Fall 2018

90TH ANNIVERSARY SPECIAL EDITION

CONNECTIONS

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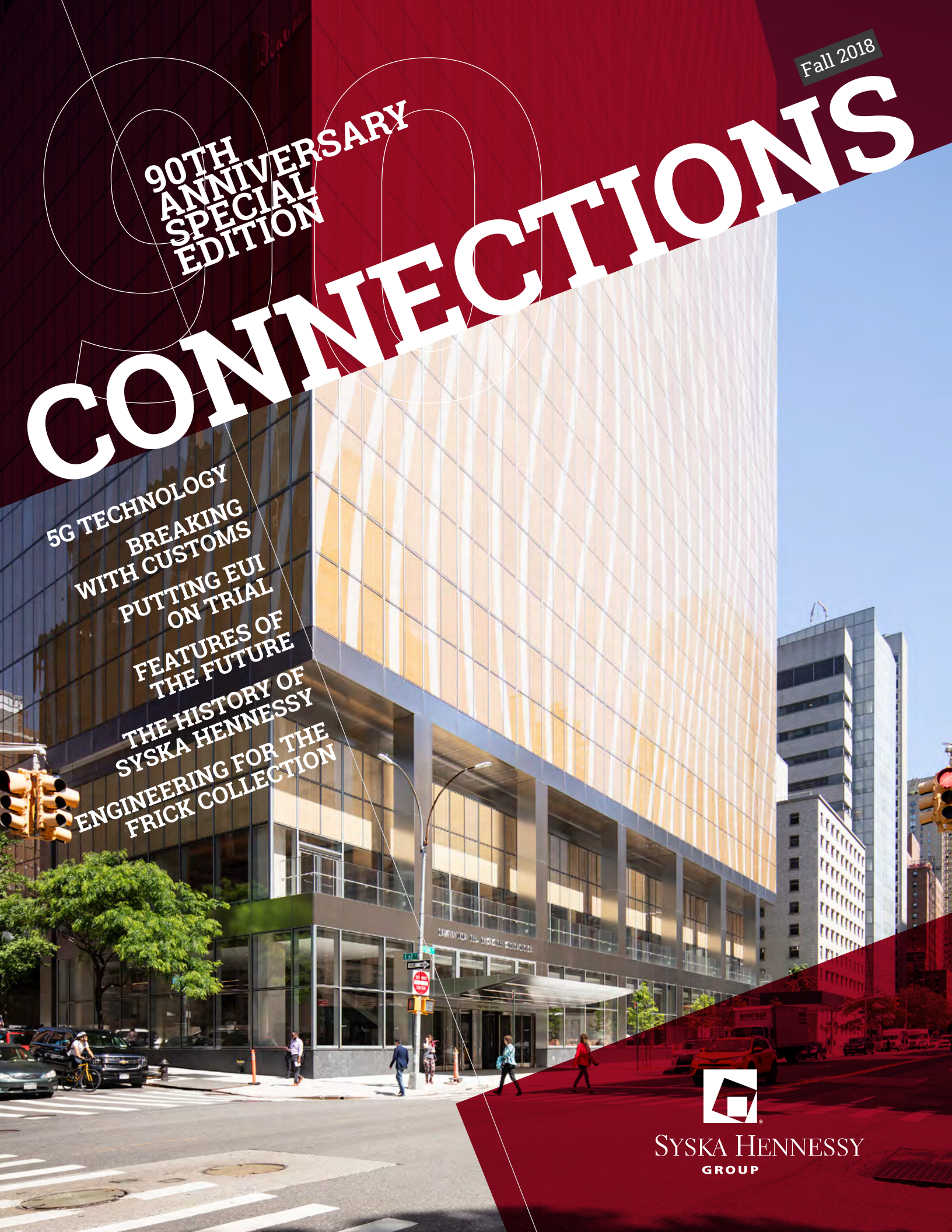
BREAKING WITH CUSTOMS

PUTTING EUI ON TRIAL

FEATURES OF THE FUTURE

THE HISTORY OF SYSKA HENNESSY

ENGINEERING FOR THE FRICK COLLECTION



SYSKA HENNESSY GROUP

90TH ANNIVERSARY SPECIAL EDITION

CONNECTIONS

Syska Hennessy Group is a leading global, full service MEP with specialist services for information and communication technology, commissioning, architectural lighting design, vertical transportation and sustainability. With more than 500 professionals across 18 offices, we provide a full range of engineering services for projects of every size and every budget. Since 1928, we have been designing smarter, safer and more efficient buildings by integrating essential system that adopt to our changing world.

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Regular Connections Features

Syska 90th Anniversary Special Content

As we honor our history, we also reflect on the present and, more importantly, our future.

A MESSAGE FROM CYRUS AND GARY...

We are excited to present to you this special edition of Connections in recognition of our 90th year in business. Syska Hennessy has come a long way from its humble beginnings. We started in a single office with six drafting tables on the 28th floor of NYC's Graybar Building, and today we are a thriving global firm with 16 U.S. locations and two global locations. In fact, we just opened our 18th office in San Jose (Silicon Valley).

Cyrus Izzo

Gary Brennen

As we honor our history, we also reflect on the present and, more importantly, our future.

The firm's ethos is just as strong as it ever was. We remain dedicated to delivering award-winning projects that are sensitive to the environment where we work and play. Our designs reflect the strengths of a talented and diverse staff, as well as nine decades of collaboration with clients and colleagues.

This year we won the Grand Award from ACEC for the Lotte World Tower in Seoul, South Korea, and the AIA National COTE Award for the Los Angeles Federal Courthouse. Almost 50 years ago, a Syska team won the Grand Award for the L'Enfant Plaza in Washington. Time moves on, but great work will always be celebrated.

Our commitment to the community outside the walls of Syska continues. Through our SENSE Network (Syska Employee Network for Support and Education), we donated 250 pounds of food to City Harvest. We participated in the Atlanta Science Festival, which celebrates local science and technology. Our San Diego team volunteered to clean up Jess Martin Park in Julian, collecting 15 pounds in total.

2018 represented another fruitful year for our SHAPE (Syska Hennessy Advocating Professional Equality) team as well. We created SHAPE to promote and foster a diverse culture. In keeping with these principles, our Chicago office hosted an event with the University of Illinois at Chicago, during which Syska executives spoke about the AEC industry to a group of young female engineering students. And our SHAPE team in San Francisco hosted a chapter of the University Society of Hispanic Professional Engineers. At this event, our engineers spoke to the university students about the field of engineering and STEM careers. The future looks bright indeed.

The future is bright within Syska too, thanks to our EDT (Engineer Development Training) program, which grooms recent college graduates for engineering careers. Such an emphasis on the next generation is a pillar of our philosophy that can be traced back to the 1960s. One of the firm's original recruits, G. Venkata Ramu, joined a similar program, and 50 years later he is celebrating his anniversary with the firm.

So what's next? One key goal we identified in our strategic plan for 2025 is to be the multi-disciplinary engineer of choice for our clients and, most important, our talented team members. This plan defines our organizational values and where we want to be. It is not about being the biggest; it's about one unified vision that guides us forward truly as a one team, delivering on the same technical passion that Syska Hennessy was founded on.

If anything can be said of Syska Hennessy, the word that comes to mind is resilient. Through each decade in our history, Syska looked to its employees to help guide the way. This core has allowed us to work with some of the world's best clients on the most innovative, interesting, and historic projects.

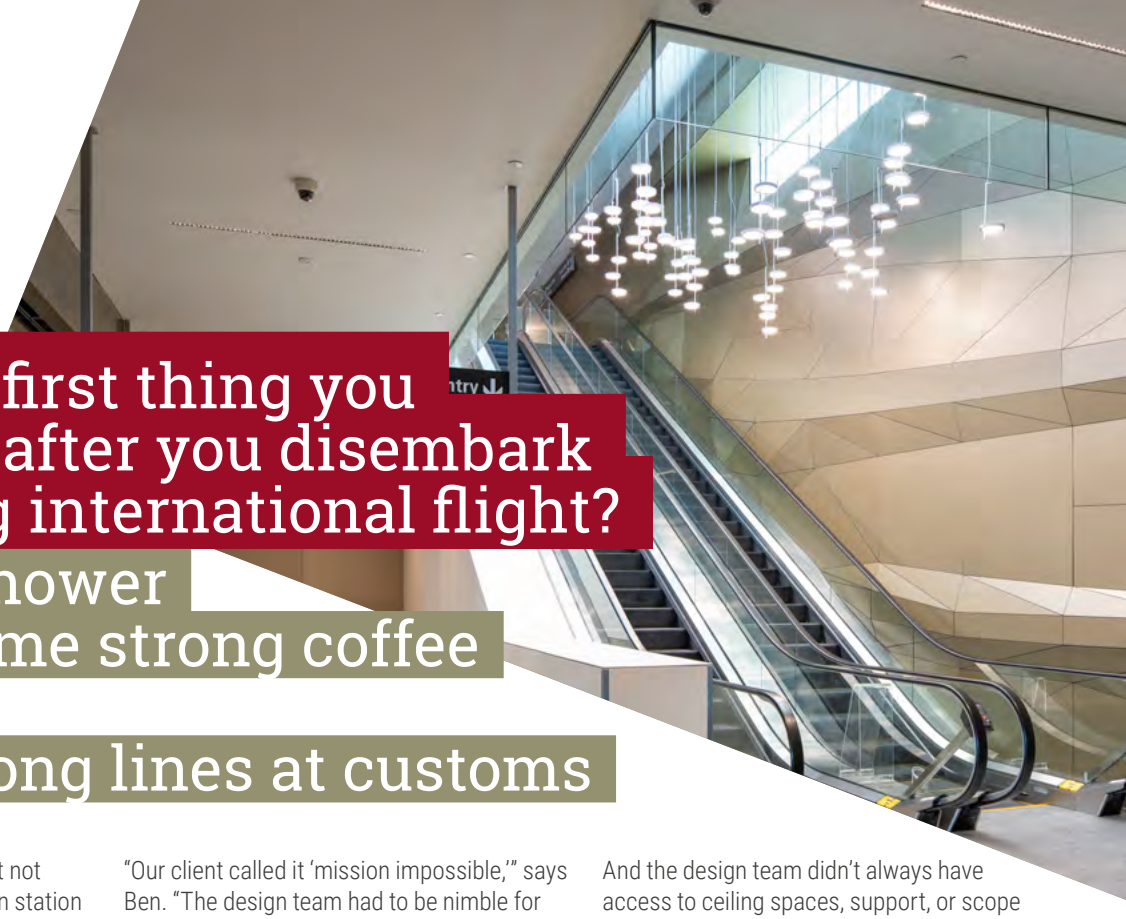
Please join us in celebrating our 90th year.

Cyrus

Gary

BREAKING WITH CUSTOMS

THE FEDERAL INSPECTION STATION AT SAN DIEGO INTERNATIONAL AIRPORT



What's the first thing you want to do after you disembark from a long international flight?

A. Take a shower
B. Drink some strong coffee
C. Nap
D. Wait in long lines at customs

If you chose option D, then you might not appreciate the new federal inspection station (FIS) at San Diego International Airport. Completed in June 2018, the facility uses the latest advances from U.S. Customs and Border Protection to speed up and significantly improve the screening process for international passengers.

One of these advances is "mobile passport control," which is based on biometric technology and eliminates the need for extra kiosks or printed forms. With mobile passport control, most international passengers interact with only one customs official. Another advance is a "bags first" system, in which passengers pick up their checked luggage before proceeding to a single checkpoint. They no longer have to clear one checkpoint before baggage claim and another after.

Thanks to these advances, most passengers get through customs in 10-20 minutes.

Ease on the front end, however, is based on hard work on the back end. The FIS project team faced several unusual obstacles. Two of the team members – Ben Regnier of Gensler and Sean Marcel of Syska – describe a few:

Accelerated Schedule

Perhaps the greatest obstacle was the fast-track schedule, which spanned only 14 months from start to finish. This timeframe is approximately half of what design teams typically view as comfortable for a project of this scope.

"Our client called it 'mission impossible,'" says Ben. "The design team had to be nimble for an extended period in order to ensure that everything got done on time and that we didn't miss a deadline." He praises Syska for playing an invaluable role in this process: "We didn't have to worry about mechanical, electrical, or plumbing. Syska provided packages for the equipment early on."

Behind the scenes, Syska was coping with some major complexities. For example, the team had to resolve varying standards from multiple stakeholders. To do so, Syska would meet with the different stakeholders, discuss the advantages and disadvantages of each design option, and eventually gain consensus.

Syska had to address other discrepancies in the realm of vertical transportation, which involved the procurement and installation of four escalators and three elevators. The main challenge here was to align the airport's requirements with the standard applications of the elevator contractor. According to Ben, "Syska made sure that there was room for everything and that deadlines were met."

To further complicate matters, Syska was undertaking 13 relocation projects in addition to the main FIS expansion. These projects encompassed spaces ranging from 800 square feet to 4,500 square feet in multiple locations throughout the existing airport. Turnaround times for completion were one-to-two weeks, based on the team as-builts that did not necessarily reflect accurate field conditions.

And the design team didn't always have access to ceiling spaces, support, or scope of work areas until a day or two before a permit was issued because many spaces were still in use.

"You can see why coordination was so essential," says Sean. "Fortunately, Gensler, the JV trade partners, and the Airport Authority staff understood the challenges we faced and helped us address them rapidly. Everybody pitched in."

One effect of the accelerated schedule was the need to accommodate changes to plans without causing delays. Changes would result from meetings with stakeholders, the accommodation of more developed design and review comments from the city, or as part of internal team QA/QC.

The addition of an active smoke control system is a good example. Originally, the program called for passive smoke control systems. But subsequently, it was determined that a small section of corridor in the new expanded area would require active smoke control, despite limited space for such a system.

"We worked closely with Jensen Hughes and our trade partners to provide a creative solution to this difficult problem," Sean recalls. A dedicated, stand-alone smoke control system simply wouldn't fit within the space constraints of the building, so ultimately the team designed a dedicated smoke control supply-and-exhaust fan, which shared the HVAC's duct distribution system for comfort cooling.

Team

Owner: San Diego Regional Airport Authority

Architect: Gensler

Contractor: PCL Construction Services (JV Partner)

Contractor: Turner Construction Company (JV Partner)

Mechanical: Southland

Electrical: Helix

I think we set a local record for the speed with which we obtained approvals for the generator and the smoke control system.

Another example is the emergency generator, which was sized at the beginning of the project based on preliminary information. Eventually, after the design developed, the client requested that the generator support additional systems. Sean notes: "We had to be very careful to avoid overloading the generator, given that it supports so many embedded systems and technology. And we were locked into a certain size because of the early procurement to meet schedule."

Everything worked out, however. "I think we set a local record for the speed with which we obtained approvals for the generator and the smoke control system," says Ben. "Syska did a good job of reviewing the installation with our trade partners before the inspector and commissioning agents came to inspect and test them both, so everything ran perfectly."

Speaking of speed, REVIT came in handy while construction was underway. For instance, the team wanted to route systems to avoid problems in the field for contractors. When a problem did arise, the team updated the models immediately and shared the information with the JV and trade partners – There was no time to wait for formal submittal packages.

Other Challenges

Size constraints applied not only to the generator and smoke control, but also to other mechanical systems: The team had to fit extensive services into areas with limited clearances above the ceiling. And Syska faced the problem of restricted space again – this time between buildings – when integrating the new mechanical system into the existing system. Some of the solutions involved reductions in duct routing and the use of high-throw diffusers. All of the solutions involved careful coordination among all trades and multiple iterations of design options.

An additional consequence of connecting to an older plant related to sustainability. To meet the requirements of LEED Gold (the team's goal) and those of the California Energy Conservation Code, Syska had to retrofit the existing systems. In spite of the difficulties, the team was able to achieve its targets. Today, the FIS features such sustainable elements as roof insulation, water efficiency, full LED lighting, and economizers on all mechanical equipment.

