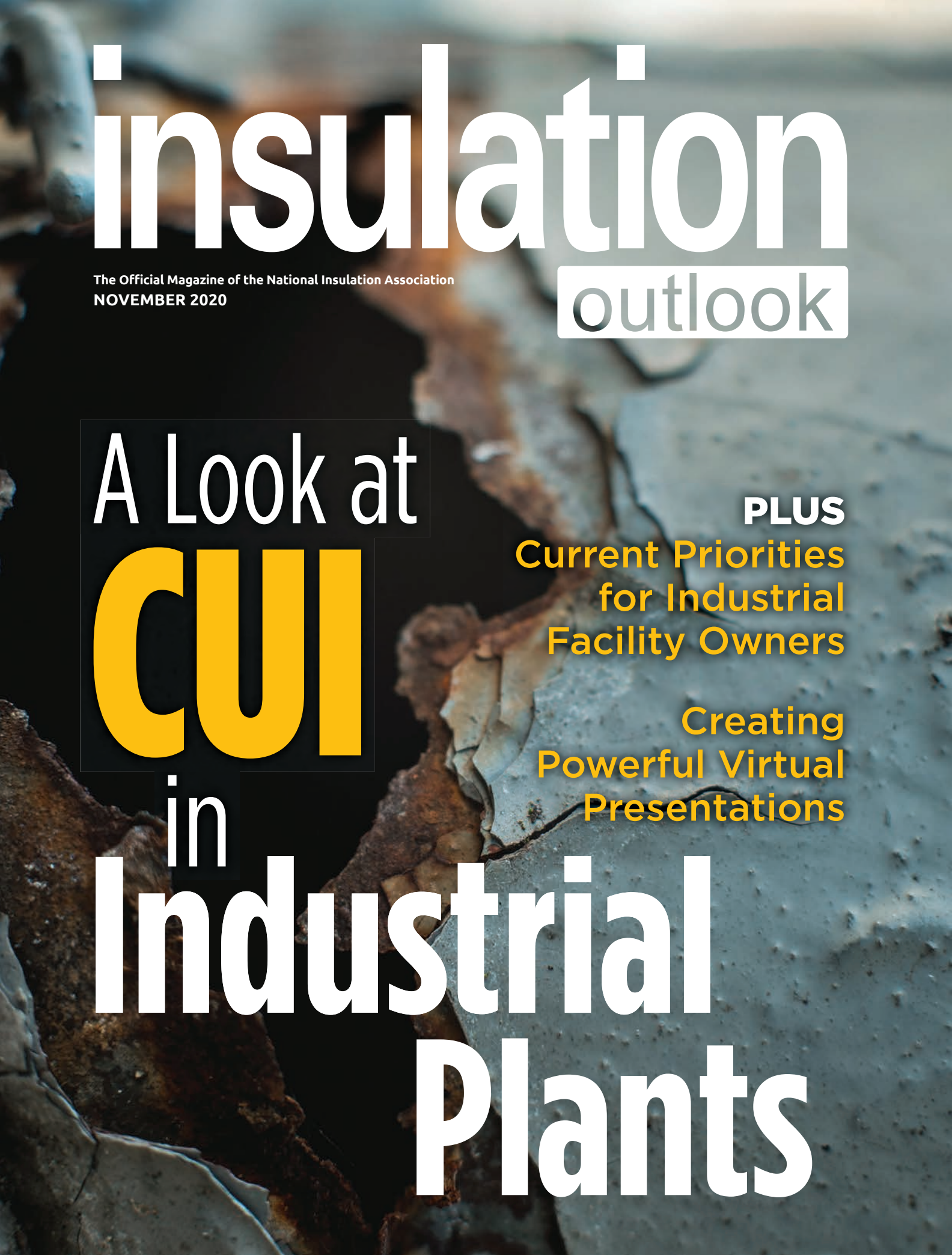

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NOVEMBER 2020

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VOLUME 65 NUMBER 10 NOVEMBER 2020

