SUPERIOR ESSEX

CASE STUDY

By masterfully combining Art Deco architectural beauty with future-forward technologies and sustainable cable, Sinclair Holdings, LLC and partners have renovated and revitalized a 1930s-era historic landmark in Fort Worth, Texas, into an unprecedented Sustainable Intelligent Building – one that provides immense energy efficiency, savings on both construction time and cost and an unrivaled hospitality experience – all run on DC power and Superior Essex Power-over-Ethernet (PoE) cable.

SINCLAIR
FORT WORTH

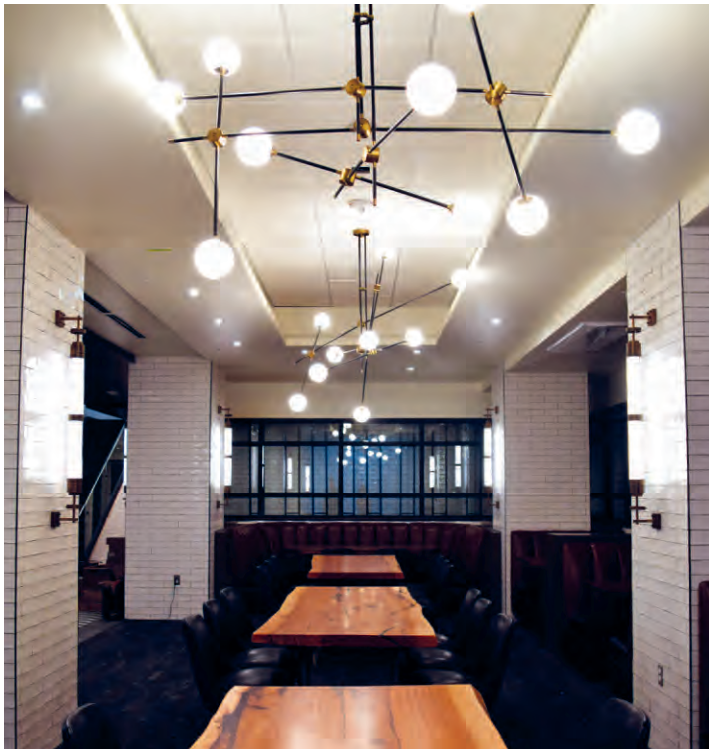
BEAUTY AND THE TECH

INFUSING NEW LIFE INTO THE HISTORIC SINCLAIR HOTEL WITH SMART BUILDING CAPABILITIES AND SUSTAINABLE CABLE

FROM ART DECO TO THE DIGITAL ERA

When veteran real estate developer Farukh Aslam, CEO of Sinclair Holdings LLC, purchased the Sinclair Building in late 2013, he knew even then that it held great potential. This 16-story, Art Deco masterpiece – built in 1929 and listed on the National Register of Historic Places – is a longtime landmark for the city of Fort Worth, TX. Aslam, though, had the vision of redeveloping the 106,000 sq. ft. office complex into a 164-room, luxury Marriott Autograph Hotel, inclusive of a fitness center, restaurant and rooftop bar. The upscale, boutique hotel is part of Sinclair Holdings' broader plan to renovate three buildings in the downtown Fort Worth area, and from early on, Aslam knew that he wanted to infuse digital technologies and sustainability into the Sinclair Building to set it apart as the model hotel of tomorrow.

To enable this, Aslam and team first relocated some of the office tenants from the Sinclair Building – as well as the future hotel's "back of the house" services – into the adjacent Sanger Building that he had previously purchased. He then sought out the cabling expertise of Superior Essex and the technological know-how of other partners as well – including Cisco, Voltserver, Legrand, Ivani, NuLEDs and Somfy. Together, they converted the historic structure into a first-in-the-world, DC-powered hotel equipped with the latest Sustainable Intelligent Building technologies.



In addition to 164 bedrooms, the hotel features numerous public spaces – including a lobby reception and bar, boardroom, fitness center, base-level restaurant and rooftop bar – which collectively use 1,500 PoE-connected smart devices to stay synced.

A MARKET EAGER FOR A MAKEOVER

As Aslam was building out another one of his hotels four years ago, he ran into an unexpected problem – the very sophisticated control panels designed to run his AC-powered, 100% – Light Emitting Diode (LED) lighting throughout the building failed to work. Neither his electrical contractor nor the third-party lighting company's engineers stepped up to fix it, so, with his electrical engineering background, Aslam vowed that he could do it better – and without either one of them – by using (PoE).