Emphasis on Passenger Comfort

Ben explains that the design approach was "inside out," from the perspective of the passenger. "We wanted to make the environment as intuitive and calming as possible," he says. To that end, Gensler used a variety of textures and colors to ease passengers into the new environment and assist in wayfinding. Lighting design, which Gensler and Syska both worked on, helped to instill a sense of calm through ample daylight.

Cooling is another important component in passenger comfort. Sean offers a typical scenario: "You've got a jumbo jet that's going to dump hundreds of people into an empty space all at once. How do you ensure that the mechanical systems kick in so that the airport isn't 90 degrees when everyone disembarks?" Syska analyzed traffic flows to develop the right specifications. Vertical transportation, too, played an important role by minimizing the length of queues.

Results

Gensler and Syska are not the only parties thrilled with the results of this fast-track project. The client is happy, and so are passengers. Business travelers with carry-ons needn't wait in line. Families who don't require complex processing also appreciate the fast turnaround. As Ben observes, "What people hate is being jet-lagged and standing behind a line of 50 people and not knowing what's going to happen next. This project has pretty much eradicated this scenario. There's a lot of goodwill as a result."

He encourages travelers to check out the project themselves: "If anyone wants to fly to San Diego, the airport is open and waiting for you."

5G TECHNOLOGY

WHAT BUILDING OWNERS AND OPERATORS NEED TO KNOW

You've probably heard the term "5G," but perhaps you dismissed it as yet another technology buzzword. Ignorance can be dangerous, however: 5G is a significant development for not only the world of technology, but also the world of real estate – and it's coming soon to a neighborhood near you. For building owners (and their asset and facilities managers) who want to stay competitive, preparation is essential.

What exactly is 5G?

5G stands for fifth-generation wireless technology. It is a revolutionary leap forward in terms of speed, response times, network reliability, and energy efficiency. At Syska, we expect 5G to provide speeds from 400 Mbps to more than 10 Gigabits, with reduced wireless network latencies (delays in data transmission) of one millisecond. These capabilities are likely to be of great interest to both commercial and residential tenants because they substantially enhance the user experience in video streaming, virtual reality (VR), augmented reality (AR), and other applications that were introduced in the fourth generation.

Improvements over 4G

Unlike the one-size-fits-all 4G core networks, the 5G core network will be flexible and adaptable, and will provide optimized support for diverse uses. Although 5G will operate using broadcast technologies, it will also support the setup of peer-to-peer connections between subscriber devices and base station antennas. These connections, which use beam-forming and MIMO technologies, focus the bandwidth and signal, and, in the process, promote efficiency. The configuration of the wireless service provider network will also change to reduce latencies on both wireless networks and in so-called EDGE computing, which streamlines the flow of information by removing some applications from the cloud.

Projected Timeframe

5G is on schedule to be deployed within the next twenty-four months. Qualcomm, Samsung and Nokia are among the wireless service providers and manufacturers conducting field trials. It is likely that by 2020, these companies will be well on their way to providing ubiquitous coverage in the macro-cellular markets. Most noteworthy for property owners and asset managers: We expect that in-building 5G coverage will be deployed at a faster pace than previous technologies.

Why Building Owners Should Pay Attention

5G is not just a high-tech perk; it is something that tenants are going to demand in the near future. Already, consumers display an insatiable appetite for instant Internet access wherever they are, along with transformative applications.

The statistics are striking: Smartphones have become the primary platform for accessing the Internet, at 61.9% share, versus desktops at 29.3%, and tablets at 8.8% (as of the end of 2017).

The underlying network technology enhancements, convenience of small size, user interface and always-on features all have influenced subscriber preference for the smartphone as the go-to device at home and in transit. And today, with many employers implementing BYOD (Bring Your Own Device) policies, it's the preferred device on the job, as well.

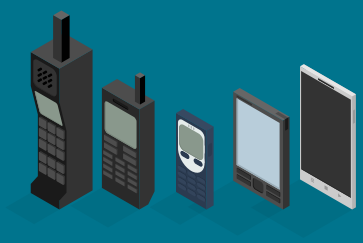
In 2016 alone, about 1.5 billion smartphones were sold. The overwhelming majority of Americans (95 percent) now own a cellphone of some kind, and 77 percent own a smartphone – compared to 35 percent in 2011, according to the Pew Research Center's first survey of smartphone ownership that year.

As the popularity of smartphones continues to rise, so will data usage. Qualcomm forecasts that measurements of mobile data traffic in 2020 will be 30-times those of 2014. Specifically, the firm projects that by 2020, eight billion gigabytes (a gigabyte is roughly one million bytes) of mobile data traffic will be handled globally on a daily basis, and that multimedia streaming will constitute 75 percent of this traffic.

Cisco predicts that by 2019, 80 percent of global Internet consumption will be video content. This equates to about 90,000 petabytes per month. (A petabyte is one quadrillion bytes, represented as 10 to the fifteenth power, or 1,000,000,000,000,000!) These numbers provide a startling sense of the immense scale of data consumption that income-property owners must be prepared to accommodate, even before the arrival of 5G.

It's interesting to note that in tandem with this surge, adoption of traditional broadband service (desktop computers) has slowed in recent years. Today one in five American adults are "smartphone-only" internet users – meaning they own a smartphone, but do not have traditional home broadband service.

The overwhelming majority of Americans (95 percent) now own a cellphone of some kind, and 77 percent own a smartphone...



A History of Mobile Technology

The subscriber appetite has historically driven new mobile technology generations every 10 or so years.

- **1982** - First Generation (1G - analog voice only) systems with large heavy phones and poor network quality were introduced.
- **1992** - Second Generation (2G) was deployed with improvements in signaling and hardware that were primarily aimed toward the voice market, but unlike the first-generation systems, used digital modulation to enhance call quality and enable new applications such as Short Messaging Services (SMS) and other low-data-rate (9.6 to 237 kbps) wireless applications.
- **2001** - Third Generation (3G) was introduced, providing a significant leap over 2G, with much higher data rates (typically ranging from 400 Kbps to 16 Mbps), significant increases in network voice capacity, along with better channel quality and -- most important -- support for advanced services and applications, including multimedia.
- **2012** - Fourth Generation (4G) was deployed (some call it 4G-LTE). This was an all IP-network with increased speeds ranging from 21 Mbps to 1 Gigabit speeds with wireless network latencies of 5 milliseconds. The wireless service providers were able to reduce network-per-megabyte costs with this new technology, while responding to increasing bandwidth demands from subscribers. One of the goals of LTE was to make the mobile Internet experience as good as or better than that offered by the wired broadband access systems deployed today.
- **2020** - 5G is on schedule to be deployed in this timeframe.

To future-proof buildings, owners and developers should include cable pathways and hardware access for future deployment in all new building designs.

Implications

It's clear that building owners who wish to stay competitive will have to provide increases in bandwidth and reductions in latency to meet demand from tenants. In other words, they need to prepare for 5G now.

One way to do so is by turning to in-building cellular distributed antenna systems (DAS). Although DAS has been deployed since the introduction of 3G, its adoption is limited. Typically, such deployments have lagged behind new mobile wireless technology introductions in the macro-cellular network (cell towers). According to Philip Sorrells, VP of Strategic Marketing at CommScope, "Only about 2% of enterprise buildings actually have mobility in the building."

Previously, carriers would finance the deployment of in-building cellular DAS. However, within the past few years, building owners have started to recognize the added value of providing cell coverage within their buildings, so we expect this percentage to increase.

Another benefit of in-building cellular DAS is that it addresses a problem posed by new building skin technologies. These technologies increase mechanical efficiencies, but they also block cell signals from exterior sites.

To be competitive in the future, buildings will require DAS designs that support 3G, 4G and 5G cellular technologies. DAS support of 3G and 4G signaling will need to continue, as there is a delay in the subscriber uptake of new technologies, and 4G is likely to be used to connect subscribers for the next 20 years. Therefore, 5G should augment and coexist with current cellular technologies, rather than replace them.

How to Future-Proof Buildings

To future-proof buildings, owners and developers should include cable pathways and hardware access for future deployment in all new building designs. Empty conduits installed during construction will allow the pulling of fiber-optic and copper-based media once the standard and product offerings have evolved.

We also recommend that in-building cellular DAS to support 3G and 4G technologies continue to be included in building designs. This will enable millimeter (mm) Wave signaling, which delivers more localized indoor coverage when compared to the lower spectrum bands currently being used for cellular connectivity. The 5G mm Wave system will require tight integration with lower bands to ensure a seamless user experience. 5G will deliver this tight integration via dual-connectivity in which multimode type devices, including subscriber phones, will simultaneously connect to both lower bands and mm Wave bands for additional bandwidth and capacity boost.

Keep the following scenario in mind during the building design process:

We expect that any in-building 5G deployments will deploy an integrated device consisting of a 5G radio with a network interface and antenna array that will require power and high-speed Internet connectivity. Since the device will be supporting 10-Gig data flows, we also expect that any connection to the device will require a single-mode fiber-optic interface. The device may utilize Power-over-Ethernet or have a DC power (low voltage) requirement. We propose that this integrated device be called a 5G Node until the industry has come up with a more formal name. 5G Nodes will be deployed to support coverage based on the following two situations:

1. Focused Spaces, such as conference rooms, class rooms, lecture centers, concert venues, training spaces and common public spaces where people tend to congregate, share an experience or socialize will have dedicated 5G Nodes located internal to the space.

2. General Spaces, such as typical office spaces would be covered by 5G Nodes that communicate using Near/Non-Line-of-Sight (NLOS) connectivity. 5G Nodes would be deployed within common areas or hallways and would utilize NLOS connectivity to devices across the spaces.

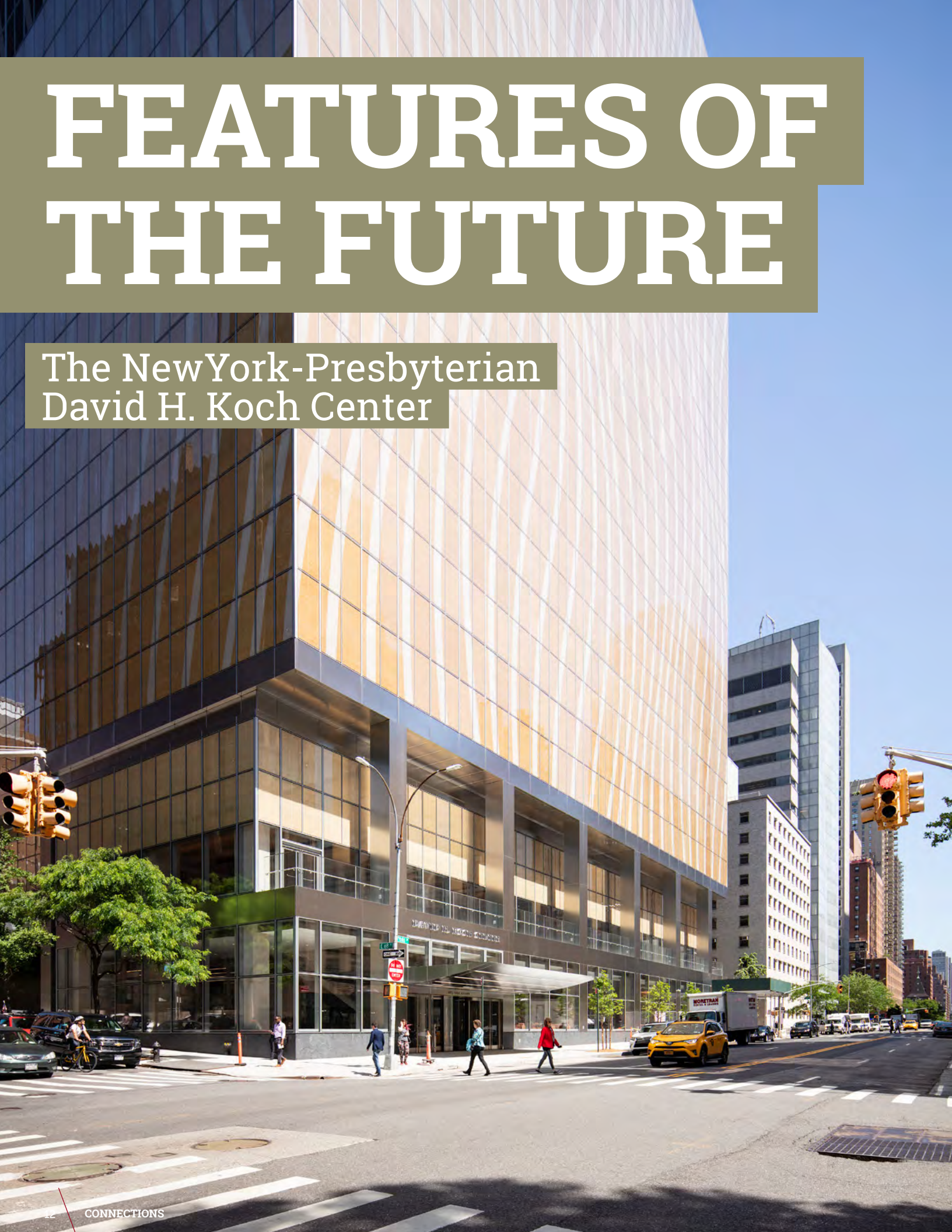
Conclusion

Although the specifics of a 5G rollout have not yet been finalized, it is nonetheless possible for building owners to plan ahead for the rollout. We encourage them to do so. 5G will ultimately be as ubiquitous as 4G-LTE has become. By 2020, buildings that are adequately prepared for 5G deployment will become the buildings of choice.

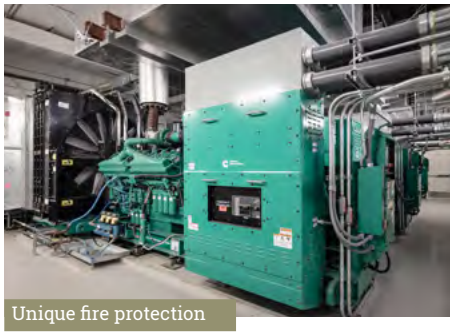
Note: A version of this article recently appeared on Facilitites.Net.com

FEATURES OF THE FUTURE

The NewYork-Presbyterian David H. Koch Center



The term “unique” is often misused, but in the case of the NewYork-Presbyterian David H. Koch Center, it is an apt adjective. Named ENR NY’s Best Healthcare Project of 2018, the Center has many notable features that distinguish it from other ambulatory care facilities both in New York City and nationwide.



Unique fire protection

Background

The Center, which opened on April 30, 2018, comprises 734,000 square feet and 12 floors. Located at 1283 York Avenue on the Upper East Side of Manhattan, it provides outpatient surgery, endoscopy, interventional radiology, diagnostic imaging, radiation oncology, infusion, and digestive disease treatments.

Syska provided MEP engineering, fire protection, and building management services for the project. Other team members included HOK, Ballinger, Pei Cobb Freed & Partners, Thornton Tomasetti, and Turner Construction Company.

Challenges

In many cases, the same groundbreaking features that set the Center apart also posed significant challenges on the engineering front. Venkata Ramu, Syska’s principal in charge, and Keith Methner, project manager, offer several examples.

Above-Grade Radiology Equipment

In most medical facilities, radiology equipment is located below grade because it is extremely heavy and because it is sensitive to interference. But below-grade environments usually lack natural light. To make the atmosphere less stressful for patients, NewYork-Presbyterian decided to house the radiology equipment on the fourth floor. Consequently, Syska had to take extra measures to ensure that the MEP systems wouldn’t interfere with the operation of radiology equipment.

Brand-New Technologies

Some of the technologies in use at the Center are so new that they hadn’t yet been invented during the project’s design phase. Two major modalities are cases in point. One is an MRI-guided linear accelerator for radiation therapy that enables real-time imaging during treatment. The other is an MRI-PET procedure room, which allows doctors to see live imaging during an operation.

