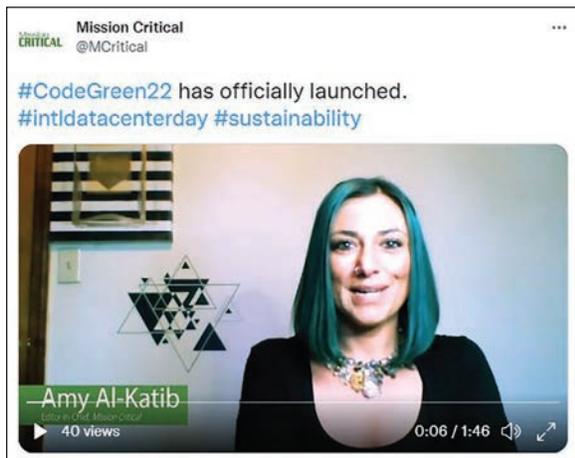
Florida/Alabama Chapter Event



INDUSTRY SPONSORS USED THE OCCASION TO ANNOUNCE NEW EFFORTS TO BRING AWARENESS TO THE INDUSTRY.

For example, Uptime Institute in collaboration with its sponsors created The Data Center Career Pathfinder, an interactive grid showcasing different types of jobs in the data center industry.

CHECK OUT THE DATA CENTER CAREER PATHFINDER



IN ADDITION TO CORPORATE, INDUSTRY, AND 7X24 CHAPTER SUPPORT, INDIVIDUALS SHOWED THEIR SUPPORT IN A VARIETY OF WAYS AS PART OF THE POWER OF ONE CAMPAIGN.

The Power of One campaign reinforces the idea that you don't have to work at a data center to celebrate International Data Center Day. Rather, all you need is an interest in sharing. Some individuals, including media partner Mission Critical Magazine's Editor Amy Al-Katib went all in on the celebration.

Check out her video, and new hairdo, in support of their Code Green campaign in honor of International Data Center Day.

WATCH AS AMY AL-KATIB LAUNCHES CODE GREEN



LISTEN TO THE THOUGHT CLOUD HERE



WATCH THE WORKING IN THE CLOUD REPLAY



Speaking of Mission Critical Magazine, this year's International Data Center Day season kicked off with *The Thought Cloud Podcast*

interview of **Bob Cassiliano**, chairman and CEO of 7x24 Exchange, and **Chris Crosby**, founder and CEO of Compass Datacenters.

With much of life returning to a semblance of normalcy following the pandemic, 7x24 Exchange is looking forward to more in-person events in the years to come.

According to Cassiliano, "Virtual events are good for a fill-in or a backup, but virtual events sometimes lack the intensity of education, information sharing, and networking that gets done when students are at an onsite situation."

7X24 EXCHANGE INTERNATIONAL LAUNCHED A NEW INITIATIVE CALLED THE INTERACTIVE CAREER TREE.

Visitors who use the career tree can learn from industry professionals about different career paths within the mission critical industry. With four "branches" containing over 20 "leaves", users can watch video interviews from sales and marketing, operations, design, and information technology professionals.

Throughout the year, 7x24 Exchange will be adding more content to the career tree.

VIEW THE INTERACTIVE CAREER TREE

In addition, the organization held a **Working in the Cloud** virtual session that focused on preparing for a data center career. The event was supported by the 7x24 Exchange Mentoring Program. It shed light on the importance of mentoring for those who are entering or who have an interest in the mission critical field.

International Data Center Day is thriving, as evidenced by the amount of support seen online and shared with 7x24 Exchange.

It is terrific to see organizations and individuals not only adopting the initiative but enthusiastically raising the bar of their celebrations year after year.

TO SEE OTHER EXAMPLES OF THE IMPACT OF THE DAY'S REACH, VISIT [HTTPS://WWW.INTERNATIONALDATACENTERDAY.ORG/ACTIVITIES/](https://www.internationaldatacenterday.org/activities/)

THANK YOU

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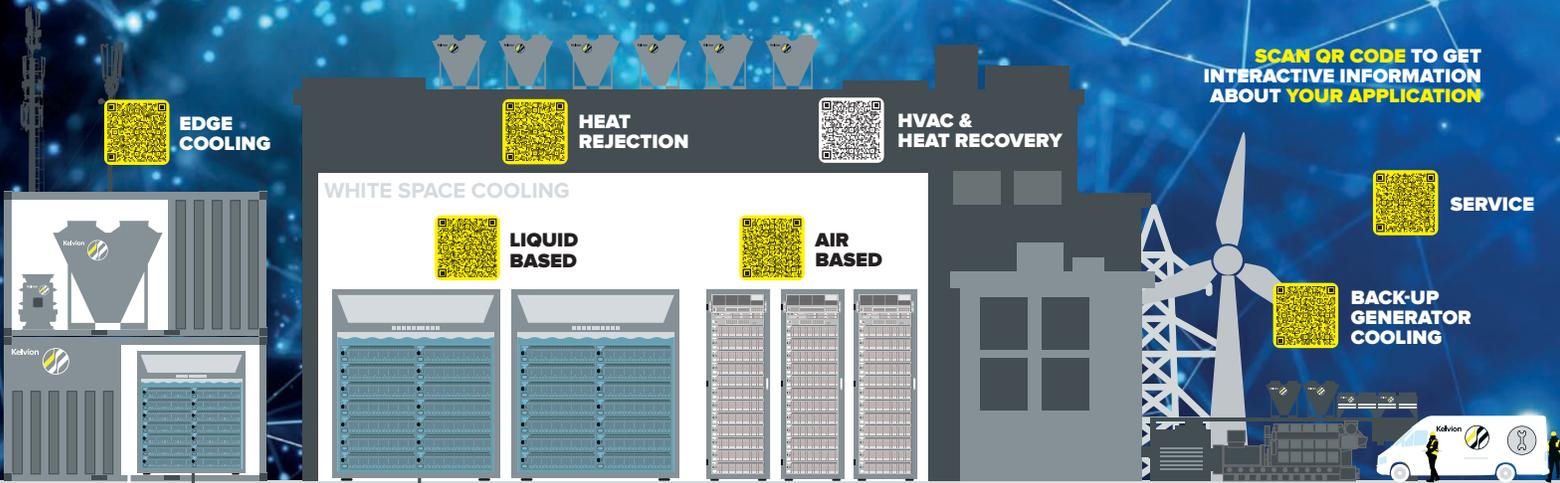


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