It was then that Aslam paused, looked around and noticed something very odd – "I've been a commercial real estate developer for 25 years, and there's hardly been any innovation in commercial buildings." He went on to say, "We've seen a lot of innovation with other things in our daily lives, like smartphones and electric vehicles, but not commercial real estate. So, I have taken a radically different approach."

He would go on to pull out the traditional electrical wiring in the Sinclair Building in favor of replacing it with various Superior Essex PoE cable products. This enabled him to create one large network of smart devices, each with its own Internet Protocol (IP) address, throughout the hotel – all in an effort to further enhance his guests' overall hospitality experience. And by working alongside their partners, Sinclair Holdings has since achieved its goal of creating one of the most advanced, energy-efficient, DC-powered buildings in the world.

3,280+

CABLE DROPS

6,500

DEVICES CONNECTED

286,000

FEET OF SUPERIOR ESSEX CABLE PRODUCTS

35%

SAVINGS ON ENERGY COSTS
(ANTICIPATED)

The future of PoE technology – which helped to provide upwards of 35% savings on energy costs for this building – looks bright and promising for Sinclair Holdings, especially from the rooftop bar of the hotel.

KNOCKING DOWN (TECHNOLOGICAL) DOORS

No cutting-edge advancements are ever without their challenges. And for the team at Sinclair Holdings, while forging their own path as pioneers in this technological arena, they ran across their fair share of issues.

	CHALLENGES	SOLUTIONS
Making a Historic Building Energy Efficient	Being built in 1929, the Sinclair is not a very energy efficient building, at least by today's standards. It had single-pane glass and wood windows, a concrete exterior structure and poor insulation. But, given the Sinclair's protections as a historic building, as well as the associated and agedbuilding codes in Fort Worth, Aslam and team spent two years getting approvals from the National Historic Register Commission to make renovations, as well as getting the financing lined up.	Making the most of these new technologies' energy-saving benefits. After working with inspectors to convince them on these new technologies, the Sinclair team eventually got approval to install double-paned glass windows and a Variable Refrigerant Flow (VRF) air conditioning system alongside PoE-powered, low-voltage LED lighting and sustainable cable throughout the building. Altogether, these cutting-edge technologies brought a considerable amount of energy efficiency into the hotel – helping to effect an estimated energy savings of 35%.
Pioneering this Level of Technological Implementation	Demonstrating to partner companies that PoE was the way of the future, then developing many of these new technologies alongside their partners — including half of the devices in the hotel that had never been PoE-powered before.	Relying simultaneously on their partners to learn about the full potential and capabilities of their individual products, as with innovative and adaptable Superior Essex cable. Then, in turn, Aslam and team went on to educate many people outside of the technology world to get them on board with understanding and using all this new PoE-based technology in the hotel.
True Convergence of the Sustainable Intelligent Building	Pulling together so many disparate systems (such as lighting, HVAC, sensors, A/V, security, network), into one common, integrated control scheme was a unique challenge. But to make the vision of the technology-forward hotel a reality, involving numerous aspects of the hotel guest experience was a necessity.	Carefully choosing dedicated partners that can devote time and resources to the development, testing, tweaking and installation of devices that can happily interface with each other. Moreover, using a cabling solutions provider – Superior Essex – that can connect all these smart devices, no matter the application or location, as well as connect with an all-new building management system that could interface with each of them.
The Unknown Unknowns	Taking a building this old and launching it into the future, Aslam and team discovered issues that they could not have known about, much less have anticipated – such as inaccurate structural drawings, sub-contractors damaging each other's work, sequencing of the various installations, elevator inspection codes and variances and electricians fighting against having their scope of work decreased.	Working with Superior Essex and other partners to invent and develop new technologies to adapt to and outsmart these challenges as they arose, the team often ended up creating better solutions than they had initially thought possible.

CONNECTING IT ALL

As Aslam noted, "Network infrastructure should be taken seriously, just like any other utility. Electricity, gas, water and now networking are all just as important – this is the fourth utility now." In line with that thinking, Aslam and team were very adamant about sourcing only the best, most reliable, most sustainable cable to run throughout their building and to task with being the central nervous system of the Sinclair Hotel.

They deployed numerous Superior Essex products for various, specific applications throughout the hotel:

- **Superior Essex PowerWise 1G 4PPoE:** Powering the touchscreen wall controllers that are located over 35-60 ft. away from the nearest devices they controlled
- **Superior Essex FAS 18 gauge/2 conductor cable:** Connecting the lighting drivers ("spice boxes") to every light fixture in each room
- **Superior Essex FAS 18 gauge/4 conductor cable:** Transporting power from the Intermediate Distribution Frame (IDF) closets on each floor to the individual receivers in each room
- **Superior Essex FAS 18 gauge/8 conductor cable:** Powering the bed headboards, which have seven lights on them, with a single cable
- **Superior Essex FAS 18 gauge/12 conductor cable:** Acting as the backbone for vertically transporting power through the building's VoltServer DC power distribution system, which sends packets of smart "digital electricity" pulsing up from the basement all the way to the IDF closets on each floor

The various FAS (Fire, Alarm & Security) cable products listed above were all non-shielded and made with multiple stranded conductors, and every cable used in the build was VoltServer approved.