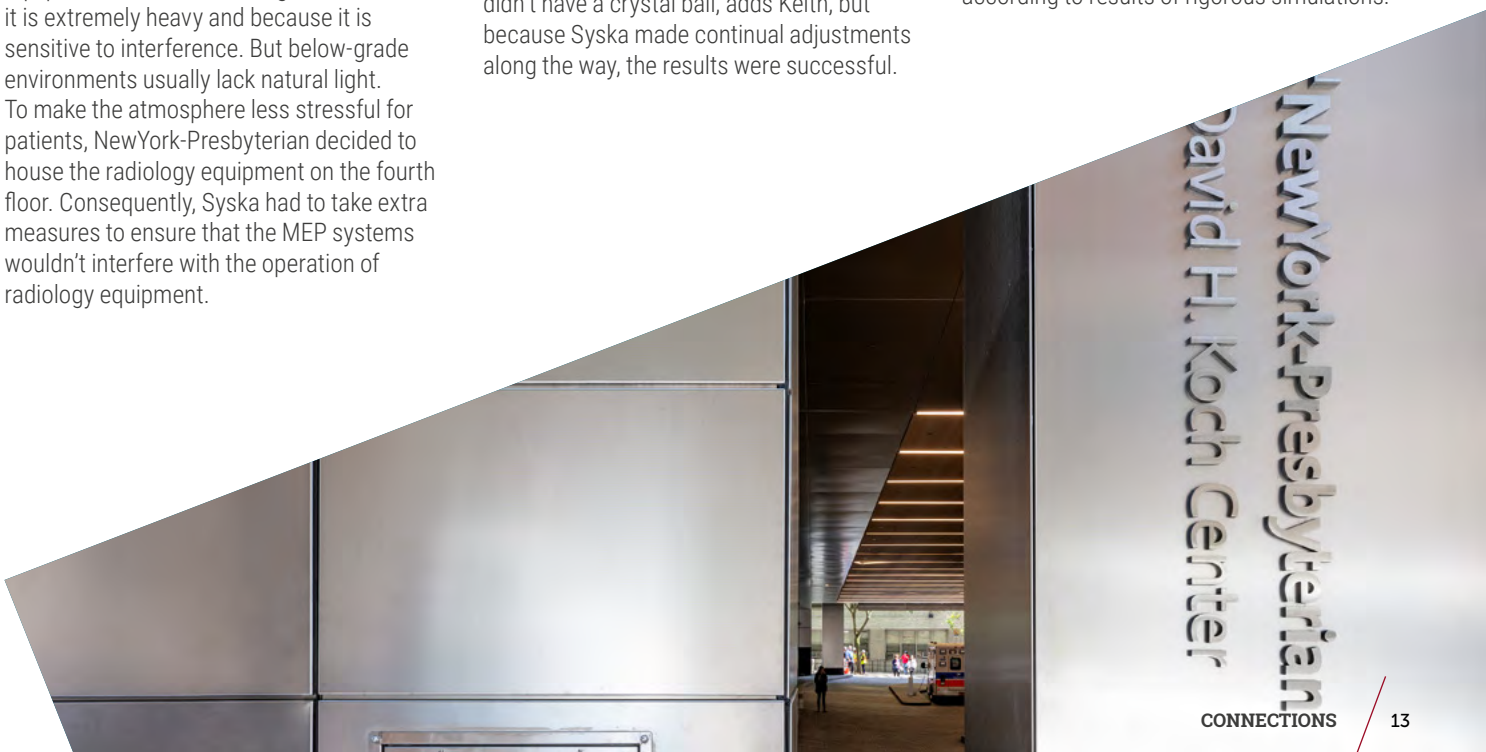
These modalities require extra levels of redundancy. To that end, Syska designed four water-to-water chillers with 100% redundant compressors and dry coolers, which provide cooling water for the equipment. Furthermore, the entire medical chilled-water system is backed up by the building’s chilled-water system.

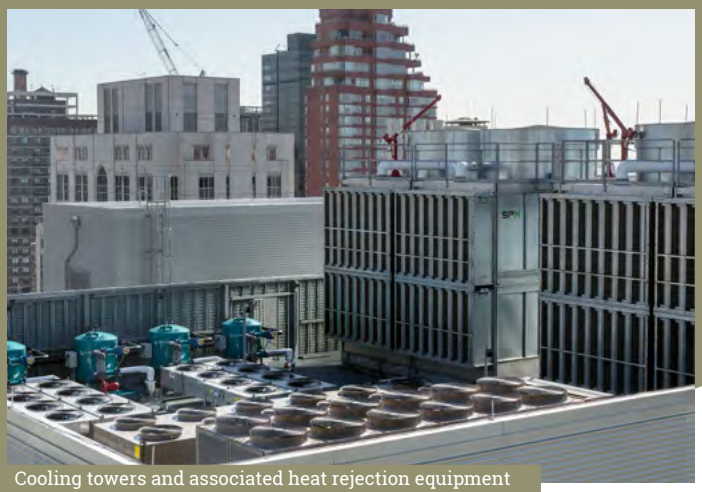
Without the final medical equipment specifications in hand, Syska had to ensure that the team’s infrastructure designs were sufficiently flexible to accommodate the eventual installations. Collaboration was key, says Ramu: “We worked with three or four entities to identify goals, and then Syska would design toward those goals.” The team didn’t have a crystal ball, adds Keith, but because Syska made continual adjustments along the way, the results were successful.

The design of fire-protection features followed a similar course. The State Department of Health required fire detection systems in the elevator machine rooms, but wet sprinkler systems are not permitted in New York. Therefore, Syska selected a system with a non-toxic aerosol agent that dispenses mist from ceilings. In designing this system, Syska had to make elaborate calculations to determine the volume of aerosol agents and proper locations. Today, the system is the largest of its kind in New York City.

Fire protection for the entrance lobby and its three-level atrium presented additional challenges because the volume of space for smoke containment is very large. According to models by an outside consultant, we designed a smoke-control system for the atrium with architectural wall glass-hinged panels, entrance doors and windows that automatically open, and 180,000 cfm of exhaust fans that redirect the smoke outdoors at the third level of the atrium.

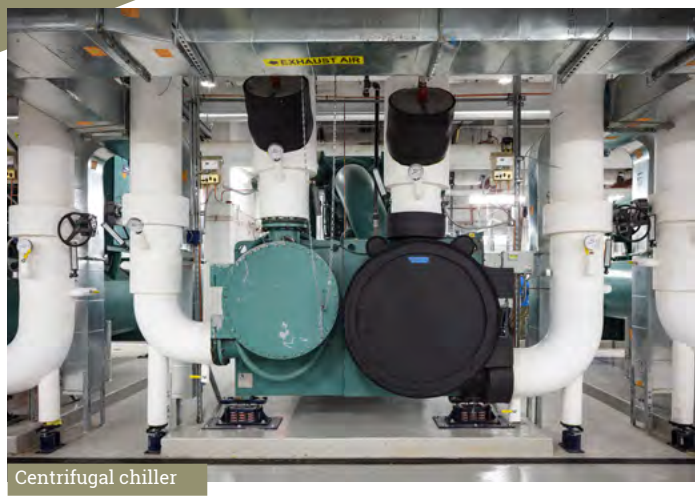
Again, collaboration among team members was critical. Syska and the project partners worked together to adjust the design regularly according to results of rigorous simulations.





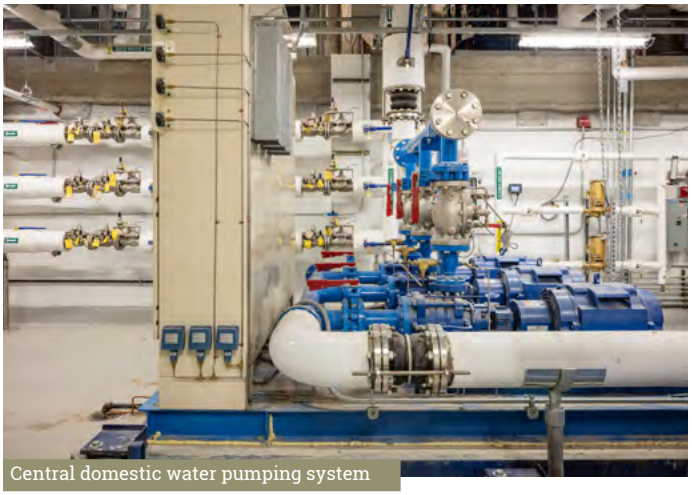
Cooling towers and associated heat rejection equipment

Emergency generator



Centrifugal chiller

Central station air handling units



Central domestic water pumping system

Team

NEWYORK-PRESBYTERIAN DAVID H. KOCH CENTER

Architect: HOK

Medical Architect: Ballinger

Consulting Architect (building envelope and lobby):

Pei Cobb Freed & Partners

Interior Design: HOK and Ballinger

Structural Engineer: Thornton Tomasetti

MEP: Syska Hennessy Group

Construction Manager: Turner Construction Company

> With this project, we used [REVIT] for engineering calculations, schedule preparations, pressure-drop calculations, and even ventilation indexes for individual rooms.

Flexibility

Another challenge arose in the design of the operating rooms. Because the uses of these operating rooms had not been determined at the project's start, the team had to ensure that the rooms were easily convertible for different types of procedures. Syska knew, for example, that some of the rooms would become hybrid robotic ORs, which require high levels of power distribution. Therefore, the team planned for extra capacity and redundancy in all of the OR spaces.

Syska also had to consider future vertical expansion of the unprogrammed spaces on the 12th through 17th floors. The team studied several options for these spaces, including general offices, a hospital for women and newborns, and even condos.

After evaluating the options, Syska had to size all centralized systems, such as the chilled water plant, incoming high pressure steam, domestic water, emergency generator plant, and the electrical service equipment rooms and distribution systems, to accommodate any of these scenarios. Space was blocked out for air-handling units, a future chiller and cooling tower, and domestic water pumping systems and heaters. Syska also ensured that the emergency generator plant could be enlarged for an additional generator and that the electrical service would support an additional service transformer.

Means to rig the future equipment into the building required coordination with the architect and structural engineer. Eventually, we decided to provide removable louvers and curtain wall panels for ease of installation in the future.

Emphasis on Patient Comfort

Many hospitals pay lip service to patient comfort, but it is a genuine priority of the NewYork-Presbyterian David H. Koch Center. "Every decision about the design and operation of this building was made with the patient in mind, from the quick and easy check-in to the private prep and recovery rooms, light-filled treatment areas and real-time status updates," says Dr. Steven J. Corwin, president and CEO of NewYork-Presbyterian.

The MEP systems Syska designed play a surprisingly large role in promoting patient comfort. One goal was a quiet atmosphere, which Syska accomplished through noise mitigation thoughout the mechanical systems. Patients do not hear disruptive sounds from air distribution equipment or the generator, thanks to acoustic panels. Neither do people in neighboring buildings.

Syska also developed systems that give patients individual control over their environments. Patients in the infusion areas, for example, select the temperature and the type of lighting they want. "Even five-star hotels don't provide this much control," says Keith.

Resiliency

Today, New York City guidelines require installation of critical utilities above the 100-year flood mark to prevent damage from flooding. These guidelines were not in place at the time of initial design, but the team built in high levels of resiliency by housing the emergency generators on the 11th floor, electrical service equipment on the 10th floor, and all equipment control panels for ejector pumps and fuel pumps above grade. Furthermore, there is an extensive range of emergency backup connections on the outside of the building, which ensures continued operation in even the worst-case scenarios.

Sustainability

Unique features of the Center extend to sustainability. For example, its green roof has an innovative drainage system. This system helps to absorb water and release it slowly to avoid a sewer surge.

Syska used energy modeling to design a highly efficient system of heat recovery with special chillers that recover heat from the technology equipment rooms and direct it to the reheat system. The building has 50-percent high-performance glazing (enhancing comfort for patients and visitors), which exceeds the code limit of 40 percent. As a result, this MEP system achieved energy savings of 17 percent and cost savings of 19 percent compared to the ASHRAE baseline.

Ramu and Keith note that the building's high-performance envelope has increased the efficiency of the MEP systems. Together, all of these features paved the way to NYSERDA grants and anticipated LEED Silver certification.

Secrets of Success

Ramu and Keith attribute the success of the project not only to the extensive collaboration among project partners, but also to the use of REVIT software for building information modeling. "REVIT offers capabilities far beyond drafting," Ramu points out. "With this project, we used it for engineering calculations, schedule preparations, pressure-drop calculations, and even ventilation indexes for individual rooms. As a result, we were able to automate much of our work and make sure that all of our documents were 100 percent accurate."

He and Keith look forward to the next project with NewYork-Presbyterian. "We've been working with NewYork-Presbyterian for 40 years or so," says Ramu. "Every one of its facilities displays some of the latest advances of the time in which construction took place. That makes our job challenging, but also extremely rewarding."


USE
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BUSINESSES ARE OPEN
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Putting EUI on Trial

AT THE LA FEDERAL COURTHOUSE

Sometimes it's better to aim low than aim high. This is certainly the case with measures of energy use intensity, or EUI.

What exactly is EUI? Energy Star® defines it as an expression of a building's energy use per square foot per year. In 2015, the average EUI for courthouses across the U.S. was 118 kBtu (kilo-British thermal units) per square foot per year, according to the AIA. Contrast this average with the first-year validated EUI of the new federal courthouse in Los Angeles: 30.9 kBtu/sf*yr.

Such a low EUI for a large building is rare throughout the U.S., even in California – a state known for its strict standards of energy-efficiency. It's not surprising, therefore, that the project has received LEED® Platinum certification and a 2018 Top-10 award from the AIA Committee on the Environment (COTE).

How did the design-build team, which included SOM, Clark Construction Group, and Syska Hennessy, attain this EUI? Rob Bolin, senior principal at Syska, offers some insights:

Goal-Setting

In 2012, when the General Services Administration (GSA) held a design-build competition for the courthouse, the defined goal was an EUI of 47 kBtu/sf*yr. The winning entry from Syska and its partners provided an improved EUI of 42 kBtu/sf*yr. After the project was awarded, the GSA's Region 9 team suggested a new goal of 35 kBtu/sf*yr to meet GSA's regional energy targets. That meant, says Rob, "a rigorous evaluation where we considered 50 or 60 different strategies, and narrowed them down to about a dozen that would offer the best value from the perspective of life-cycle costs."

Strategies

One of the resulting strategies the team employed was a faceted form of the fully glazed façade. This design compensated for the building's orientation, which is aligned with the urban grid, but not the North/South/East/West compass axis. Our solution allowed for more opaque façade surfaces to face East and West, where solar gain and glare are more challenging to control, and for transparent surfaces to face North and South, where solar control is more straightforward.

Thanks to this choice of orientation, the team could better control the solar load, conserve energy, and reduce the peak cooling loads inside the building. This last benefit also made it possible for Syska to downsize the building's MEP equipment.

Another strategy was the use of a displacement ventilation system. Displacement ventilation delivers conditioned air near the floor to provide comfort cooling directly to the occupants in the lower portion of the space, while using thermal stratification to allow warm room air to be removed at the ceiling. Syska had recently implemented such a system in the Long Beach Courthouse for courtrooms and public circulation spaces, and found that the thermal comfort the system provided would be equally advantageous for the Los Angeles Courthouse. The climate in Los Angeles is slightly different from that of Long Beach, but similar enough that in both cases, you can use air-side free cooling for a significant number of hours throughout the year, resulting in an energy-efficient and thermally improved indoor environment with superior air quality.

It's an extremely efficient way for us to operate a plant in a climate like Los Angeles.

The GSA and the U.S. Marshall service have very specific air change requirements for holding areas to manage air quality – both central holding areas and local holding areas adjacent to courtrooms. To meet these elevated air-change rates, the team used a "cascading ventilation" strategy. This method takes previously conditioned return air from the courtrooms, mixes it with tempered outside ventilation air, and then delivers the "cascaded" air to the holding rooms at the required air change rates. This technique reduces the amount of energy needed to pre-condition outdoor ventilation air by up to 50%.

