

YouTube Gives Rise to New DIY Crowd, Marketing Opportunities

BY ANGELA D. HARRIS
ACHR NEWS STAFF

With more than 2 billion users watching an average of 1 billion hours of video daily, YouTube usage accounts for almost a third of the internet. On mobile

devices alone, the company reports that it reaches more people in the U.S. audience than any TV network. What began as a platform to communicate about personal happenings has become an open forum of videos, spanning diverse topics that are giving rise to an advanced do-it-yourself

(DIY) crowd. From car repairs to ductwork replacement, trade professionals are faced with the consequences of YouTube learners.

Despite these challenges, some contractors have found that YouTube for the HVAC industry has a beneficial side as well.

"We're in a skilled trade in HVAC, and with the way the industry keeps changing and the trends with new equipment, sometimes Google and YouTube are the best ways for us to get information quickest," said Pete Huey, general

■ See **YOUTUBE** | Page 17

Onset of Winter Raises Concerns About Spread of Virus Indoors

As workers return to offices, worries persist about commercial building IAQ

BY JOANNA TURPIN
ACHR NEWS STAFF

As lockdowns due to the COVID-19 pandemic are winding down in many areas, some workers are returning to their office buildings for the first time in months. Unfortunately, this influx of employees coincides with many buildings buttoning up for winter — potentially reducing ventilation — as well as with what is traditionally the start of flu season in the U.S. There are also concerns that COVID-19 infections could spike again later this year.

According to the Centers for Disease Control (CDC), both flu and COVID-19 viruses are primarily spread through the air. This mainly occurs when tiny droplets — expelled by infected people when they cough, sneeze, or talk — impact or are inhaled by others who are in close proximity. Those droplets may become concentrated in areas with low ventilation rates, increasing the risk for virus spread, which is why experts are recommending not only increased ventilation but also better filtration in most commercial buildings.

■ See **IAQ** | Page 9



REDUCE THE SPREAD: A generation of research and experience has proven that when properly maintained and operated, HVAC can reduce the spread of viruses. PHOTO COURTESY OF CARRIER

FYI HVACR BRIEFS

MANUFACTURERS

LG Electronics USA (Alpharetta, Georgia) named **Steven R. Scarbrough** to senior vice president and general manager of Air Conditioning Technologies.



Motion Industries Inc. acquired **Applied Machine and Motion Control Inc.** (Park Hills, Kentucky).
Wrench Group LLC (Houston, Texas) acquired **All About Water** (Chandler, Arizona). This is the firm's fifth acquisition in 2020.

AAON Inc. (Tulsa, Oklahoma) achieved Platinum level in the 2020 Sustainable Tulsa Scor3card® verification program.

Milwaukee Tool (Brookfield, Wisconsin) will expand with a new service hub in Greenwood, Indiana.

Grundfos (Chicago) broke ground at its Americas Regional Center, located in Brookshire, Texas.

The Harris Products Group (Mason, Ohio) named **Kimberly Elliott** vice president of strategy and technology.

continued on Page 5

these people to be home all the time, Bowman said. A house today may be filled at all times with five people and several pets. All of them are producing humidity.

The right amount of humidity is good, Mounts said. It stops irritants like dust mites. In an area like Houston, however, too much humidity creates problems with biogrowth. Again, it's a balancing act, Bowman said. Mounts said HVAC contractors can offer solutions like germicidal UV lights to solve these problems.

In addition to installing mini splits and creating humidity, people have spent a lot of time cleaning their homes in the past few months. This creates another IAQ issue. Mounts said his company's study found 40 percent of homes have elevated chemicals.

"We swim in a chemical soup, and we're largely oblivious to it," Mount said.



NOT THE HEAT BUT THE HUMIDITY: A dehumidifier, such as this one, helps cut down on biogrowth. Reaching a balance between too much and too little humidity is one of the many challenges of IAQ.