FEATURES

Insulation Outlook (ISSN 1097-4458) is published monthly (except for the combined issue of April/May 2020) by the National Insulation Association (NIA), 516 Herndon Parkway, Suite D, Herndon, VA 20170; phone 703-464-6422; fax 703-464-5896. Periodicals postage paid at Herndon, VA, and additional mailing offices. POSTMASTER: Send address changes to *Insulation Outlook*, 516 Herndon Parkway, Suite D, Herndon, VA 20170. Unless specifically noted at the beginning of the article, the content, calculations, and opinions expressed by the author(s) of any article in *Insulation Outlook* are those of the author(s) and do not necessarily reflect the views of NIA. The appearance of an article, advertisements, and/or product or service information in *Insulation Outlook* does not constitute an endorsement of such products or services by NIA. *Insulation Outlook* accepts, but assumes no responsibility for, unsolicited manuscripts. Manuscripts submitted for consideration must contain the name, address, telephone number, and business affiliation (if any) of the author. All manuscripts are subject to editorial and technical review by the publisher and/or designated industry representatives. Authors may request to see the edited article submissions before publication. Authors are responsible for obtaining and maintaining records of copyright and use permissions of all images, graphics, and photographs. SUBSCRIPTION RATES. United States—NIA member: $69/year, $108/two years; non-member: $98/year, $155/two years. Canada/International—NIA member: $88/year; $132/two years; non-member: $113/year, $170/two years. Single copies—$10 for NIA Members; $15 for non-members. *Insulation Outlook* is printed in the United States. *Insulation Outlook* and National Insulation Association are trademarks of the National Insulation Association.

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Communication and Understanding Can Prevent All Sorts of Corrosion

This month's issue of *Insulation Outlook* focuses on a topic of grave concern for everyone in the mechanical insulation industry: corrosion under insulation (CUI). The costs of CUI permeate all levels of a facility—from increased budgets to repair and replace insulation and system components, higher operating costs and lost productivity/efficiency, to system failure and safety concerns. The subject is particularly timely, given how many "normal" activities (such as regularly scheduled inspections and maintenance) have been put off during the pandemic. With winter now already upon us in many parts of the country, increased condensation and moisture are ready to cause trouble, and CUI thrives when we are too busy to pay attention to it.

In his article on the subject, "A Different Perspective: Corrosion under Insulation in the Power Industry" (page 8), Gary J. Bases describes how "continued careful attention" to insulation and associated system components is vital to preventing destructive corrosion. That phrase struck a chord as I realized the same can be said of our professional and personal relationships. Just as we cannot put off preventative maintenance, systems inspection, and cleaning, we need to maintain our connections to people. If we let too much time pass without checking in, it corrodes our base. For our businesses, that can mean missed opportunities for work; in our personal relationships, losing touch can have damaging emotional consequences.

One way to maintain those relationships is through effective communication. These days, virtual conferences, like NIA's Virtual Fall Summit, are how many of us collaborate and get work done. How comfortable are you making presentations virtually? Do you worry about holding everyone's attention, knowing that you are competing against any number of distractions coworkers are facing working at home—including technological difficulties? Davie Zielinski, of SHRM, offers tips to solve these problems and more in "Virtual Presentations and Meetings Require New Approaches for Success" (page 28).

Communication also means listening and really hearing what others are telling you. In "Whaddya Want Now? Current Priority Concerns of Industrial Facility Owners and Managers for Mechanical Insulation Systems" (page 16), Darrell Peil shares insight into what keeps many of our clients up at night and explores what you can do to meet their needs.

In her NIA Focus message, Michele Jones observed that one constant in our industry is that it is built on strong relationships. Just as NIA is finding new ways to keep its members connected to the association and to each other during the pandemic, it is up to all of us to step up, participate, and continue to build solid relationships. ***Take the Pledge*** to play an active role in our association, industry, and business community. We cannot let the pandemic, or any other circumstance, corrode the relationships that keep us, our businesses, and our industry healthy.

John Lamberton
President
National Insulation Association

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Proceeding with Confidence

As we wrapped up our first-ever, fully virtual NIA Fall Summit (our annual members-only meeting) in early November, thinking back to how NIA approached this massive shift in format, it required a change of mindset. How does NIA—our organization, Board of Directors, and staff—continue to do what we do? How do we accomplish the same things, but differently? Treading water or taking a wait-and-see approach were not options for us to meet the needs of our members or our industry. So we sought new ways to branch out and reach members where you are—literally and figuratively:
in your offices, taking care of the health and safety of your businesses and staff members while navigating near-term and long-term strategies for business stability and growth.