For the main lobby, the team chose a changeover radiant slab, using tubing installed in the concrete slab to deliver heating and cooling to this monumental space.

Lighting was another important consideration. "The building's orientation and massing drove daylight from the perimeter and the central light court into the courtrooms," says Rob. "So we ended up with balanced daylight on both sides of each of the courtrooms." The combination of daylight-responsive lighting controls with an all-LED lighting design also results in significant energy savings without any sacrifice in lighting quality.

The next step was to optimize the cooling and heating generating systems, so the team chose condensing boilers, which operate efficiently with low-emissions equipment. Other cooling and heating features include high-efficiency centrifugal chillers and a heat-recovery/heat-pump pony chiller that is the first-on chiller. The latter can reject heat to the heating water circuit instead of to a cooling tower and operate simultaneously as a boiler.

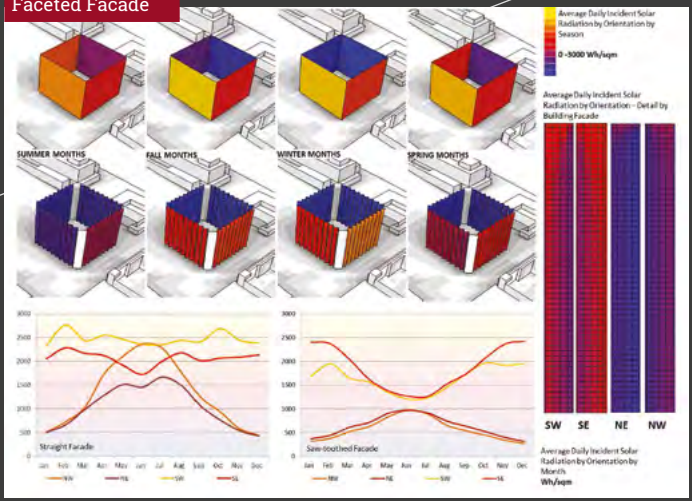
Rob notes: "It's an extremely efficient way for us to operate a plant in a climate like Los Angeles. In this case, we have large parts of the building that rely on 100% outside air for free cooling, but some internal parts that require air conditioning year-round."

The team also employed photovoltaics, installing a rooftop photovoltaic array that generates 500,000 kilowatt hours of energy each year, which roughly equates to 2.5 kBtu per square foot per year. The system wasn't energized during the first year of operation, but even without this deduction, the team's design-phase energy model projected an energy performance of 32.5 kBtu/sf*yr.

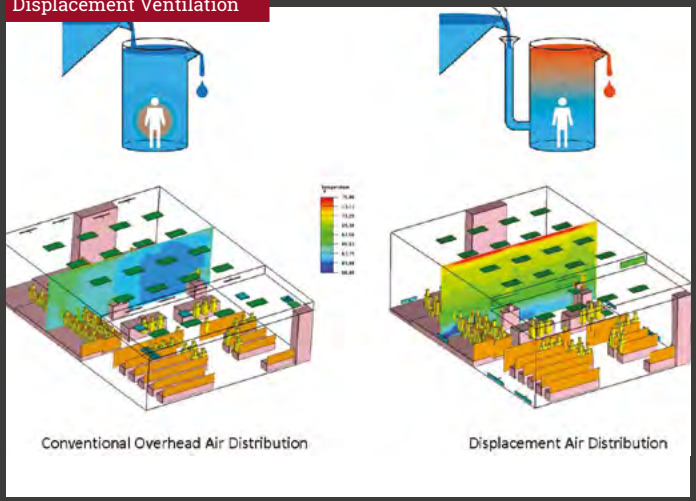
Testing: The Moment of Truth

After construction, the team was ready to test the model and validate the EUI by measuring the actual energy performance of the building. The results would not only be enlightening; they would also affect the team's remuneration: A performance guarantee was a stipulation of the contract with the GSA.

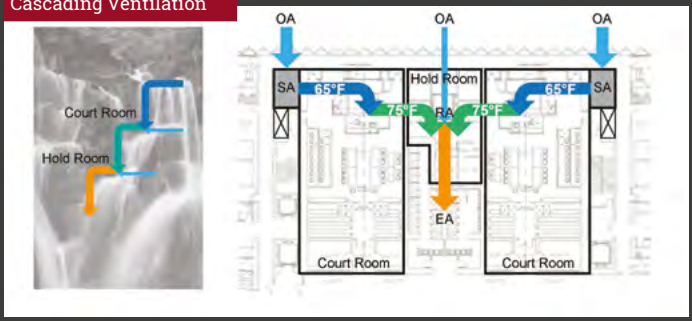
Faceted Facade



Displacement Ventilation



Cascading Ventilation



Tri-Generation Concept

Path To Net Zero

Validation involved the collection of monthly energy bills and metering. Once a quarter, the team would compare the design energy model with the validated energy model. In creating the validated models, the team took into consideration operational adjustments made to the building and actual weather data. (Temperatures, the team discovered, were about six degrees higher than the 40-year averages, which didn't help on the energy-efficiency front.)

The result of 30.9 EUI after the first year is remarkable, especially considering that the photovoltaic array was not in operation. "We're likely to attain an EUI under 30 for the second year," Rob predicts. "That's phenomenal for a 600,000-square-foot building that adheres to the GSA's very stringent operational requirements."

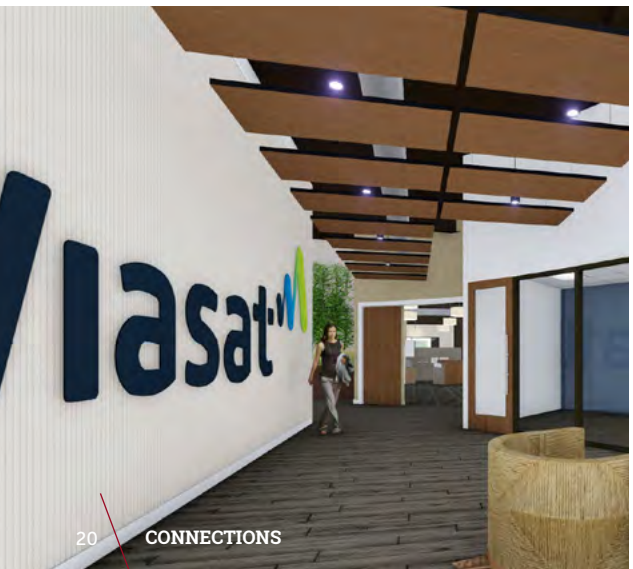
The Syska/SOM/Clark team had even higher performance aspirations from the start – Potentially, the courthouse could eventually become a net-zero building, or even a net-positive energy building, which generates more power than it consumes. "We actually set the building up for this possibility as part of the original competition submission," Rob says. For example, in the future, the building could use biofuel trigeneration instead of natural gas trigeneration, and add a biofuel generator or a fuel cell generator. Farther down the line, the building could implement new technologies that haven't yet been developed.

In the meantime, the quest to attain an EUI below 30 continues. Stay tuned for updates!

WORKPLACE, WEST-COAST STYLE

Viasat's New California Campus

For many people, the phrase "corporate campus" connotes a set of monolithic, institutional structures. That is a far cry from what employees and visitors will encounter at Viasat's new campus in Carlsbad, California. Located across the street from Viasat's existing headquarters, the new campus – the largest development in the city of Carlsbad – embodies the company's culture of creativity, exploration, freedom, and innovation.



Viasat is one of Carlsbad's largest high-tech employers. For more than 30 years, the global communications company has helped shape how consumers, businesses, governments, and militaries around the world communicate. Today, the company comprises more than 5,200 people across 28 offices.

The firm's campus expansion, situated on 23 acres, will accommodate six office buildings of two or three stories, ranging in size from 77,000 to 120,000 square feet and totaling 587,000 square feet; along with three parking structures, a café/conference center, and recreational amenities. Two buildings and a courtyard are complete; construction is progressing on the rest of the site.

Architect Milos Makaric of SCA gave us an update on this complex expansion, along with an overview of the new campus and the ways in which SCA and Syska are working together.

According to Milos, the campus design "reflects the proximity to the ocean and beach and the casual California way of living." A sense of openness is another thematic element. "We gave careful consideration to not only the campus elevations, but also to the buildings facing El Camino Real [California's historic "Royal Road"] and Viasat's neighbors," he notes. For example, a corner building offers below-grade parking, which provides secure entry for visitors without interrupting views.

Some of the planned recreational amenities would not be out of place in a resort. Intended to foster "unexpected experiences" as well as interaction among employees, clients, and visitors, these include hammocks, swings, bocce ball courts, jogging trails, several shade structures for informal meetings, trees surrounded with bar-height counters for outdoor eating, an outdoor stage, fire pits, and a barbeque.

Employees who can't make it outdoors will nevertheless find the indoor environments to be perfectly comfortable, thanks to the mechanical and plumbing systems that Syska has designed. Our work encompasses an acoustically sensitive conferencing center with a custom air handler, 24/7 cooling of select critical spaces, technology laboratories with strategic ventilation and heat rejection, atrium displacement ventilation cooling and heating, ventilation systems for the underground car park, and kitchen ventilation systems for the café/dining facility.

Energy-efficiency was a key design consideration. Indeed, the project qualified for incentives from the San Diego Gas and Electrical Savings by Design program, which encourages design and construction of energy-efficient buildings. All buildings will be equipped with PV systems that offset energy use from the grid. Some buildings will even exceed the strict requirements of the California energy code by more than 10 percent.

"Teamwork is the key to making this project successful and finishing everything on time for Viasat employees to enjoy the new campus," says Milos. "Syska has been very understanding of the aggressive schedule and the need for sometimes very quick turnaround of documents. Consequently, the permitting process has been smooth."

As for Viasat employees, Milos reports that they are "extremely excited" by the new campus and that they "can't wait to move in." We'd like to move in too!

We gave careful consideration to not only the campus elevations, but also to the buildings facing El Camino Real [California's historic "Royal Road"] and Viasat's neighbors.

LEED IN DATA CENTERS

A 'MISSION CRITICAL' MISSION

Most people associate LEED® certification with multi-family and office buildings. Few associate it with data centers, and this is not surprising: Less than five percent of data centers in the U.S. are LEED certified.

Economizing refers to the "free" cooling that stems from compressor-less systems, and which has become an essential element of nearly every data center design.

That percentage is slowly rising, however at the recent Building Performance Analysis Conference and SimBuild, Syska's Kristopher Baker, PE, LEED AP; and Xun Jia, Ph.D., PE, LEED AP, highlighted an emerging trend -- the greening of data centers -- and explained techniques for reducing energy use in these facilities. Below are some key points from their presentation:

What's Behind the Trend?

Our modern world increasingly relies on digital and cloud-based data, which has led to significant growth in data centers. In 2014, the global market for data center construction was $14.59 billion. Experts predict that by 2019, the market will have risen to $22.73 billion.

Along with this growth comes higher levels of energy use and greenhouse gas emissions. Data center owners who recognize their environmental responsibilities are paying attention. Indeed, Syska has worked with such owners to attain LEED Platinum certification for 19 data centers across the U.S.

Energy Use in Data Centers

In a typical building, energy use comprises three relatively equal parts: HVAC, lighting, and plug load. In contrast, the energy use of a data center is dominated by the electrical demand of the IT servers, storage, and the supporting electrical infrastructure. In addition, there is little seasonal or geographical variation in thermal loads; the energy consumption of data centers is nearly flat throughout the year. Finally, the primary purpose of most buildings is to provide a comfortable indoor environment for human occupants. A data center's sole purpose is to maintain a 24-hour uninterrupted runtime environment.

What influences the amount of energy use within a data center? Server efficiency plays a significant role: More efficient servers use less power and less heat, which, in turn, requires less cooling. Cooling is generally the second most intensive energy component, consuming between 15 percent and 25 percent of the total energy used.

LEED Version 4 is the first version to address data centers specifically. Today, the USGBC requires whole-building energy modeling for all data center projects and determination of the building's PUE (predicted power usage effectiveness). PUE is the standard metric for evaluating the efficiency of the overall building structure. It represents the ratio of the total energy consumption in the data center to the IT energy consumption. The lower the PUE, the more efficient the infrastructure design, and the less costly it is to operate the facility.

Energy-Saving Strategies

Baker and Jia identified three key strategies for saving energy within the mission-critical environment. One is hot aisle/cold aisle containment, in which airflows are isolated. Without containment, the hot exhaust from the server racks mixes with the supply air before entering the intake of the server racks. In a containment strategy, each row of server racks is organized to face each other with the inlets served by the same aisle (the cold aisle) and the back sides or exhausts similarly organized around the same aisle (the hot aisle).

Economizing is another strategy. Economizing refers to the "free" cooling that stems from compressor-less systems, and which has become an essential element of nearly every data center design.

A third strategy for energy savings, said Baker and Jia, is virtualization – using less equipment and less power to provide the same IT load. By dramatically reducing standby losses, virtualization can lead to savings in IT energy by as much as 70 percent.

Baker and Jia also suggested techniques for properly simulating the energy use of data centers for design or LEED purposes. To learn more, contact Baker and Jia directly at kbaker@syska.com or xjia@syska.com. ■

More efficient servers use less power and less heat, which, in turn, requires less cooling.

SYSKA SNIPPETS

NEWS HIGHLIGHTS OF RECENT MONTHS

ACEC 'Grand Award' for Lotte World Tower in Seoul

Syska won the 2018 "Grand Award" from the American Council of Engineering Companies (ACEC) for our work on Seoul's Lotte World Tower – the fifth tallest building in the world. We also received a National Recognition Award from ACEC for our role in building Dubai's "Office of the Future," the world's first 3D-printed commercial office building.

Best of the Midwest

Syska was a member of the team that designed CNA's new headquarters in Chicago – a project that has just won a Best Projects Award in the Interior Design/Tenant Improvement category from ENR Midwest.

The California Green Rush

Another Syska project that won an ENR Best Projects Award is Palomar College's new maintenance and operations complex, a net-zero facility that is the first community college building in the world to earn Living Building Petal certification. In this case, the award came from ENR California and the category was Best Green Project.

Silicon Valley Office Opens

Speaking of California, we have a new office in Palo Alto that serves as a hub for innovation and testing, provides local client support, and addresses the growing demand in the area for critical facilities, corporate offices, and labs. For more information about this office, please call Jose Herrera at jherrera@syska.com or 415-420-8322.

Spotlight on Charlotte: Construction Underway at Ally Charlotte Center

Construction has begun on Ally Charlotte Center, a commercial tower in Charlotte, North Carolina. The 26-story, 742,000-square-foot property, scheduled for completion in 2021, will be the first office building in the state to register for LEED, WELL, and WiredScore certifications. (The property has already attained WiredScore Gold.) Ally Financial Inc. will be the anchor tenant.

Preston Fogartie, the marketing manager for owner/developer Crescent Communities, describes the design approach as "inside out." She explains that the emphasis is "on the individuals who will work and play in this environment" with the goals "to enhance the lives of those who experience it, either as colleagues or visitors, and to entice the most valuable resource of all: talent."

Syska is playing an integral role in reaching these goals, according to Preston. "The strong team leadership, coupled with individual areas of expertise, has made our experience very smooth," she says. "Syska designed the systems that bring the development to life, with a focus on maximizing building function, efficiency and occupant comfort," all of which are making Ally Charlotte Center "safe, sustainable, efficient, healthy, and habitable."

Making a Grand Entrance at the Empire State Building

In August, the Empire State Building unveiled a new entrance to its word-famous observatories. According to the building's ownership, it was "brought to life by a cross-disciplinary, best-in-class team from the arts and architecture to technology and entertainment industries, to conceive and curate the fully-modernized masterpiece." Syska was proud to be part of this team.

A Colorful Announcement

Here's some good news for families who live in or visit Plano, Texas: The Crayola Experience has opened at The Shops at Willow Bend. The 60,000 square-foot concept includes a retail space (The Crayola Store), and offers 22 hands-on activities and live entertainment. Syska, which served as the project's MEP engineer, did some drawings for the concept, but we didn't use crayons.