Why PoE Technology?

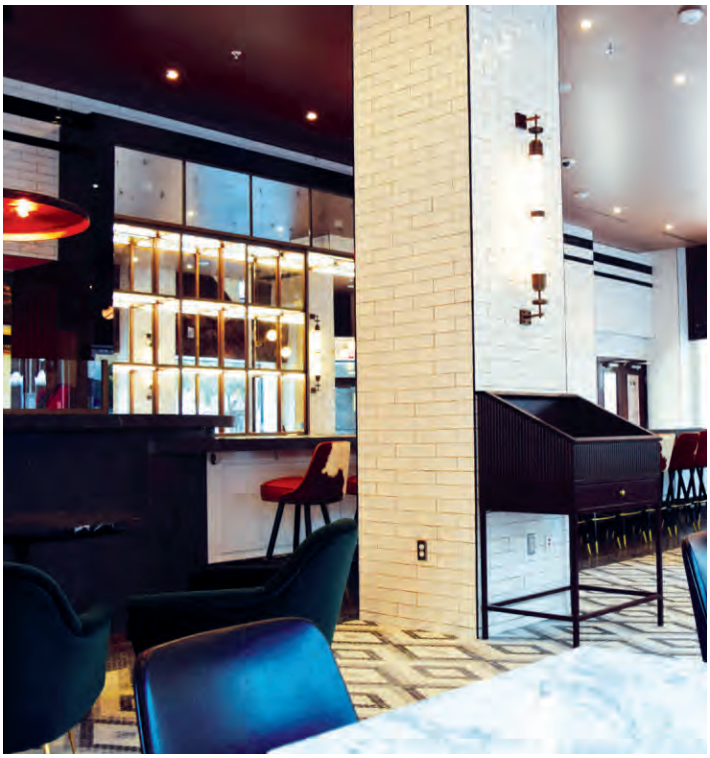
The main advantage of using PoE is that it can transport both data and power on the same cable. And to make end devices "smart," and able to communicate with operators and each other, each device – whether lighting driver, electric mirror, mini bar or window shade motor – needs an individual IP address, which PoE enables. There are three main benefits of this:

- **Improved Troubleshooting:** If, for example, any single light in the building goes out, the PoE-connected system immediately notifies the staff to repair it.
- **Tracking Energy Consumption:** Staff can "monitor, in real-time, the whole building's power consumption at a miniscule scale – at any node, a single light, a whole room, a whole floor – they can plot the entire history of the whole building," as Aslam says. Plus, using presence and occupancy-sensing capabilities made possible by Bluetooth mesh technology, the rooms can automatically change state to consume less energy.
- **Less Loss & Waste:** By sending power DC, the devices are not losing energy or generating heat between the AC and DC conversion when the power hits the LED light, which puts less stress on the LEDs, thereby increasing their longevity.

Why PowerWise Cable?

Utilizing 22 AWG copper conductors, PowerWise 1G 4PPoE cable delivers 60 Watts of power to PoE-enabled devices with 97% power efficiency and 100 Watts of power at 88% power efficiency, while also supporting 1 Gigabit data transmission. In spaces with hundreds of PoE devices, this greatly improved power efficiency can yield an energy savings of thousands of kilowatt hours per year, which translates to thousands of dollars in saved utility costs. Additionally, PowerWise 1G 4PPoE cable maintains the lowest temperature rise in large cable bundles, ensuring reliable power and data transmission in high-density installations and further improving system energy efficiency.

The building's VoltServer DC power distribution system sends packets of smart "digital electricity" throughout the hotel via over 286,000 feet of Superior Essex PoE cable.



There are over 5,000 lights installed throughout the hotel, as seen here in the hotel restaurant and lobby bar, each powered and connected to the network with PoE cable.