Against the backdrop of the national election and an international pandemic, we focused on what we know about this industry and our members: We are built on strong relationships. So, we provided the needed conduit for connections by offering virtual meetings (see "Virtual Presentations and Meetings Require New Approaches for Success" on page 28). As we proceed with confidence into 2021, these strong relationships will help sustain our members and our industry.

Turning to the focus of this issue of *Insulation Outlook*, two of the topics that are consistently examined in relation to the industrial sector are corrosion under insulation (CUI) and the importance of specifications. Both subjects are thoroughly addressed in NIA's Thermal Insulation Inspector Certification™ course, which is now a fully virtual, 4-day learning experience that educates participants on how to inspect and verify that materials and mechanical insulation systems have been installed in accordance with the specifications.

We just announced new virtual course dates for February and May 2021:

- **February 10–11, 2021:** Part 1, NIA's Introduction to Mechanical Insulation
- **February 17–18, 2021:** Part 2, NIA's Thermal Insulation Inspector Certification Course
- **Registration Deadline:** January 26, 2021

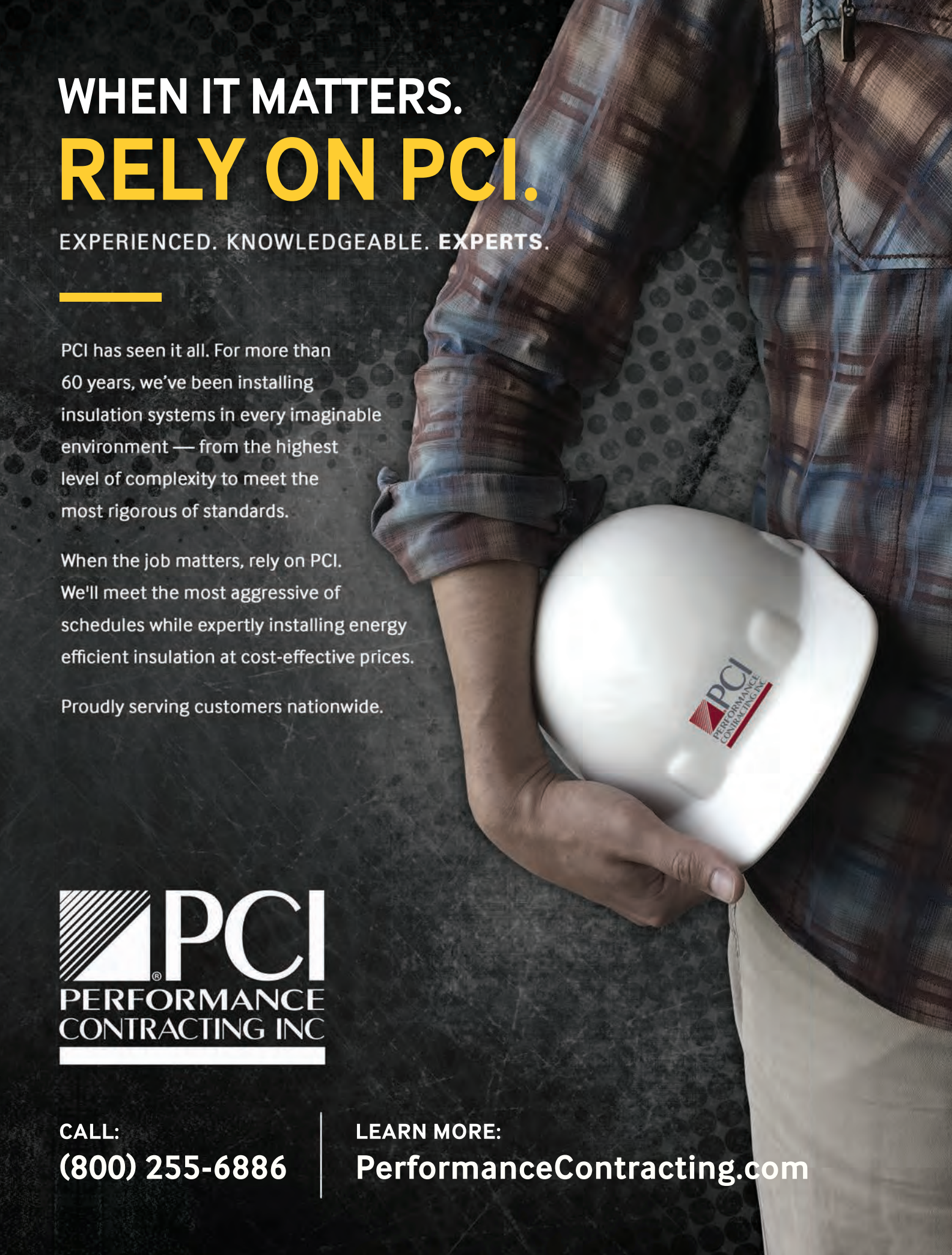
- **May 11–12, 2021:** Part 1, NIA's Introduction to Mechanical Insulation
- **May 18–19, 2021:** Part 2, NIA's Thermal Insulation Inspector Certification Course
- **Registration Deadline:** April 26, 2021