Associate Principal Promotions

Nine Syska executives have been promoted to the position of associate principal. They include:

- James Carrigan, associate practice area director (New York)
- Alex Engelman, PE, CEM, LEED AP, associate practice area director (New York)
- Mike Falkenstern, CEA, CxAP, LEED AP BD+C, associate practice area director (New York)
- Josh Fluecke, PE, LEED AP, associate practice area director (Chicago)
- Niki Fox, PE, LEED AP, associate practice area director (New York)
- George Hachem, PE, LEED AP, associate practice area director (Raleigh)
- Sean Marcel, PE, associate managing director (San Diego)
- Kevin Meyer, PE, associate managing director (Jacksonville)
- Alex Myers PE, LEED AP, associate managing director (Charlotte, NC)

New Associate Partners

Please join us in welcoming new associate partners to the firm:

- Jennifer Crawford, business development manager – and returning employee (San Diego)
- Robert Cunningham, CIPD, CPE, associate managing director (Boston)
- Christopher Ieradi, associate practice area director (Los Angeles)
- Bryan Nguyen, RCDD, supervising consultant (New York)
- Lawrence Ollice, Commissioning (Chicago)
- Demetrios Plessias, PE, associate practice director (New York)
- Sean O'Shea, PE, LEED AP, technical manager (New York)
- Michael Thomas, Business Development, Mission Critical (Chicago)

Engineers on the Rise

Congratulations to the newest graduates of Syska's Engineer Development Training program. This program was designed to support entry-level engineers through in-house and online professional development, on-site training, mentoring, and tuition reimbursement. The graduates are:

- Sinclair Calderon, Los Angeles
- Matthew Cassidy, Chicago
- Ali Durrani, San Francisco
- Humberto Govin, Jacksonville
- Kai-Wei Hsu, Los Angeles
- Anthony Micara, New York
- Carlo Rivera, San Diego
- Joseph Spath, San Diego
- Evan Swedo, San Diego
- Naser Zeidan, San Francisco

To keep up to date on Syska news, make sure to check our web site regularly, and don't forget to follow us on LinkedIn, Instagram, Twitter and YouTube.

www.Syska.com

LinkedIn: Syska Hennessy Group

Instagram: @syskahennessy

Twitter: @syskahennessy

YouTube: Syska Hennessy Group

90TH ANNIVERSARY SPECIAL EDITION

Syska 90th Anniversary Special Content

AN OVERVIEW OF NINE DECADES

SYSKA HENNESSY GROUP AT 90:
PAST, PRESENT, AND FUTURE

Nine decades is a long time to be in business. As we celebrate this milestone anniversary, we look back on the events and developments that transformed us into the Syska Hennessy Group of today. Here are some highlights:

Watervliet Arsenal

LA Convention Center

The Pentagon

In 1928, Adolph G. Syska and John F. Hennessy left the firm of Clyde R. Place and opened their own office in New York City. When Syska & Hennessy first opened its doors, there were no more than five or six engineering firms in New York whose work was geared toward the needs of architects.

The young firm's objective was to provide mechanical and electrical engineering services for prominent commercial and institutional structures designed by the leading architectural firms of that time.

The partners felt that their individual strengths complemented each other well. Although both were talented engineers, Hennessy focused his attention on developing new business and overseeing office administration, while Syska took care of engineering design and production.

The first few years -- with the country still in a depression -- proved challenging, with work in the construction industry slowing down to a standstill. However, the firm had several projects on the boards, including its first large federal commission, the Post Office Department Building in Washington, D.C.

Another notable project during the firm's first decade of business was the Frick Collection. In 1933, the firm of John Russel Pope was preparing plans for the alterations and additions to convert Mr. Frick's residence, built in 1913-1914, into a museum. Syska & Hennessy was selected to provide the mechanical and electrical engineering design. Air conditioning was still in its infancy, and substantial research was taking place to determine desirable interior temperature and humidity levels to ensure the survival of the contents of the collections. The Frick Collection is believed to be the first museum in the world to be fully air-conditioned, and through its ongoing renovations and improvements program, the museum became one of the longest continuous projects for the firm. (See page 46 for more details about this work.)

In early 1937, the firm consisted of Mr. Syska, Mr. Hennessy, two secretaries, a mechanical department of four, a plumbing department of two, and an electrical department of one full-timer and one part-timer, as well as one part-time office assistant.

During the next year, the firm expanded its geographic footprint, opening regional offices in New Jersey, and North Carolina.

In 1939, the firm was retained to design its first international project, The ESA and A bank in Melbourne, Australia, which was soon followed by hotels for Pan American Airways in Brazil and Liberia. In what was surely a pioneering use of alternative forms of energy conservation, the two hotels in Brazil were designed to use solar energy as the primary source for domestic heating, with electrical standby for rainy days.

During World War II, the firm teamed up with Colonel Kelley, an architectural engineering firm with offices in Trenton, New Jersey, and Jersey City. During this period, the firm went by the name Kelly, Syska and Hennessy, Architect – Engineer. One of the firm's major defense efforts during this war was the Todd Shipyards. This project included expanded installations in Brooklyn, Hoboken, and New Orleans, as well as a completely new installation in South Portland, Maine.

The Rapid Growth: 1945-1962

At the conclusion of the war, Kelly, Syska and Hennessy was dissolved, and the firm returned to its original name. At the same time, the newly created United Nations found its permanent home in New York City. Wallace Harrison, the architect of this project, retained Syska & Hennessy to provide engineering services. This was a pivotal project that increased the firm's staff to over 80 people by the time the project was completed. During this time, the engineering design included combination lighting fixtures and air diffusers, strip line air diffusers and the use of river water for cooling.

In 1960, Syska Hennessy Group started to work on what became known as one of the best attractions in New York history, Lincoln Center for the Performing Arts. This project helped solidify the firm's stature as the foremost consulting engineering firm in the country. When the firm celebrated its then 50th anniversary in 1978, it was held at the Metropolitan Opera with the-then governor, Hugh L. Carey, attending.

In 1939, the firm was retained to design its first international project, The ESA and A bank in Melbourne, Australia...

As the firm ended the seventies, it looked forward to a period of normalization and prosperity...


Epcot Center


King Saud University

Growth Nationally and Internationally

In July 1963, the firm opened its doors in Washington, D.C. and expanded to 300 people. In a significant step, the firm formalized its commitment to service its clients' global needs by opening an international division. John F. Hennessy II was elected chairman following the death of his father in April 1973. During the same year, Syska Hennessy expanded to the West Coast with the acquisition of a small Los Angeles firm (formerly known as Levine and McCann).

The 70s proved to be a difficult period, as building construction in the U.S. was in a decline. During this time, the firm focused its attention on the Middle East, where construction was thriving as a result of the skyrocketing oil prices. An office in Tehran, Iran was opened.

At the time, the largest project in the Middle East was the King Saud University in Riyadh, Saudi Arabia. A consortium of firms, including Syska Hennessy, was awarded the design and construction administration in the Summer of 1975. This project, built on desert land 10 miles from the capital, comprised a self-contained facility for 15,000 students, faculty, and administrative staff, along with a teaching hospital. The campus was built at a cost of $3.5 billion, and was occupied by the fall of 1983.

In December 1977, Syska Hennessy established an office in San Francisco. The firm had truly become a worldwide operation, with offices in New York, Washington, Los Angeles, and San Francisco, as well as overseas offices in Paris, Switzerland, Iran, and Saudi Arabia.

The Years of Restructuring and Change: 1978-1990

As the firm ended the seventies, it looked forward to a period of normalization and prosperity, but the events of the next decade would prove to be anything but normal. As a result of the Islamic revolution in Iran, the Tehran office was closed (and eventually the Paris office, too, due to a lack of work).

These events did not faze Syska Hennessy. Once this tumultuous period had passed, the firm saw a period of unprecedented work. By the summer of 1982, the firm had over 600 employees and a new regional office in Boston, Massachusetts.

The Rebuilding Years: 1990-2000

By 1992, a slowing economy saw significant downsizing of the firm. In these tough times, the leadership began to focus its attention on better aligning the firm with its clients and their needs, to help avoid future staff impacts. Accordingly, the firm began to develop market experts who were not only talented engineers, but who also understood the business problems clients in a particular market faced. This realignment of the practice allowed Syska Hennessy to move forward again, fueled by a growing project backlog.

In 1993, Syska was selected for the Ronald Regan National Airport expansion, which would become one of many landmark aviation projects. During the 1990s, the firm also increased its California footprint to include San Diego.

In 2000, the seeds of an ownership transition were sown. The firm moved away from a third-generation, family-owned business run by the Hennessy family. This change allowed Syska Hennessy to truly be called a management-owned firm. With this ownership transition, the structure of the management was re-organized. Members of the new management team who still work at Syska now include Gary Brennen and G. Venkata Ramu, one of the firm's original college recruits from 1968! (Please see page 42 for more on Ramu.) With this varied set of talents in place, recognition of the firm's broad capabilities grew. To signify this change, the firm changed its name in 2002 to Syska Hennessy Group, symbolizing a redefined company -- one that is better able and organized to meet its client challenges.

The New Millennium: 2001-2018

In 2008, Cyrus Izzo and Gary Brennen were selected as co-presidents. (Please see page 32 for their perspectives on Syska past, present, and future.) And in 2010, the firm created a leadership team with senior principals from our regional offices to help drive organizational efficiency.

During this time, the firm, as in the previous decades, sought out the best projects in the market. Such projects included the United Nations, LaGuardia Airport's Master Plan, Long Beach Courthouse (the first social infrastructure P3 in the U.S.), SDIA Greenbuild (the first LEED Platinum airport terminal), the LEED Platinum Jia Hui hospital project in China, Lotte World Tower in South Korea, the 3D printed Office of the Future in Dubai and the L.A. Federal Courthouse, to name a few.

Today, we still seek to work with the best firms and clients and help them realize their project goals. Please join us on our journey as we embark on the next 90 years.

Today, we still seek to work with the best firms and clients and help them realize their project goals.

Lotte World Tower

I think our core DNA and our core values, such as integrity, have been pretty steady...

LEADING SYSKA

THEN AND NOW

In 1982, a young man graduated from Penn State and joined Syska Hennessy's training program for engineers. His name was Gary Brennen. A little more than a decade later, a man with seven years of engineering experience joined the firm from Ammann & Whitney. That was Cyrus Izzo. Today, Brennen and Izzo are the firm's co-presidents.

What were their early experiences at Syska like? How does the Syska of today compare to Syska then? And what are their goals for Syska's future? The firm's 90th anniversary year seemed like an ideal time to pose these questions.

Syska Then

After only three months at Syska, Gary was thrown into the deep end. While most of his colleagues were working on King Saud University, Gary had been assigned to an electrical project for Sigonella Naval Air Station in Sicily. When it came time for a site visit, Gary was asked to represent Syska. For a new recruit, this was a daunting assignment. But he persevered. As Gary recalls: "We didn't mention that I'd just graduated from college."

Cyrus had a different sort of apprehension when he took on his first project at Syska – electrical engineering work for Madame Tussaud's Wax Museum, which was opening venues in New York and Las Vegas. "I just kept thinking about melting wax," Cyrus remembers. His fears were allayed once he learned that the materials used were actually fiberglass rather than wax. "The heads can melt, but they're not as temperature-intolerant as you might expect," he says. "They're pretty hearty."

What was the culture like at the time? According to Cyrus, the family-run business had a lot of "layers." Today, the organization is much flatter. And oversight comes from a broader-based management team with equity.

But elements of the earlier culture remain. "We retained a sense of family and belonging," says Gary. Furthermore, he notes, "the idea of engineering excellence and innovation has always been there." Cyrus adds: "I think our core DNA and our core values, such as integrity, have been pretty steady."

Syska Today

One striking aspect of Syska is the long tenures of its employees. Venkata Ramu, for instance, recently celebrated his 50th anniversary with the firm. Attendees of a party in his honor included many current Syska employees with tenures ranging from 20-35 years.

"When someone shows the ability or desire to learn and grow and expand, we will pave the way to make that happen."

What keeps people at Syska? Cyrus points to the entrepreneurial culture. "When someone shows the ability or desire to learn and grow and expand, we will pave the way to make that happen." Gary agrees: "If you have the energy, we'll give you the backing." The Shanghai office is a good example. In 2008, Syska supported the relocation of senior principal Ing Lim, who opened a one-person outpost there. Today, that "outpost" has 30 professionals.

An emphasis on collaboration is another factor. "As co-presidents, we are in constant communication," says Gary. "Dialogue is important to our relationship, the relationships among employees, and between employees and clients." Cyrus has a similar perspective: "It doesn't have to be my way or Gary's way. If people want to come to us with an idea, we say 'bring it on.'"

Which projects have been the most memorable for Gary and Cyrus?

Gary points to the Governor George Deukmejian Courthouse in Long Beach, California. This was the first social infrastructure P3 completed in the U.S procured under the principles of performance-based infrastructure contracting. "We created some incredible relationships that continue to this day," Gary says. For Cyrus, what stands out most was a security-focused project for the U.S. Army Corps of Engineers after 9/11 took place. Another important one for the firm overall was the reconstruction of the Pentagon after 9/11. "That was pretty special," says Cyrus.

Syska Tomorrow

What goals do Gary and Cyrus have for the future? "One is to remain a privately held, management-run consulting firm," says Cyrus. "We'd also like to double our rate of growth." Leadership development is another. "We want to give people tools and platforms so that they can take control of their own career paths," Gary states. "And as for our clients, we want them to think of us as their go-to firm. Fortunately, we're already succeeding to a large degree on both fronts, but we want to advance even further beyond the status quo."

Adolph G. Syska

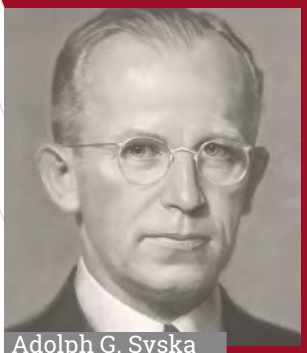
Syska was born in New York City on August 21, 1889. He graduated from Columbia University in 1913 with a degree in mechanical engineering. His engineering career began with the firm of Gibbs and Hill; later, he worked for the New York Central Railroad, where he rose to the position of assistant engineer.

He gained experience in the field of HVAC design, working for Fermogas Corporation; the New York State Architect's office; Creedmor Hospital as engineer in charge of power plant design; and as assistant engineer at Murrie and Company. In 1921, Mr. Syska joined the firm of Clyde R. Place as engineer in charge of design of power plants, and stayed there until 1928, when he and Mr. Hennessy founded Syska and Hennessy.

During the active years of his career, "Ed" Syska rose to a position of prominence in the engineering world. He was an acknowledged expert on boiler plant design and authored numerous reports on the subject of boiler plant operations and economics. In addition, he was active in many industry organizations. He served on the administration committee of the American Institute of Consulting Engineers, as president of the Association of Consulting Engineers in 1944, and, at the time of his death, as chairman of the ethical practices committee of the New York Association of Consulting Engineers. Mr. Syska was also a member of the American Society of Mechanical Engineers and the National Society of Professional Engineers.

Who Were Syska and Hennessy?

Adolph G. Syska and John F. Hennessy became friends when they both worked for Clyde R. Place. In 1928, they opened up their own office in New York City – It was a small room with six drafting tables on the 29th floor of the Graybar building.



Adolph G. Syska

John F. Hennessy

Entering the services as major, Mr. Hennessy took charge of a construction office of the Rubber Reserve Corporation...

John F. Hennessy

John F. Hennessy was born in New York City on June 14, 1902. After working at Todd Shipyards for a summer, he decided that the professional side of engineering was more to his taste than the manual. He went on to MIT, receiving a BSME degree in 1924. In 1925, he joined the consulting firm of Clyde R. Place, where he met Ed Syska.