PERMANANT SHIFT IN CONSUMER THINKING

Many of these issues are going to outlast the COVID pandemic. Bowman said he expects new building codes will put IAQ front and center. Even without any regulation, consumers will drive a change, Ruse said.

"The mindset is healthier environments forever," he said. "Post-COVID, it will be that much more meaningful as homeowners, builders, and property managers



COMFORT MATTERS: A technician works on the controls for a home's HVAC. Comfort counts as part of overall IAQ.

build health into our way of life when it comes to the structure of homes and businesses.

"Think of it in terms of how airport security changed

because of 9/11. It never went back. We still take our shoes off. Security measures stuck, and so will demand for healthier living choices." **N**

IAQ

Continued from Page 1

THE ROLE OF HVAC

At the beginning of the COVID-19 pandemic, little was known about how the virus spread, and there was concern that it could be transmitted through HVAC systems. As a result, ASHRAE and other organizations quickly offered detailed guidance regarding how to potentially mitigate virus transmission through the modification of commercial HVAC systems.

Since then, nothing has happened that would change ASHRAE guidance; however, the case for airborne transmission of the COVID-19 virus seems to be getting stronger and gaining more widespread acceptance, said William Bahnfleth, ASHRAE presidential member, ASHRAE Epidemic Task Force chair, and professor of architectural engineering at Pennsylvania State University.

"An extensive analytical study of the Diamond Princess cruise ship incident, which has its critics, concluded that aerosol transmission was highly likely and probably responsible for a large percentage of cases," he said. "Another development is the publication of a pre-print by the University of Oregon that reported identification of SARS-CoV-2 RNA in multiple locations inside air handling units in a

hospital. This was followed more recently by a pre-print from the University of Florida reporting sampling of active SARS-CoV-2 virus in patient rooms in a hospital. Additionally, a new study reports on a nursing home outbreak in the Netherlands that appears to be the result of inadequate ventilation."

Bahnfleth added that while the Oregon hospital study demonstrates that SARS-CoV-2 can be transmitted through HVAC systems — which he never doubted was possible — it does not establish that COVID-19 has actually been transmitted by this route.

While there is no new evidence that COVID-19 can be spread by HVAC systems specifically, new studies show how the virus can be transmitted through airflow, said David Budzinski, vice president of commercial excellence at Johnson Controls.

"Since HVAC controls airflow, there has been an increased focus on particle size and how virus-sized particles specifically are transmitted through airflow," he said. "With this knowledge, we can recommend and implement appropriate HVAC solutions like increased filtration and outdoor air systems, as well as some traditional anti-virus mechanisms like UV lighting."

RECOMMENDATIONS

When it comes to mitigating the risk of indoor microbiological

You're Already There, Test The Air!

Offer a complimentary 30-minute indoor air quality test with EVERY scheduled service call to achieve healthier spaces and greater profits!



Includes carrying case, power cord and meter

IAQPRO SmartAir™ Professional Indoor Air Quality Meter

1. Conducts comprehensive air quality tests in homes & businesses
2. Identifies problems, suggests causes, recommends solutions
3. Creates on-site report & quotation

Measures 9 Critical Air Quality/Comfort Factors:

PM2.5, PM10, CO2, tVOC, Temperature, Relative Humidity, Dew Point, Building Pressure, Indoor Comfort Zone



Download App for Free!

eProduct #9 at achrnews.com

“While the Oregon hospital study demonstrates that SARS-CoV-2 can be transmitted through HVAC systems – which I never doubted was possible – it does not establish that COVID-19 has actually been transmitted by this route.”

– William Bahnfleth
professor of architectural engineering
Pennsylvania State University

transmission, including the SARS-CoV-2 virus, the consensus continues to be that it can be achieved via four primary indoor air quality pillars: dilution, exhaust, containment, and cleaning, said Ron Cosby, thermal systems and technology leader at Trane Technologies.