I encourage you to have at least one person on your team attend and receive this one-of-a-kind certification.

Plus, as I mentioned in last month's column, we have launched a 4-hour, stand-alone course on specifications, NIA's Understanding Specifications for Insulation. With the first course completed with over 50 registrants and survey ratings of good/excellent, we are excited to open the registration up for all. The course helps class participants understand the purpose and complexity of specifications, how they vary between market segments, and how that knowledge can benefit their company. NIA will hold additional classes in 2021, but in the meantime, visit *www.insulation.org/training-tools/specifications* to learn more. If you have questions or would like to host your own class, email *training@insulation.org*.

As NIA Consultant Ron King wrote last year in *Insulation Outlook* magazine, "The mechanical insulation industry needs to say goodbye to bad mechanical insulation specifications and heighten awareness by providing examples of good specifications." Through education, training, and advancing the mechanical insulation industry, NIA will proceed in continuing to focus on the power of insulation and the long-term benefits of a properly designed and installed insulation system.

Michele M. Jones
Executive Vice President/Chief Executive Officer
National Insulation Association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A DIFFERENT PERSPECTIVE:

Corrosion Under Insulation in the POWER INDUSTRY

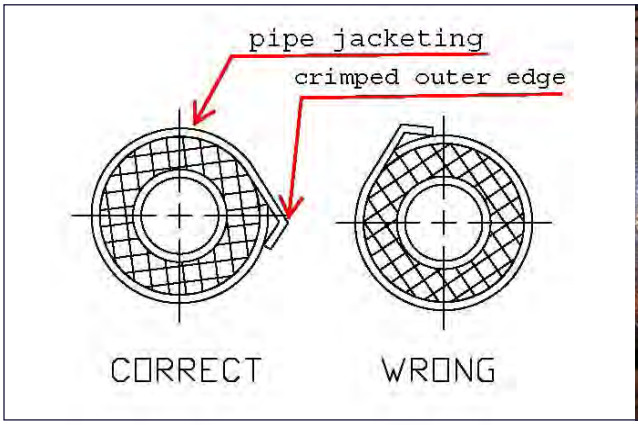
By Gary J. Bases

Corrosion under insulation (CUI) is an ongoing issue at many power plants. Corrosion can be found under insulation used over boiler walls and hot steam piping, or under insulation for flues, ducts, and air-pollution equipment. To better understand CUI, we must know what corrosion is and what causes it.

The most common and costly type of CUI found at power plants is oxide corrosion. It can be described as either plate or pipe corrosion. They are the same type of corrosion, but the medium they carry makes them different. Both terms refer to corrosion caused by moisture getting to the plate, casing, pipe, or tube (sometimes referred to as substrate).

Plate corrosion refers to corrosion found on the plate that is used to fabricate flues, ducts, air-pollution equipment, and casing that is used to fabricate penthouses and vestibules. These areas have either hot air or hot gas inside. If corrosion causes a leak, it can cause harm; but this can be detected before anyone gets seriously hurt because hot gas or hot air leaks have an unmistakable odor, and there is usually no sudden burst or rupture.