At the beginning of World War II, Mr. Hennessy enlisted in the Army Air Force, while Mr. Syska ran the firm. Entering the services as major, Mr. Hennessy took charge of a construction office of the Rubber Reserve Corporation in order to expedite and supervise a construction volume of almost $600,000,000. For his work with the Aviation Petroleum Branch, he earned the Legion of Merit for "exceptional meritorious conduct in the performance of outstanding service."

From 1961 to 1963, he was a member of the New York City Board of Education, directing the school construction program. He also served as president of both the New York Building Congress and the New York Association of Consulting Engineers, and was a trustee of the New York City Hall of Science. One of his most challenging professional involvements was the development and passage into legislation of the badly needed New York City Building Code.

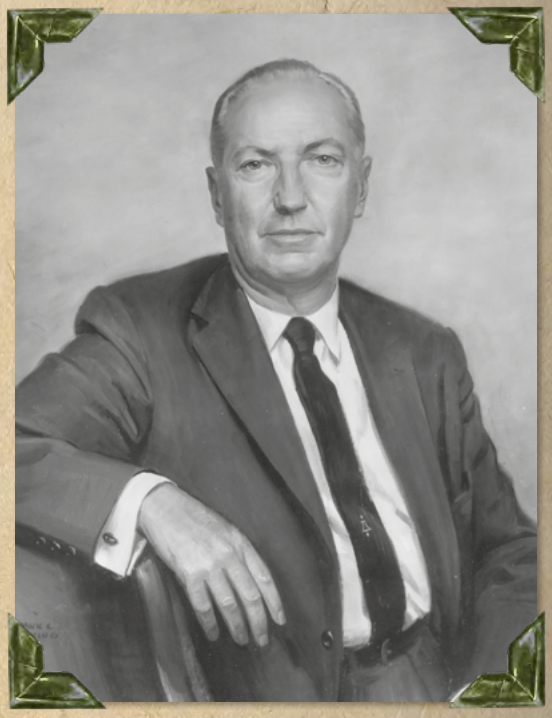
Mr. Hennessy received an honorary Doctor of Engineering degree from Manhattan College in 1956 and an honorary Doctor of Law degree from Iona College in 1958. The University of Michigan inducted him into Tau Beta Pi, the honorary engineering fraternity, in the same year.

In 1963, he received the first founders medal from the New York Association of Consulting Engineers, and, in 1969, the Distinguished Engineer in Industry award from the New York Society of Professional Engineers.

"We retained a sense of family and belonging... the idea of engineering excellence and innovation has always been there."

A look back at our history through pictures...

Governor Hugh Carey and John Hennessy II



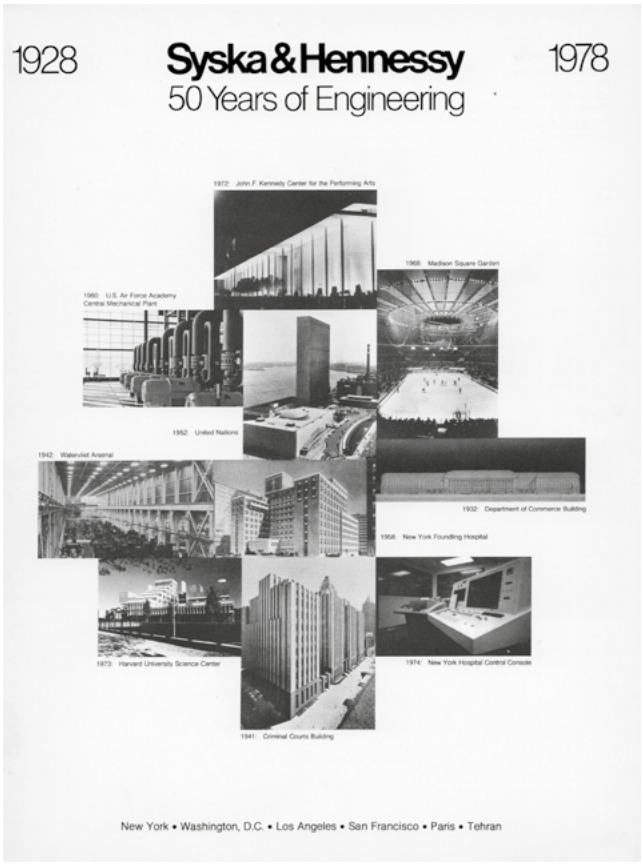
John Hennessy Sr.

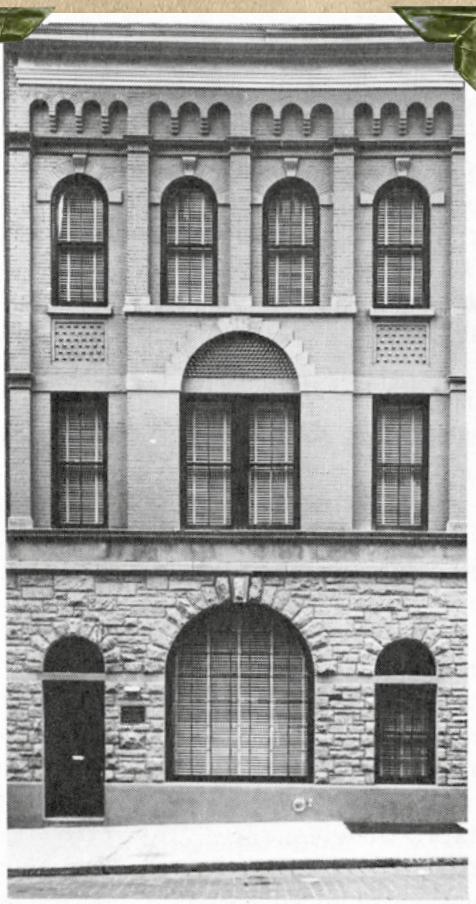
National Gallery of Art

Monterey Bay Aquarium

MIT Science Building

Procter and Gamble



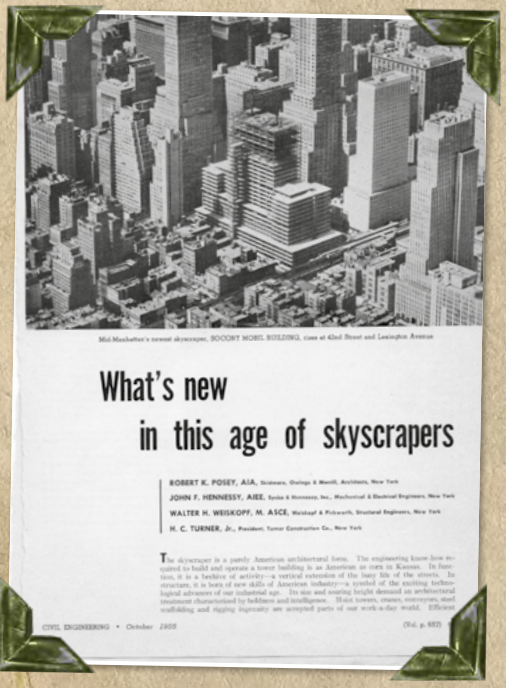


The Stable

Formerly a stable in the late 1800s, this brownstone served as our offices for 32 years. It is located at 144 East 39th Street between Lexington and Third Avenues.

ACEC Grand Awards 1969

ACEC Grand Awards 1969



Mid-Manhattan's newest skyscraper, MOBIL BUILDING, rises at 42nd Street and Lexington Avenue

What's new in this age of skyscrapers

ROBERT K. POSEY, AIA, Skidmore, Owings & Merrill, Architects, New York
JOHN F. HENNESSY, AIEE, Syska & Hennessy, Inc., Mechanical & Electrical Engineers, New York
WALTER H. WEISKOPF, M. ASCE, Weiskopf & Pickworth, Structural Engineers, New York
H. C. TURNER, Jr., President, Turner Construction Co., New York

The skyscraper is a purely American architectural form. The engineering know-how required to build and operate a tower building is as American as corn in Kansas. In function, it is a beehive of activity—a vertical extension of the busy life of the streets. In structure, it is born of new skills of American industry—a symbol of the exciting technological advances of our industrial age. Its size and soaring height demand an architectural treatment characterized by boldness and intelligence. Hoist towers, cranes, conveyors, steel scaffolding and rigging ingenuity are accepted parts of our work-a-day world. Efficient

CIVIL ENGINEERING • October 1958 (Vol. p. 692)

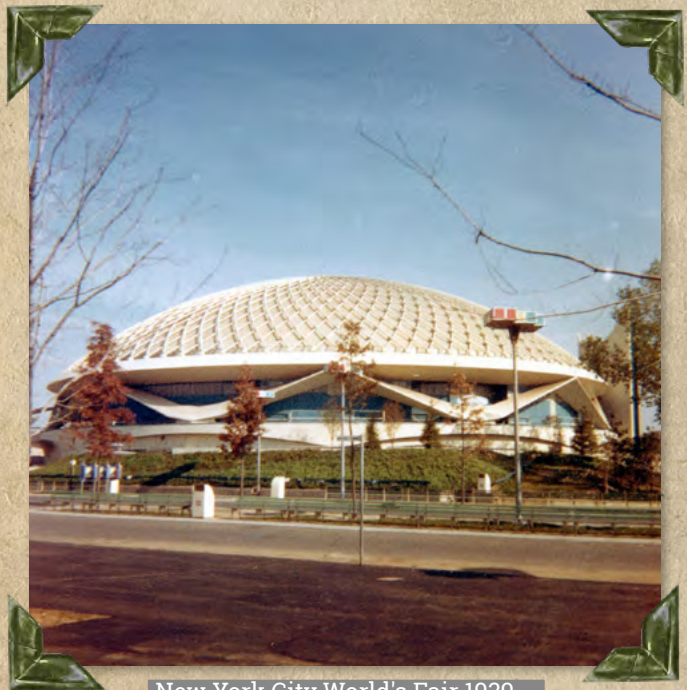
New York City World's Fair 1939

Ellis Island

John Hennessy II

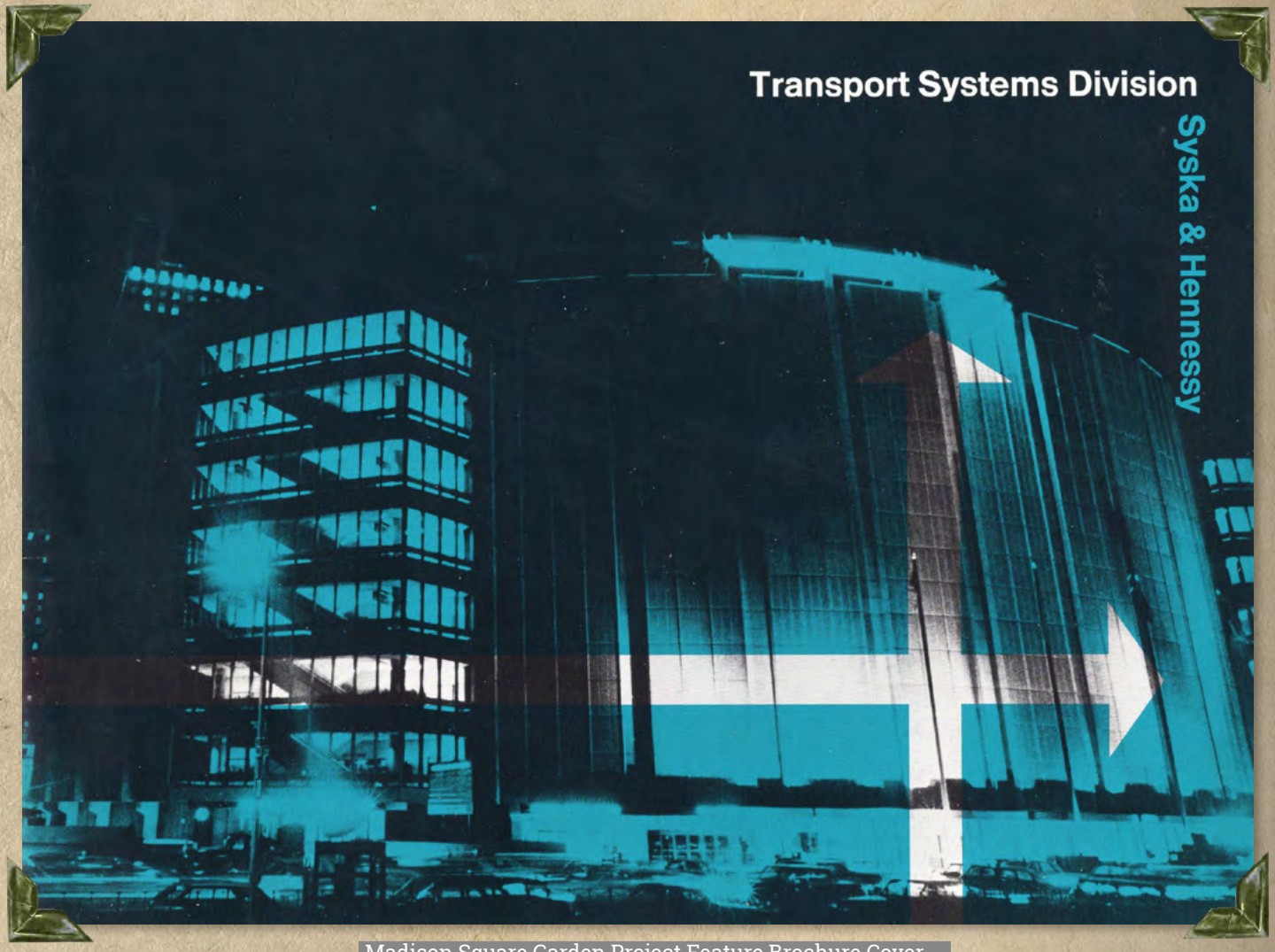
New York City World's Fair 1939

Los Angeles International Airport



New York City World's Fair 1939

Naval Regional Medical Center



Madison Square Garden Project Feature Brochure Cover

McGraw Hill Auditorium

Ed Sullivan Theatre

McGraw Hill

San Francisco International Airport

Ed Sullivan Theatre

A SYSKA SUPER HERO

G VENKATA RAMU

G. Venkata Ramu, Syska's EVP, chief engineer, and a member of the board, is an avid tennis player. But we suspect he enjoys marathons even more. After all, he's just celebrated his 50th anniversary at Syska.

A SYSKA SUPER HERO G VENKATA RAMU

During a recent party in his honor, Ramu received a special present – a photo of "The Great Ramu" in a superhero costume. To the colleagues who have worked with him over the years, the costume is eminently appropriate. Here are some of the memories they shared:

"Ramu, for us, has been the secret weapon, if you will, in Syska, in the industry … I don't think the firm would be as vibrant as it is without a person like Ramu helping to drive excellence in every step of the way."

Cyrus Izzo, Syska co-president

"Ramu was my second boss at Syska when I was just two years out of school. He has remained a mentor and sage guide ever since. Ramu makes it clear when a decision is made in his mind when he concludes an argument with 'think about it.' Follow his advice or you will be in harm's way. We owe him an unpayable debt. An unpayable debt from all of us at Syska."

Gary Brennen, Syska co-president

"Ramu was a wonderful mentor and friend for the almost 40 years I spent at Syska Hennessy. He once told me that prior to graduate school he struggled with a choice between medicine and engineering. We are all better off as a result of his choice."

John Magliano, former chairman and CEO

"The questions we bring to Ramu seem to us like the hardest, most earth-shattering, problems to figure out and solve. Five minutes with Ramu probably saves you a week's worth of heartache, pain, and suffering."

Robert Ioanna, senior principal and senior manager of the New York City office

"I was brought up in a Christian family where we always ask, 'What would Christ do?' At Syska we ask, 'What would Ramu do in this circumstance?"

Mike Ortega, CAD/BIM development supervisor

"I find talking to [Ramu] to be both educational and calming."