“The dilution comes from outside air ventilation to remove viruses via fresh air replacement, which effectively increases the outside air exchanges per hour,” he said. “The exhaust tenet revolves around ensuring that areas with limited airflow,

such as bathrooms, have a mechanism to exhaust air to continually refresh the air. Our suggestion is to operate exhaust continuously.”

Containment involves maintaining indoor humidity at ASHRAE-suggested levels of 40 to 60 percent relative humidity, said Cosby, which helps prevent rapid evaporation of any droplets or aerosols that may contain viruses. Smaller water droplets or aerosols may hang in the air longer and increase the risk of infection, he said, and there have also been studies for previous



DIFFERENT NEEDS: There is no single solution for all environments, as every building is different and each one may have different needs and variables when it comes to indoor air quality. PHOTO COURTESY OF TRANE

coronaviruses that indicate the body reacts differently in lower humidity levels.

“Maintaining humidity indoors will help to reduce the potential of infection and reduce the potential severity of illness,” he noted. “Finally, commercial HVAC systems can go on the offense through use of cleaning technologies to actively reduce the number of

microbiologicals that may be in the air or on surfaces.”

Increasing the level of air filtration is also a relatively easy way to reduce potential indoor virus particles, but the type of filter needed depends on the specific building, said Budzinski. For most buildings, Johnson Controls recommends using filters with a MERV 13 rating, or as high as MERV 16

for certain applications. HEPA filters are also available and are becoming more common in commercial buildings.

“There is no one-size-fits-all solution for upgrading HVAC systems in this situation,” he noted. “It is also beneficial to have a significant amount of outdoor air mixed with the indoor air. A 10 percent outdoor to indoor air ratio is a great starting point for many spaces, but some facilities are choosing to go as high as 30 percent outdoor. Because of this, we are seeing an increased demand for dedicated outdoor air systems (DOAS). In situations where a DOAS unit would be too large, a smaller recovery ventilator can achieve satisfactory results without a major HVAC system upgrade.”

As for air cleaning technologies such as ultraviolet germicidal irradiation (UVGI), photocatalytic oxidation, and bipolar ionization, these can be helpful in many cases, but better filters are often the best first course of action.

“The quickest and most cost-effective way to enhance air cleaning is by upgrading HVAC filters to ones that more aggressively capture certain microbiological particles,” said Cosby. “ASHRAE recommends upgrading filters to a minimum of a MERV 13 filter, but these upgrades need to be done with the understanding that it could come at a price of increased energy consumption with increased pressure drop.”



EXPLORE NEW OPPORTUNITIES FOR GROWTH

“DUCTZ offers, through the commercial side, a lot of opportunity for growth at very high margins.” – Tim M., DUCTZ of Greater Columbia

Expanding your business to include DUCTZ specialized service lines gives you more to offer your customers and opens up new opportunities to access commercial projects that may not have been possible before.

Commercial Opportunities Include:

- **In-House Training** - Ongoing training & certification for commercial, industrial, municipal, and healthcare settings.
- **National Service Team (NST)** - Work with our National Service Team as they respond to large-scale, highly technical projects.
- **Connections to Restoration** - Build relationships with our parent company BELFOR Property Restoration and other contractors to become their HVAC restoration partner.



As of June, franchisee revenues are up over 10% compared to the same time period in 2019.

Air Duct Cleaning • HVAC Restoration • Dryer Vent Cleaning • Condenser Coil Cleaning

Discover what opportunities DUCTZ has in store for you.
Call **866.721.9386** or visit ductzfranchise.com/TheNews10 to learn more today.

eProduct #10 at achrnews.com

ENERGY PENALTIES

Slowing the spread of COVID-19 is a team sport, and proper ventilation and enhanced filtration are important parts of the solution along with hand washing and social distancing, said Chris Opie, vice president of product management and marketing at Carrier HVAC and leader of Carrier Commercial HVAC Healthy Buildings Program. However, increasing outside air ventilation to 100 percent while maintaining indoor comfort levels will

likely not be possible in most commercial HVAC systems that were not designed to do so in the first place.