Pipe corrosion refers to corrosion found on boiler wall tubes, boiler trim and drain piping, soot blower piping, headers, downcomers, supplies, risers, steam leads, and the balance of plant piping. These systems have either hot



STEAM PLACED ON TOP OF PIPE WITH NO CRIMP FOR WEATHER SEAL

RAIN WATER LEAKING FROM BOTTOM OF PENTHOUSE

water or steam (saturated and superheated). Unlike plate corrosion, if CUI occurs on these systems, it is in most cases not detected until the pipe or tube bursts. With no warning, a leaking pipe or tube can spray hot steam or water, which can cause injuries and even fatalities to the plant personnel working in the area.

Though insulation cannot prevent or stop water from getting to these areas, insulation can have characteristics that could mitigate or help prevent water incursion. The best prevention includes proper installation of the insulation and an outer covering (e.g., jacketing for piping) that is watertight, to keep external water from ever getting to the insulation. Unfortunately, that is not always easy. For example, the placement of the crimped weather edge on pipe jacketing can make a difference, impacting the effectiveness of efforts to stop CUI.

Fortunately, at power plants, the majority of the time temperatures during normal operation are above 230°F, which is approximately the temperature water steams. If water does get into the insulation, it will not be absorbed into the fibers. When a unit is running, the water will steam off. The normal power industry standard requires insulation on any system operating at 150°F and above. This lower temperature is found on such systems as feed water piping systems, some drain and vent piping systems, forced draft fans, and ducts from the forced draft fans to the air heater. These are the systems most vulnerable to external rain and potential CUI.

Obviously, water from external sources like rain is what causes the electrochemical mechanism to occur, which leads to pitting and eventually to holes or cracks on the substrate surface. So what other source(s) can water come from that could get under the insulation?

WET INSULATION

Treated water is used for boil out, acid cleaning, and chemical cleaning. It is used throughout the power industry.

- **Boil out (not to be confused with hydrostatic testing)—**A cleaning process used before a new or re-tubed boiler goes online. The inside of the boiler tubes and systems (i.e., superheater tubes) must be cleaned to remove any foreign material that may have gotten inside—such as grease, oils, or even welding material—before the unit can be filled with water to make steam. This type of cleaning uses potable water with an alkaline reagent (soda ash, caustic soda, phosphates, and silicates) pumped inside the tubes to dissolve any grease, oil, or protective coatings from the manufacturing process. The unit is then cooled, and water is removed quickly.

- **Acid cleaning —**A cleaning process used for boilers that have been in operation. Acid cleaning is used to remove sludge or other corrosion products inside the tubes that may have accumulated over time. Acid cleaning is also used in new boilers prior to boil out to remove original mill scale inside the tubes. The acid is very caustic and must be kept off the outer surface of the tube and removed quickly with solvents.

- **Chemical cleaning—**A cleaning process used to remove grease that has decomposed into organic acids such as hydrochloric acid, hydrofluoric acid, citric acid, and phosphoric acid. All of these acids are not only bad for the substrate but also can attack insulation.

The water for all the above-mentioned cleaning processes comes from an outside source that requires hooking up to the steam-generating boiler. External leaks may occur at weld locations, or a ruptured process line can spill or spray the chemically treated water onto external surfaces. For boiler tube

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cleaning, the entry to the boiler will be directly into a boiler's wall tube or into a header that has a plug or cap. Either way, external insulation is removed to expose the tube or header (and some insulation adjacent to the removed area). In some cases, spillage of the treated water may drip down multiple floors and get into the insulation below. The water may steam away when the unit comes back online, but the organic acids may remain, which can cause CUI.

So, what characteristics do we look for in an insulation material used in the power industry, beyond just its thermal and temperature characteristics?