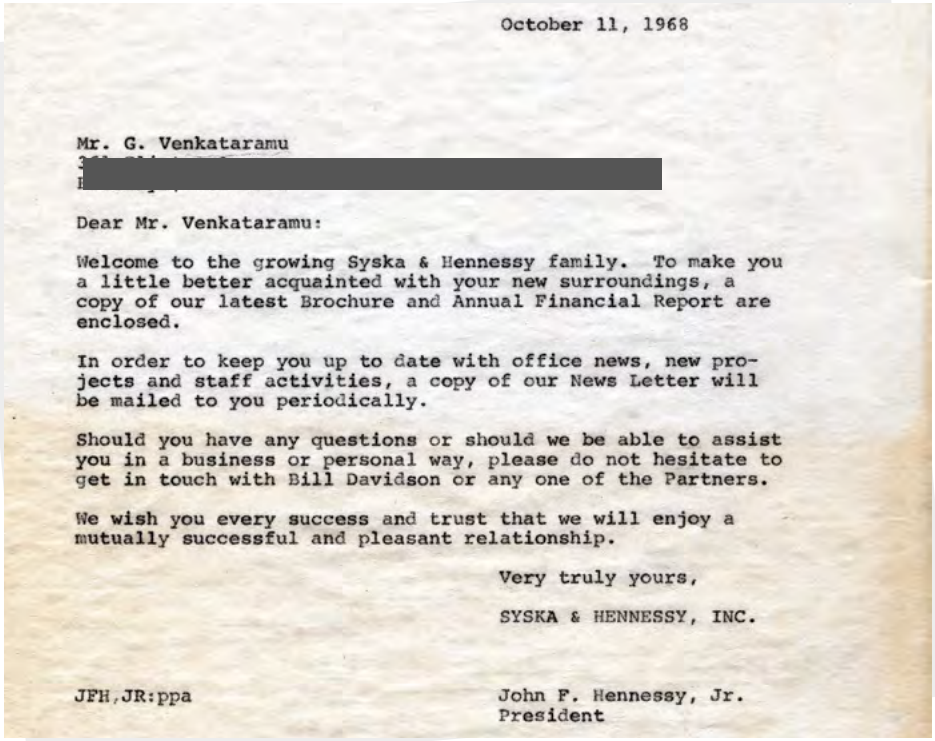
Keith Fitzpatrick, senior principal

"I was told that Ramu is 6'5'', he's loud, and yells a lot. So I came to work and met Ramu. He's not 6'5'', he's not super loud … but over time, I realized that he's definitely a giant; a humble giant."

Jim Regan, senior principal, senior managing director of the Eastern region

"He's a very smart guy. And he remembers everything."

Marina Dishel



October 11, 1968

Mr. G. Venkataramu
[redacted]

Dear Mr. Venkataramu:

Welcome to the growing Syska & Hennessy family. To make you a little better acquainted with your new surroundings, a copy of our latest Brochure and Annual Financial Report are enclosed.

In order to keep you up to date with office news, new projects and staff activities, a copy of our News Letter will be mailed to you periodically.

Should you have any questions or should we be able to assist you in a business or personal way, please do not hesitate to get in touch with Bill Davidson or any one of the Partners.

We wish you every success and trust that we will enjoy a mutually successful and pleasant relationship.

Very truly yours,

SYSKA & HENNESSY, INC.

JFH,JR:ppa

John F. Hennessy, Jr.
President

Original offer letter

NBC

The Secrets of His Success

What are the secrets of Ramu's staying power? According to his son Uday and daughter Meena, it's that he truly enjoys his work. "Dad has told us that going to work never, never feels like work," says Meena. "His work had brought him so much joy and love over the years," adds Uday.

Ramu thinks it's a matter of attitude: "If you approach everything as fun, as a challenge, it's no problem." This attitude served him well shortly after he received his MS in mechanical engineering from the University of Mississippi. A friend suggested that he apply to Syska, but Ramu had no idea what Syska did. "I didn't even know what HVAC was," he recounts. My friend said, 'Oh, you will learn, don't worry.'"

Tennessee Valley Authority

Ramu states that he's had a "great time" at Syska over the years. Among his favorite memories are work trips to Cairo and Istanbul, a project for the heir of Johnson & Johnson that included a fully heated, fully air-conditioned dog house, and a project for Mr. Hennessy himself – air-conditioning for the founder's clubhouse in the Bahamas. When Ramu was told about the latter, he exclaimed: "Is this a prank? Do you want to get me fired?" But Ramu kept his cool and so did the clubhouse.

Anyone who sees photos of Ramu from 50 years ago and Ramu today will notice very few differences. Does his eternal youth stem from his enjoyment of work, from tennis matches, or from something else? Cyrus Izzo thinks he knows the answer. "He loves dessert. I've never seen Ramu pass up an opportunity to have dessert after dinner. And he also likes to chase it with a Remy Martin."

We'll drink to that. Congratulations, Ramu!

Firm award presented

A Most Gratifying Assignment
John F. Hennessy Sr, 1962

ENGINEERING FOR THE FRICK COLLECTION

In 1962, Mr. John F. Hennessy Sr. penned an article about the Frick Collection, a project that represented one of the first modern uses of air-conditioning in a pre-war building (in a museum space no less). The collaboration between Syska Hennessy and the Frick would span thirty years.
We were able to track down the article, and hope you enjoy it as much as we did.

"Residence of the late Henry Clay Frick, New York City, is now a public museum containing the world-famous 'Frick Collection' of rare objects, paintings and books."

"Paintings, set as wall panels, are an impressive background for rare furnishings in the Fragonard Room."

Professional engineers have all the human attributes of other people, and they, too, respond to the element of surprise.

When it was suggested that I write about the project that meant the most to me, I thought of our code of ethics. They preclude the solicitation of work, and it may be that this includes even wishing specifically for a particular assignment. So I am going to tell the story of a project that our firm did not know about, but for which we were selected to perform the mechanical engineering services. It is a project with which we have been associated for over 30 years, almost the entire life of the firm.

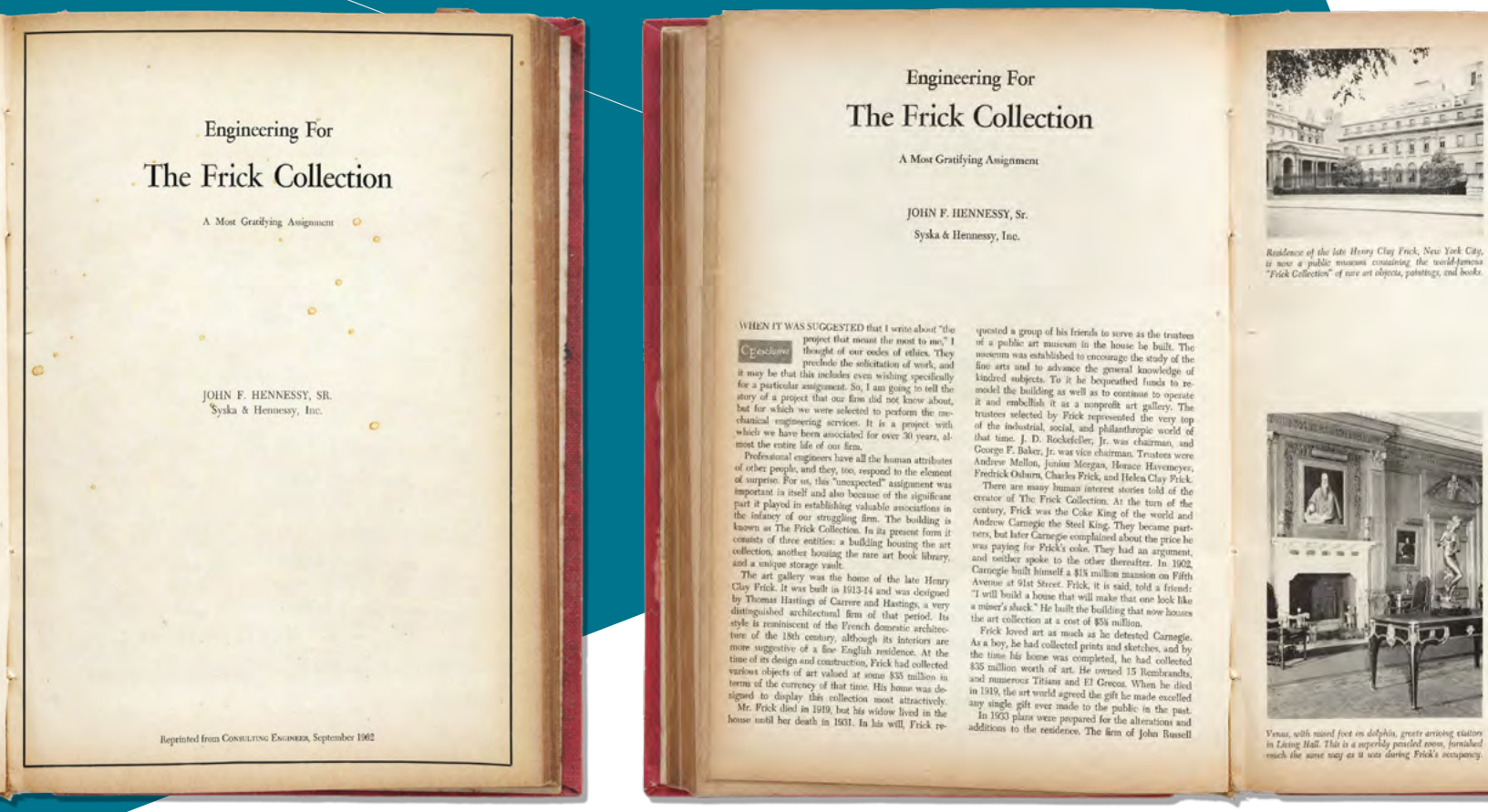
Professional engineers have all the human attributes of other people, and they, too, respond to the element of surprise. For us, this "unexpected" assignment was important in itself and also because of the significant part it played in establishing valuable associations in the infancy of our struggling firm. The building is known as The Frick Collection. In its present form it consists of three entities: a building housing the art collection, another housing the rare art book library, and a unique storage vault.

The art gallery was the home of the late Henry Clay Frick. It was built in 1913-14 and was designed by Thomas Hastings of Carrere and Hastings, a very distinguished architectural firm of that period. Its style is reminiscent of the French domestic architecture of the 18th century, although its interiors are more suggestive of a fine English residence. At the time of its design and construction, Frick had collected various objects of art valued at some $35 million in terms of the currency of that time. His home was designed to display this collection most attractively.

Mr. Frick died in 1919, but his widow lived in the house until her death in 1931.In his will, Frick requested a group of his friends to serve as the trustees of a public art museum in the house he built. The museum was established to encourage the study of the fine arts and to advance the general knowledge of kindred subjects. To it he bequeathed funds to remodel the building as well as to continue to operate it and embellish it as a nonprofit art gallery. The trustees selected by Frick represented the very top of the industrial, social, and philanthropic world of that time. J.D. Rockefeller, Jr. was chairman, and George F. Baker, Jr. was vice chairman. Trustees were Andrew Mellon, Junius Morgan, Horace Havemeyer, Fredrick Osburn, Charles Frick, and Helen Clay Frick.

There are many human-interest stories told of the creator of The Frick Collection. At the turn of the century, Frick was the Coke King of the world and Andrew Carnegie the Steel King. They became partners, but later Carnegie complained about the price he was paying for Frick's coke. They had an argument, and neither spoke to the other thereafter. In 1902, Carnegie built himself a $1.5 million mansion on Fifth Avenue at 91st Street. Frick, it is said, told a friend: "I will build a house that will make that one look like a miner's shack." He built the building that now houses the art collection at a cost of $5.5 million.

Frick loved art as much as he detested Carnegie. As a boy, he had collected prints and sketches, and by the time his home was completed, he had collected $35 million worth of art. He owned 15 Rembrandts, and numerous Titians and El Grecos. When he died in 1919, the art world agreed the gift he made excelled any single gift ever made to the public in the past. In 1933 plans were prepared for the alterations and additions to the residence. The firm of John Russell Pope was the architect. Our firm was selected as the mechanical and electrical engineers, and H. G. Balcom as the structural engineers. Mark Eidletz & Sons, in those years considered the Tiffany of the construction industry, was selected as the builder. As a young engineer, I had occasion to walk home from several meetings with Robert Eidletz, who was then president of the firm. One day he told me that he had done over



Engineering For

The Frick Collection

A Most Gratifying Assignment

JOHN F. HENNESSY, SR.
Syska & Hennessy, Inc.

Reprinted from CONSULTING ENGINEER, September 1962

Engineering For

The Frick Collection

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Residence of the late Henry Clay Frick, New York City, is now a public museum containing the world-famous "Frick Collection" of rare art objects, paintings, and books.

Venus, with raised foot on dolphin, greets arriving visitors in Living Hall. This is a superbly paneled room, furnished much the same way as it was during Frick's occupancy.

$100 million worth of work for Rockefeller without a word in writing. Such was the mutual confidence they had in each other's integrity.

The first problem that confronted us as engineers was to determine the conditions of temperature and humidity under which the paintings and rare books could best be preserved. At that time, air conditioning was still a new art, and no gallery in the world had been air conditioned, as far as we could discover. We corresponded and discussed the problem with all of the prominent galleries in this country and abroad. As a result of this research, a determination of the best conditions was made, and the design proceeded. The "ideal temperature" to be maintained during the cooling season, as defined by the client, was 68F. Research time, "tears," and complaining were necessary to overcome this misconception.

A similar study was made for the lighting. In terms of what we know now about lighting pictures, the standards for that period were very poor. However, the design of the building was such that the high windows on the court afforded much natural light, so the importance of the artificial lighting was minimized. The first stage of the alterations provided for the storage of the works of art (paintings and others) on steel racks and in compartments in a very large vault, which was constructed in the basement. The vault was air conditioned so that items in storage could be kept under closely controlled conditions.

In the residence, the rooms on the street level were made suitable for public use, generally preserving the paintings, murals, and other works of art in about the same areas as they were during Frick's occupancy. A motor court in the center of the building was glassed over; a lecture room was added; and on a site immediately adjoining the gallery on 71st Street, a 10-story art reference library was constructed.

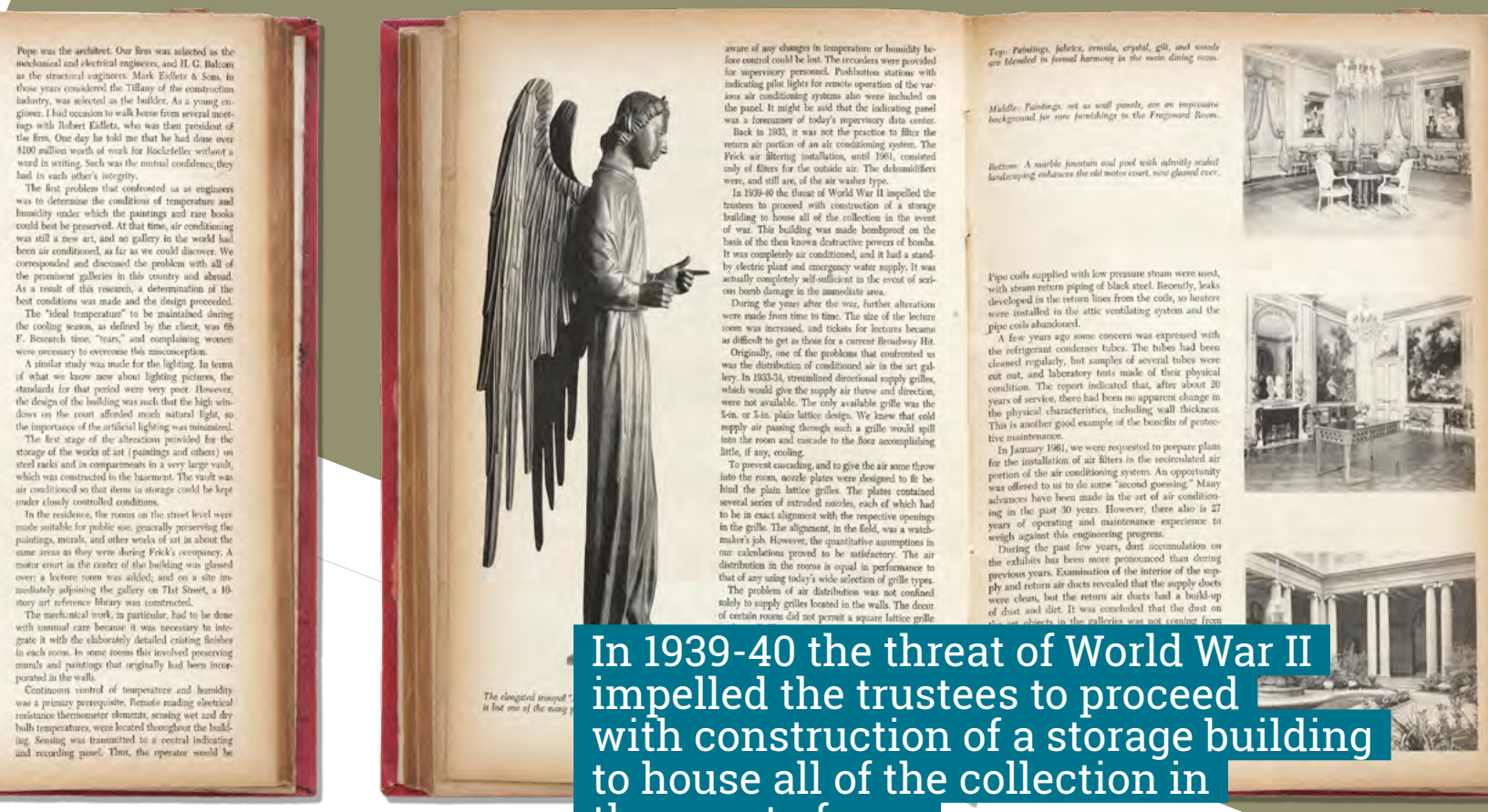
The mechanical work, in particular, had to be done with unusual care because it was necessary to integrate it with the elaborately detailed existing finishes in each room. In some rooms this involved preserving murals and paintings that originally had been incorporated in the walls.