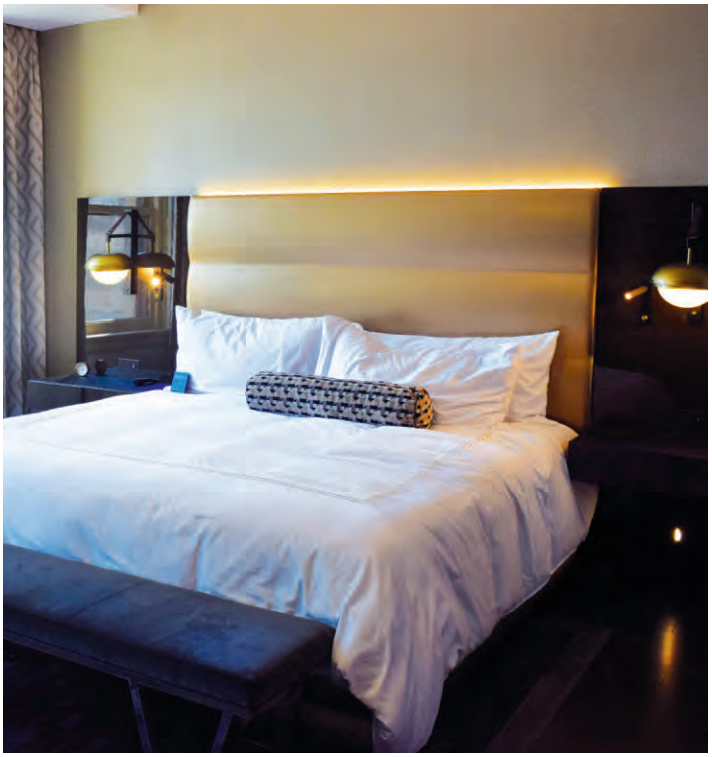
"My relationship with Superior Essex started over three years ago, and it's been nothing but amazing. The network of companies that they cater to is phenomenal, and at trade shows they've introduced us to some great partners. Some of their products are very unique and not offered by other, similar vendors, such as their 22-gauge PowerWise cable, which we use a lot of in our deployment. And their willingness to customize products for us – that's pretty remarkable."

// Farukh Aslam, CEO, Sinclair Holdings LLC

"The cabling from Superior Essex has actually been ahead of what we've been able to accomplish so far in this project. They always had a solution, and then they guided us on what that best solution would be – stuff we didn't even know we could do. They were able to provide us with a variety of cables to meet our different needs, and then supplied them in a timely manner. They have all of the ends and odds of what you'll need to make a digital building, and having a partner that's willing to help you, and that's quick and responsive, has been so helpful time and time again"

// Hannah Walker, In-House Designer, Sinclair Holdings LLC

Though the renovation was a retrofit and somewhat constrained by the building being listed on the National Historic Register, the simple elegance of PoE systems allowed the in-house designer to create a unique, energy-efficient ambiance both in this elevator bank and throughout the rest of the hotel.



A single Superior Essex 18 gauge/8 conductor PoE cable powers the bed headboards, each of which features seven lights.

The hotel suites, with their gorgeous amenities and fixtures, utilize PoE cable to power, connect and control more than 30 devices in each room, including the bathroom lights, electric mirror and even the shower head.

THE TANGIBLE RESULTS OF INNOVATION

After the renovation, The Sinclair is now able to be reclassified as not only a historic place, but also as a gorgeous hotel and a Sustainable Intelligent Building. All the new technology within it works together to provide immense energy efficiency, savings on both construction time and cost and an unrivaled hospitality experience – all run on DC power and PoE cable. As a result, the team was able to realize the following benefits:

Benefits for the Hotel Guest

An overall improved guest experience, customizable to each user

- Marriott App Integration

  "As soon as you check in, our sensors will know that you're there, and they can set that room to your customized room settings for temperature, lights, window shades and more that you've programmed into your Marriott app." – Walker

- Special Room "Scenes"

  "Because we can communicate with every light, window shade and device in the room, guests can use the touchscreen wall controller to create special, customizable 'scenes' – such as good morning, social, relax and romantic – and it feels luxurious to have all these scenes happening in your room." – Walker

Benefits for the Environment

An overall 30-35% reduction in energy costs

- Anticipated, as compared to utility costs of other hotels of similar size, both nationwide in the same city.
- If a room is unoccupied, the smart devices work together to automatically drop the shades, adjust the temperature and turn off the lights and TV to help save on energy.

Required backup diesel generator replaced with lithium-ion batteries

- LG's Energy Storage System (ESS) in the Sinclair Hotel basement is now the first battery system in the world to be used in this manner. It's also UL 924 rated and provides peak load shaving in the building.