Insulation can come in many forms and types, but the most common at a power plant are hard block type ASTM C533, type I and II; mineral wool board ASTM C612, type IVB; mineral wool blanket ASTM C592; preformed pipe insulation type ASTM C533, type II: ceramic fiber board and blanket; and fiber glass boards ASTM 612. All have different thermal characteristics, but the other desired characteristics are the same:

1. Resistance to moisture, so as to not create or retain water (low or no porosity);
2. Reasonably low conductivity that will not increase appreciably when in service;
3. Sufficient mechanical strength to withstand shipping, application, and handling;
4. Low shrinkage when heated;
5. Good resistance to disintegration or settling due to vibration, even after prolonged service at operating temperatures; and
6. The ability to retain structural strength during exposure to operating temperatures.

CHEMICAL CLEAN LEAK

Obviously, number 1 is most important to preventing CUI. If you read insulation data sheets for the types of insulation mentioned earlier, all are resistant to moisture. The insulation manufacturers do a 24-hour "soak test" (ASTM C210) to verify that their material retains its thermal characteristics after the insulation has dried. If any of these insulating materials get exposed to high temperatures (above 250° F), the water is steamed away. The insulation material will still retain its insulating properties regardless of how many times this is repeated, as long as the insulation is held in a sandwich construction, which is a system where the insulation is in direct contact both with the outer finish (lagging or jacketing) and against the pipe, tube, plate, or casing. In some cases, an inner support system, such as 22-gauge corrugated inner lagging or road mesh, is used over external stiffeners for insulation support. However, the large-opening configuration of road mesh makes it undesirable for an inner support if a sandwich construction is required.[1]

CUI is preventable, and prevention begins at insulation installation. The best way to prevent CUI is to ensure a properly installed insulation and outer finish (lagging or jacketing), installed in a sandwich-type construction. The next step is frequent plant

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CHEMICAL CLEAN CONNECTION AT LOWER SIDE WALL HEADER

inspections including both the inside and the outside of the boiler. Preventing CUI requires continued careful attention to insulation and lagging, and pipe-jacketed systems, and being careful during boil out and chemical cleaning processes. Remember: It is always cheaper to replace your insulation than it is to repair or replace the substrate-corroded area.

REFERENCE

[1] A sandwich construction is used to prevent loss of insulation material after binder burnout due to vibrations associated with normal boiler operation. The open spaces on road mesh are too large to prevent loss of insulation material over time.

GARY J. BASES *is the President of BRIL, Inc., an independent consulting firm specializing in brick, refractory, insulation, and lagging. He is also the author of* The Bril Book *(a complete guide to brick, refractory, insulation, and lagging systems),* The Bril Book II *(a technical manual that includes bril application drawings for the power-generating industry),* The Bril Book III – the Book of Bril, The Bril Book IV – Boiler Construction, *and* The Bril Book V – Boiler Lagging. *He can be reached at (330-665-2931 or* brilincbases@gmail.com.

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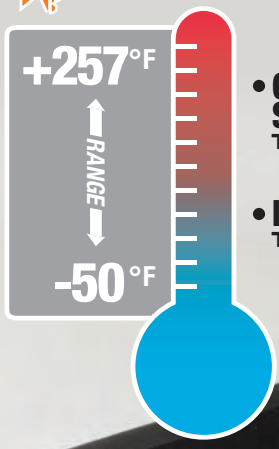