“Any HVAC system that is equipped with a modern digital control system should have the capability to accept control sequence modifications to address the suggested current guidance, but the design capacity of the equipment will dictate the degree to which a given system can be made to comply,” he said. “Updated sequences may also require

additional instrumentation along with control logic updates. In many cases, full compliance may mean mechanical as well control system updates.”

Another concern is that increasing ventilation and humidity levels in cold weather, as well as in hot summer climate conditions, will likely result in energy penalties in all but the most moderate climates, said Opie.

“Building owners can partially mitigate the energy penalty that comes with changes to their HVAC operation by taking advantage of energy-saving strategies that may exist in their building automation system, if one is present,” he said. “Supply air setpoint reset, addressing limited occupancy by placing

continuously unoccupied zones into temporary setback, demand-limiting non-essential equipment, and expanding overall comfort setpoints are just a few options that should be easy to implement in a contemporary building automation system. Owners can also consider added features and equipment like exhaust air energy recovery and DOAS units.”

In the past, building owners often limited the intake of outdoor air to reduce operating costs, but they need to understand that there are new IAQ priorities now that include significantly increasing the amount of fresh air being used to ventilate and dilute the air, said Cosby.

“A best practice is to consistently run an HVAC

system to remove stagnant air from the room and replace it with fresh clean air,” he said. “We also recommend that building operators change the setpoints on the HVAC system’s fresh air dampers that regulate the intake of outdoor air into a building. Increasing airflow from the outdoors flushes out stale indoor air to help remove microbiologicals, which may include certain viruses and other contaminants. Building operators may also want to disable any demand-controlled ventilation originally set up to reduce outdoor airflow to save energy.”

Increased ventilation with outdoor air is likely to increase energy use, which is undesirable, said Bahnfleth; however, he believes new methods are

EXPLODING DEMAND FOR IAQ

The HVAC industry is ready to help provide healthy indoor air with a range of products and services. These include performing evaluations, monitoring IAQ, and providing solutions for ventilation, filtration, and disinfection.

TSI Inc. makes instruments in a variety of sizes for professionals to monitor for IAQ, occupational hygiene, and other purposes.

“We are seeing demand expand, particularly for indoor air quality,” said Kevin Chase, TSI’s global product manager for exposure monitoring and IAQ.

Chase said TSI’s equipment can’t monitor for viruses like COVID-19, but it does detect ultrafine particulates, which can act as a proxy. The company’s products are getting interest from a new group of customers. For example, medical offices want to monitor particulates in a room after one patient leaves to determine how soon another patient can enter. Beyond trying to prevent spreading the coronavirus, there is a trend to detect a wide range of IAQ parameters, Chase said.

RGF Environmental Group Inc. has seen enough demand for its IAQ products that it made a major investment to ensure they are available.

“It is becoming increasingly more difficult to obtain indoor air quality products,” said Mathew Charles, vice president of RGF’s air products division. “As the current pandemic continues to swell, so does the demand and awareness for air purification products. RGF has been facing many of the same challenges as other manufacturers in obtaining key components to produce over 500 different environmental products.”