Benefits for the Technology

- Legitimacy, Proof of Concept and Scaling Up

  "A lot of this PoE work was done in the past in a lab at a tech company. But to do it on this scale and in mainstream businesses such as a branded Marriott Autograph hotel or CVS retail store shows that the technology is coming of age, is reliable, is easy to deploy and actually saves you energy. And it lends a level of comfort to developers that the technologies are proven." – Aslam

- Faster, Cheaper and Safer than Old-Fashioned Electrical Wiring

  "PoE is much quicker to deploy, and you only need a low-voltage contractor to do so, which is cheaper than an electrical contractor, and you won't need as many inspections anymore either." – Aslam

  There are also very few areas where people can be shocked in this building, as there are far fewer electrical connections throughout. This reduces the risk of fires as well.

- Immensely Low-Maintenance

  Once it's all in place, the technology all self-maintains and self-regulates, and so hotel staff only need to be monitoring it — without requiring any outside technical training.

- Future Savings – Insurance

  "Since the building is safe – because it can't shock you or start electrical fires – we're also working with insurance companies to get cost breaks on insurance premiums." – Walker

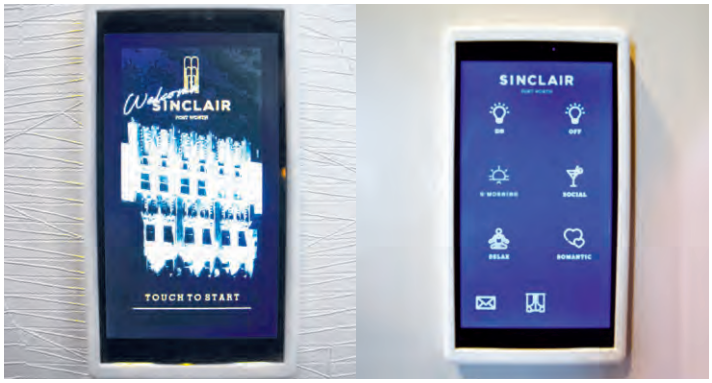
Benefits for the Company

- Recognition

  "You are walking into the first hotel in the world which runs on DC power," says Aslam. "And the fact that our work is being noticed at the very highest levels is very encouraging." – Aslam

- First DC-powered/PoE-supported CVS in the World

  In 2018, Sinclair Holdings opened a CVS store in their office building next door with similar technology, making it the first CVS in the world to run on low-voltage DC lighting and Digital Electricity.



Hyper-efficient PowerWise 1G 4PPoE cable powers the touchscreen wall controllers that are located over 35-60 ft. away from the nearest devices they control.

By working with innovative partners, The Sinclair Hotel features stunning PoE lighting fixtures, such as the ones shown here, more than half of which had never been powered by PoE technology before.

ONWARD TO THE NEXT INNOVATION

The Future of this Technology

"I'm a firm believer that the future of buildings is stored energy, and our hotels will now have a lot of it. Once people see PoE and stored energy working, more of them will jump on it, especially when the players are this large." – Aslam

Sinclair Holdings' Next Development Project

- "After everything we've learned here with this building, we're starting to look towards consulting for and partnering with developers. We want to begin taking this technology mainstream and to get projects built with PoE not just in Fort Worth, but all over the world, that are more energy efficient. We're even envisioning that some of our next projects could be completely DC-powered, completely off-grid and completely net zero." – Hannah Walker
- "Considering all that we learned from the Sinclair Hotel renovation, with our next project, we can probably do it in a third of the cost and make the process far more efficient and with far fewer change orders." – Hannah Walker
- Aslam is envisioning, and already testing, a multi-family high-rise building, where all of the kitchen appliances – including the stove, oven, microwave, full-size refrigerator, dishwasher, washer and dryer – run on Class II DC power, transported by PoE cables. Moreover, the team is currently developing a PoE-powered VRF air conditioning units and high-definition televisions, and Superior Essex has already developed a cable fit for this exact application.
- Sinclair Holdings is working with the city of Fort Worth to set up a center of excellence focused on Sustainable Intelligent Buildings to benefit the whole city and beyond.

By masterfully combining Art Deco architectural beauty with future-forward technologies and sustainable cable, Sinclair Holdings and partners have renovated and revitalized a 1930s-era historic landmark in Fort Worth, into an unprecedented Sustainable Intelligent Building – one that provides immense energy efficiency, savings on both construction time and cost and an unrivaled hospitality experience – all run on DC power and Superior Essex Power-over-Ethernet (PoE) cable. //

The LG Energy Storage System (ESS) in the Sinclair Hotel basement is now the first lithium-ion battery system in the world to be used as a replacement for the required backup diesel generator. It's also UL 924 rated and provides peak load shaving in the building.

Superior Essex cable acts as the backbone for transporting power up from the basement to these IDF closets on each of the hotel's 16 floors.