Continuous control of temperature and humidity was a primary prerequisite. Remote reading electrical resistance thermometer elements, sensing wet and dry bulb temperatures, were located throughout the building. Sensing was transmitted to a central indicating and recording panel. Thus, the operator would be aware of any changes in temperature or humidity before control could be lost. The recorders were provided for supervisory personnel. Pushbutton stations with indicating pilot lights for remote operation of various air conditioning systems also were included on the panel. It might be said that the indicating panel was a forerunner of today's supervisory data center.

Back in 1933, it was not the practice to filter the return air portion of an air conditioning system. The Frick air filtering installation, until 1961, consisted only of filters for the outside air. The dehumidifiers were, and still are, of the air washer type.

In 1939-40 the threat of World War II impelled the trustees to proceed with construction of a storage building to house all of the collection in the event of war. This building was made bombproof on the basis of the then known destructive powers of bombs. It was completely air conditioned, and it had a standby electric plant and emergency water supply. It was actually completely self-sufficient in the event of serious bomb damage in the immediate area.

During the years after the war, further alterations were made from time to time. The size of the lecture room was increased, and



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In the residence, the rooms on the street level were made suitable for public use, generally preserving the paintings, murals, and other works of art in about the same areas as they were during Frick's occupancy. A motor court in the center of the building was glassed over; a lecture room was added; and on a site immediately adjoining the gallery on 71st Street, a 10-story art reference library was constructed.

The mechanical work, in particular, had to be done with unusual care because it was necessary to integrate it with the elaborately detailed existing finishes in each room. In some rooms this involved preserving murals and paintings that originally had been incorporated in the walls.

Continuous control of temperature and humidity was a primary prerequisite. Remote reading electrical resistance thermometer elements, sensing wet and dry bulb temperatures, were located throughout the building. Sensing was transmitted to a central indicating and recording panel. Thus, the operator would be aware of any changes in temperature or humidity before control could be lost. The recorders were provided for supervisory personnel. Pushbutton stations with indicating pilot lights for remote operation of the various air conditioning systems also were included on the panel. It might be said that the indicating panel was a forerunner of today's supervisory data center.

Back in 1933, it was not the practice to filter the return air portion of an air conditioning system. The Frick air filtering installation, until 1961, consisted only of filters for the outside air. The dehumidifiers were, and still are, of the air washer type.

In 1939-40 the threat of World War II impelled the trustees to proceed with construction of a storage building to house all of the collection in the event of war. This building was made bombproof on the basis of the then known destructive powers of bombs. It was completely air conditioned, and it had a stand-by electric plant and emergency water supply. It was actually completely self-sufficient in the event of serious bomb damage in the immediate area.

During the years after the war, further alterations were made from time to time. The size of the lecture room was increased, and tickets for lectures became as difficult to get as those for a current Broadway Hit.

Originally, one of the problems that confronted us was the distribution of conditioned air in the art gallery. In 1933-34, streamlined directional supply grilles, which would give the supply air throw and direction, were not available. The only available grille was the ¾-in. or 7/8-in. plain lattice design. We knew that cold supply air passing through such a grille would spill into the room and cascade to the floor accomplishing little, if any, cooling.

To prevent cascading, and to give the air some throw into the room, nozzle plates were designed to fit behind the plain lattice grilles. The plates contained several series of extruded nozzles, each of which had to be in exact alignment with the respective openings in the grille. The alignment, in the field, was a watchmaker's job. However, the quantitative assumptions in our calculations proved to be satisfactory. The air distribution in the rooms is equal in performance to that of any using today's wide selection of grille types.

The problem of air distribution was not confined solely to supply grilles located in the walls. The decor of certain rooms did not permit a square lattice grille in the wall. Floor registers at the windows were provided originally for warm air heating. Partial nozzle plates also were installed behind these register faces to throw the cooling air upward and forward.

The ceiling of the galleries is glazed, an attic space is above the ceiling, and the roof of the attic contains large skylights; the purpose, of course, being to provide natural lighting for the exhibits. To reduce the cooling requirements, the attic space was ventilated. Winter requirements involved heating of this space.

Pipe coils supplied with low pressure steam were used, with steam return piping of black steel. Recently, leaks developed in the return lines from the coils, so heaters were installed in the attic ventilating system and the pipe coils abandoned.

A few years ago, some concern was expressed with the refrigerant condenser tubes. The tubes had been cleaned regularly, but samples of several tubes were cut out, and laboratory tests made of their physical condition. The report indicated that, after about 20 years of service, there had been no apparent change in the physical characteristics, including wall thickness. This is another good example of the benefits of protective maintenance.

In January 1961, we were requested to prepare plans for the installation of air filters in the recirculated air portion of the air conditioning system. An opportunity was offered to us to do some "second guessing." Many advances have been made in the art of air conditioning in the past 30 years. However, there also is 27 years of operating and maintenance experience to weigh against this engineering progress.

During the past few years, dust accumulation on the exhibits has been more pronounced than during previous years. Examination of the interior of the supply and return air ducts revealed that the supply ducts were clean, but the return air ducts had a build-up of dust and dirt. It was concluded that the dust on the art objects in the galleries was not coming from the supply air, but was created by visitor traffic, which has increased rapidly in recent years. Consequently, we formulated our recent project for the installation of return air filters. Incidentally, the original outside air filters have been retained.

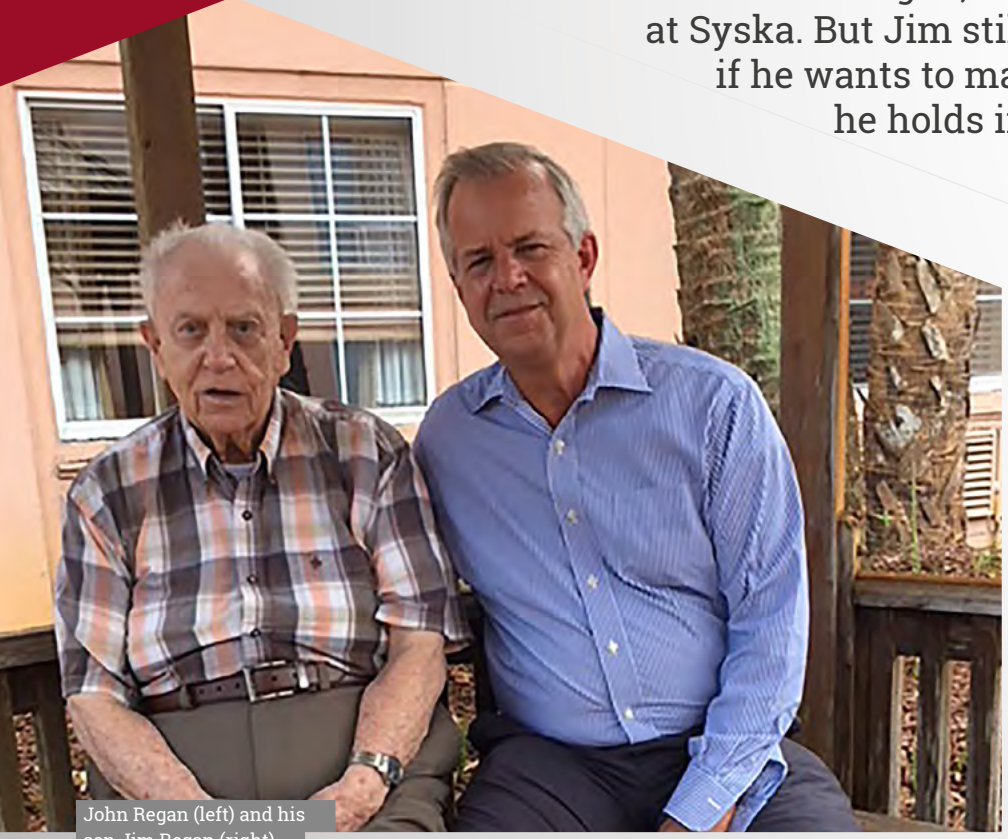
This is the brief history of a project -- small by today's standards -- that was unique in its concept, challenging in view of the information available at that time, and most beneficial to our firm because of the associations that grew out of it.

In 1939-40 the threat of World War II impelled the trustees to proceed with construction of a storage building to house all of the collection in the event of war.

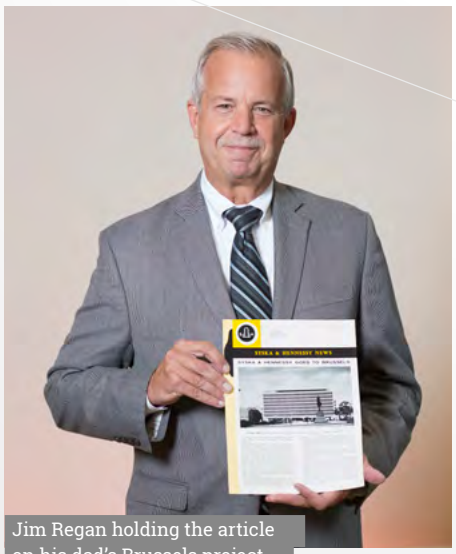
MEET THE REGANS

REPRESENTING TWO GENERATIONS OF SYSKA EXECUTIVES

Most people would consider 37 years a long tenure. That's the length of time that Jim Regan, senior principal, has worked at Syska. But Jim still has another decade to go if he wants to match the record of someone he holds in high esteem – his father.



John Regan (left) and his son Jim Regan (right)



Jim Regan holding the article on his dad's Brussels project

John Regan, Jim's father, spent 47 years at Syska. What are the secrets behind his and his son's impressive tenures? We spoke with the Regans to find out. In the process, we learned what Syska was like many decades ago, a few decades ago, and today.

John

John joined Syska in 1946, when Adolph Syska and John Hennessy were at the firm's helm. He started as a draftsman, earning $30 a week. Of course, the nature of the role was quite different then from what it is today. John recalls: "We used to use a slide rule to do our calculations. And we were doing all the drafting by hand."

Mr. Syska and Mr. Hennessy both played influential roles in John's career. "Mr. Hennessy taught me the managerial end of the business, and Mr. Syska taught me the engineering end of it," says John.

In the early days of his tenure, John was a little intimidated by Mr. Syska, who liked to give employees pop quizzes: "He'd come down the spiral staircase in our office on 39th Street and ask us questions like "How many pounds does a gallon of water weigh?' or "How many foot-pounds per second in a boiler horsepower?' Everybody in the engineering room would put their heads down, hoping he wouldn't come over." John, however, was not in a great position to avoid the grilling, since his desk was right at the bottom of the stairs. But eventually, he "got wise," and wrote the answers to the standard questions on a sheet of paper affixed to his wall. Whenever Mr. Syska came down, he'd simply glance over for the answer.

There was a method to the madness, though, John points out. "Mr. Syska said that during meetings, you can't pull out a piece of paper and look at something. You have to have the information memorized."

Another question Mr. Syska liked to ask was "What did you learn today?" According to John, the reason for this question was Mr. Syska's belief that any day you didn't learn at least one new thing was a wasted day.

Mr. Syska didn't just ask questions, though; He gave John valuable hands-on experience. One of the first projects they worked on together was the MEP design criteria for the New York City Housing Authority, along with three projects for the Authority – one in Flushing and two in Manhattan.

Mr. Hennessy, in contrast to Mr. Syska, focused on marketing and new business. During many nights when John was working overtime, Mr. Hennessy would be upstairs working on client contracts. "No matter how many hours one spent in the office, you always knew that Mr. Hennessy was putting in equal or more hours, either in the office or out, working through his vast client contacts," John recounts.

"If anyone gave you the feeling that you belonged and were part of a family, it was Mr. Hennessy."

John remembers joining Mr. Hennessy at meetings with Nelson Rockefeller, and the annual get-togethers for all employees at Mr. Hennessy's place in the Hamptons. "I learned much of the managerial and human aspects of this business from Mr. Hennessy, and it was a pleasure to manage projects under his direction," says John. "If anyone gave you the feeling that you belonged and were part of a family, it was Mr. Hennessy."

John also has fond memories of the projects he worked on, particularly the Empire State Plaza and King Saud University in Saudi Arabia. Of these two projects, John says: "I can't think of anything I would have rather done in my life."

The only area in which things were less than rosy for John was softball. He was on the Syska team, but he did not excel. The players had an ingenious solution to getting him off the field: They "promoted" him to coach.

Jim

When Jim joined Syska in 1978, he worked closely with Venkata Ramu, who has just celebrated his 50th anniversary with the firm.

Before Jim started, John told him what to expect on his first day, describing Ramu as very loud and intimidating. Soon enough, Jim discovered that his father had been joking. "Ramu is soft-spoken and one of the nicest guys you'll ever meet," says Jim.

Jim left briefly in 1990 to join AKF. He returned in 1993, after his father told him of an opportunity at Syska.

Jim had some opportunities to work on projects that his father worked on. For example, John worked on the original construction of the former Grumman headquarters on Long Island in 1984. Years later in, 1997, Jim worked on the conversion/renovation of the building to the new Cablevision Headquarters.

What has kept Jim at Syska for so long? He points to the family atmosphere and the friendships he's developed with co-workers. His father has similar feelings. Indeed, John is still close to another retired principal, Mark Puleo.

Like his father, Jim enjoys his projects. One of his favorites is Ellis Island. "When we started, everything was abandoned," he notes. "It was so rewarding to play a role in its transition." He adds that two of his grandparents came through Ellis Island.

The Third Generation

Speaking of relatives, Jim's kids (AKA John's grandkids) are, unfortunately, not carrying on the Syska tradition. Jim's son went to SUNY Albany to study engineering but changed his mind after a week. He is currently working as a quality analyst for a software/engineering defense contractor on Long Island. And his daughter is a registered nurse. That said, links to Syska persist:

Jim's daughter works at Long Island's St. Francis Hospital, for which Syska designed a new central plant. And both kids were born at the Good Samaritan Hospital, another Syska project on Long Island. Jim concludes: "So even though my kids didn't go into engineering, they're touched by it somehow."

CONNECTIONS

90TH ANNIVERSARY SPECIAL EDITION

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