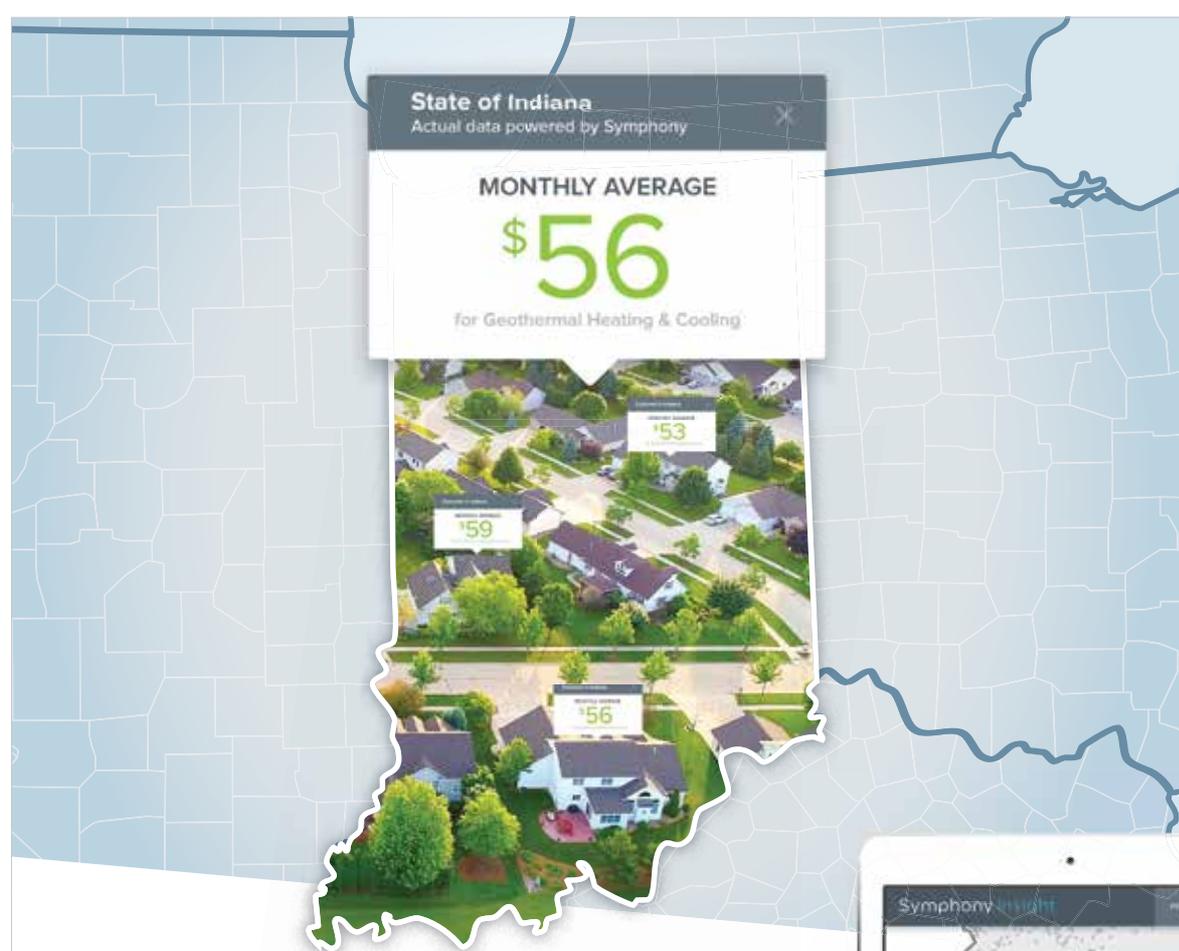
In January, RGF had purchased a 2,400-square-foot building to meet its expected demand for the year. Once the pandemic hit, the company accelerated its three-month plan to one month. This included spending \$2 million in new equipment that was installed and operating in record time.

RGF developed new programmable drilling fixtures and is implementing robotic automation methods to improve productivity and quality. The company tripled its workforce, in part so it could run its metal fabrication and product assembly lines around the clock. To further avoid production delays, RGF signed on with several new hardware suppliers and fabrication houses.

RGF’s most popular product is photohydroionization (PHI), an oxidation technology that minimizes and neutralizes indoor air pollutants such as bacteria, viruses, mold, gases (VOCs), and odors. PHI utilizes a broad-spectrum, high-intensity UV light targeted on a hydrated quad-metallic catalyst surface.

Charles said the company was declared a critical manufacturer by the Department of Homeland Security. This meant RGF’s facilities kept operating during the worst of the pandemic, but the company had to prioritize hospitals, health care facilities, and first responders. Now it can focus more broadly on other customers. And demand from those customers remains extremely strong.

“There is no end in sight,” Charles said. “We haven’t even hit our baseline. With the increased awareness of the importance of indoor air quality, businesses will continue to take the necessary steps to protect their customers and employees. The pandemic has led to a whole mindset change.”



Symphony Insight

Symphony Insight provides you with actual energy usage & operating costs data from WaterFurnace homeowners across the country.

It’s simply the most accurate, compelling way to communicate the financial benefits that geothermal provides and features an easy-to-use interface so you can filter by model, tonnage, geography, and more. Symphony Insight can transform your selling story and is only available to WaterFurnace dealers. To learn more about Insight or becoming a WaterFurnace dealer, visit waterfurnace.com/insight.



visit waterfurnace.com/insight

WaterFurnace is a registered trademark of WaterFurnace International, Inc. ©2020 WaterFurnace International Inc.

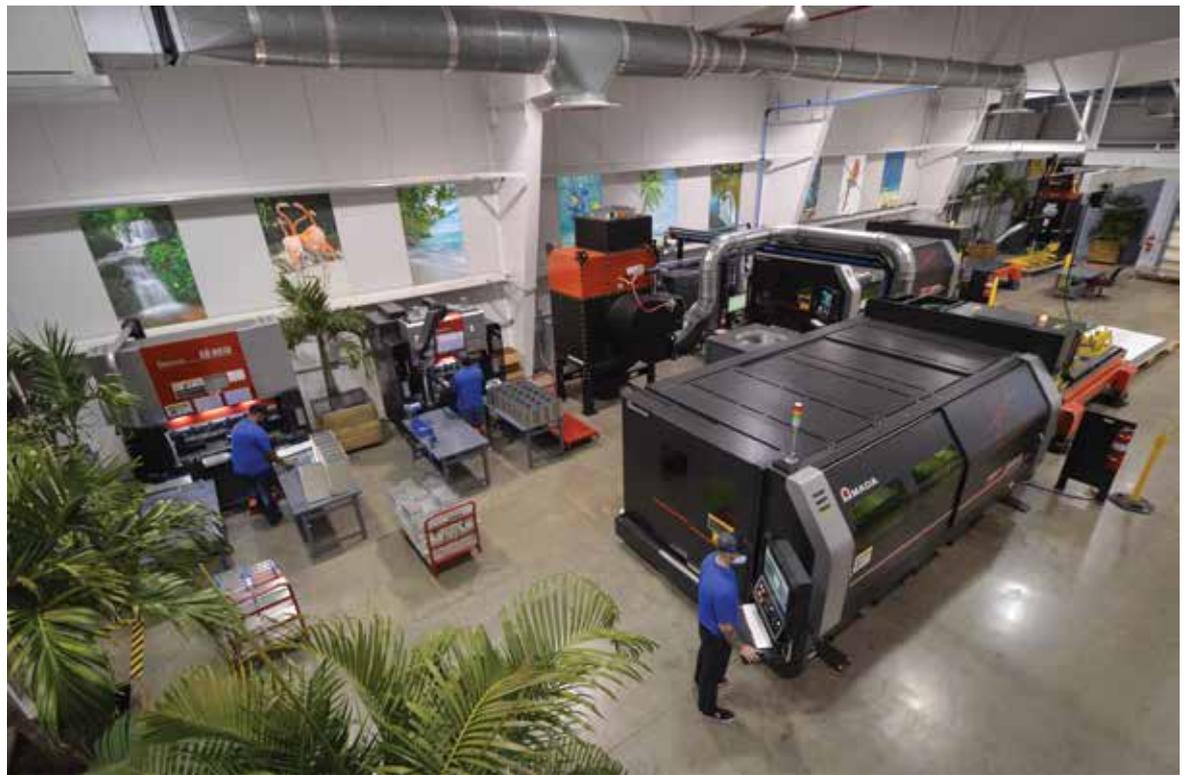


eProduct #11 at achrnews.com

evolving to address that concern. One possible lower-cost option that he sees emerging combines the effects of ventilation and filtration — and possibly other types of air cleaners — to achieve an equivalent air change rate target.

“For example, if a portable HEPA filter unit with a clean air delivery rate of two air changes per hour is placed in a room that

is ventilated with two air changes per hour of outdoor air, the space has a total removal rate of about four air changes per hour,” he said. “Recommendations for what the target should be vary with the source, from about three on the low end to five or six on the high end. The energy impact of engineering controls will certainly be considered when changes to standards related to



SEEKING SOLUTIONS: RGF Environmental Group Inc. employees work on IAQ products at the company's new warehouse. Commercial clients are seeking ways to safely reopen buildings, creating opportunities for HVAC contractors.

Empower your techs to be Performers

1. Service techs become more productive on each call
2. Clients experience immediate impact on performance
3. You add and keep customers
4. You protect your margins

The Alliance does this with

TECHnology & Expertise

- SmartDiagnostics©
Techs find and validate extra work
- SmartExpedite©
Auto-tech parts ordering/handling
- SmartMaintenance©
Provide client-attractive PM, on margin



Smart
Tech
APP

Smartech
Alliance

Memberships include multiple SmartTech App options
Free state-of-the-art dispatch/scheduling, invoicing & more

Try the Alliance
at no cost for 90-days!

Join today at

SmartechAlliance.com

eProduct #12 at achrnews.com

COVID-19 are proposed. That is still some time in the future. We need to absorb the lessons of this experience first and also think about the bigger picture of other infectious diseases that may be epidemic in the future, including seasonal influenza.”

While increased outdoor air ventilation may result in an energy penalty for building owners, the impact really depends on what is done with the individual system from a service and equipment perspective, noted Cosby.

“If recommissioning is conducted for a building reopening to ensure proper equipment operation and controls methodologies for enhanced indoor air quality, the building owners may see energy consumption improvements, especially if they begin economizing more in the winter,” he said. “Additionally, equipment upgrades as part of an improved indoor air quality package can deliver energy savings, so recommissioning of buildings and equipment or new equipment installs may assist building owners in the long run.”

LONG-TERM EFFECTS

The COVID-19 pandemic will likely have substantial long-term effects on both the design and construction of commercial HVAC systems. While these effects are difficult to predict, it is possible that significant changes related to ventilation and air distribution systems could be mandated in the future, said Opie.

“Improving ventilation and filtration is a current focus, and



ADDRESS ISSUES: In terms of maintenance, it is recommended that HVAC and control systems be fully recommissioned with any known issues addressed, prior to a building reopening. PHOTO COURTESY OF CARRIER

we know how to do that, albeit with a commensurate energy penalty for many climate zones,” he said. “However, current studies are looking at airflow patterns in addition to ventilation as a contributor to infectious disease transmission in an enclosed space. Underfloor and thermal displacement air distribution systems, or other system types that promote vertical airflow patterns versus traditional systems, may help reduce the incidents of person-to-person transmission. This can be addressed long-term in new building designs and internal arrangement of the building occupants. Retrofitting existing buildings will present greater challenges to improve ventilation and filtration.”

Design and operational changes related to the pandemic are already happening in new construction, said Budzinski, who noted that some office buildings and critical spaces are starting to use HVAC systems that follow standards typically found in healthcare facilities. These system changes will also have an influence on how certain commercial buildings are operated.

“In the long term, people will be very conscious of elements that contribute to healthy spaces, like touchless environments and technology for airborne particle removal,” he said. “We are driving this change with our customers by launching new technologies and services aimed at helping them come back to their facilities safely.” ■