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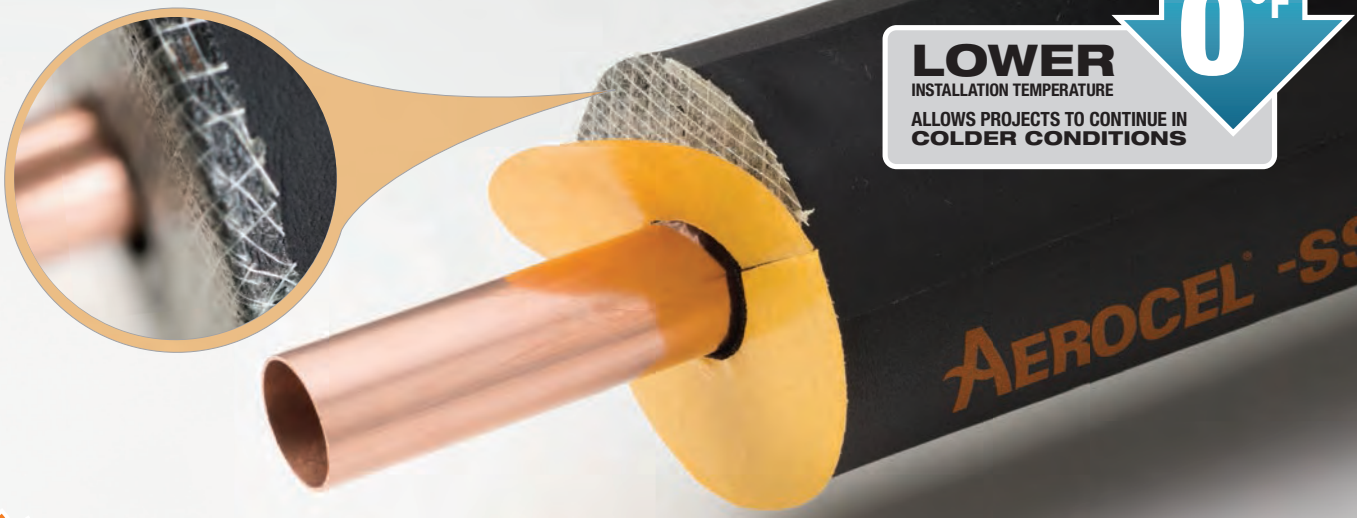

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Whaddya Want Now??

Current Priority Concerns of Industrial Facility Owners and Managers for Mechanical Insulation Systems

By Darrell Peil

As new societal trends develop and regulations are implemented for managing an industrial facility, priority needs for owners and managers of these facilities change. The past priority needs may remain, in addition to the new; or they may fall by the wayside as more pressing subjects develop. Then, there are the basic needs and desires that always exist, to cap off the considerations that go into choices an industrial facility owner and manager make for their business. The intent of this article is not to focus on any *single* component of an insulation system as the major concerns are addressed, but to recognize that the entire assembly of all the components—and the practices employed in selecting and assembling the components of the systems—are the real determiners of the performance delivered by the insulation system. Too often, a silver-bullet solution for a concern is desired, and a designer or user of mechanical insulation will select one component to focus on as the sole solution to the concern being addressed. With mechanical insulation, *systems thinking* is as important as the piping and equipment that it is covering.

Many types of nonresidential buildings are categorized in the "industrial" classification of facilities, used across many segments of commerce for the production, storage, processing, distribution, and transport of a finished product of some kind. The finished products from these facilities range from energy (in the form of fuels and electricity) to prepared food products ready for immediate use by the consumer. An industrial facility might be defined as any facility built for housing a given part of a process or a whole process, and meant to consider the process equipment needs, raw materials, or finished goods staging, and the needs of the typical number of personnel required to facilitate the process.An industrial facility can be any kind of construction, from those fully exposed to the outdoor environment, like tank farms and pipeline facilities, to fully enclosed facilities such as a paper plant that houses the entire production process and storage for finished goods. The range of common industries that exist and have a use for mechanical insulation in their facilities includes the following:

- Electric power generation—including conventional generation plants fueled by coal, gas, nuclear, or oil, and renewable electricity generation (most commonly photovoltaic solar and wind-powered electricity generation).
- Production/extraction of raw energy products like offshore/onshore oil and natural gas-processing facilities.
- Petroleum refining—facilities for hydrocarbon processing into fuels and feedstocks for chemical-processing plants.

- Chemical-processing facilities that are devoted to a wide array of petrochemicals or petroleum distillates like olefins and aromatics, specialty chemicals, and plastics (like polyethylene and polystyrene).
- Pipelines that transport oil, natural gas, and refined products from their point of production to loading terminals or storage facilities.
- Transport and storage terminals for oil, natural gas, refined products like gasoline and diesel fuel, and chemical storage.
- Metals and minerals facilities, including open and subsurface mines, mills, and processing plants for materials like iron ore, aluminum ore, gypsum, copper, gold, silver, feldspar, lithium, lead, nickel, beryllium, and molybdenum.
- Pulp, paper, and wood-processing facilities like mills for lumber; and for converting plants for paper or cardboard.
- Food and beverage processing, distribution, and storage facilities for meat, dairy, vegetable, and bakery foods; and fresh, preserved, and ready-to-eat products.
- Alternative fuels including solids, gases, and liquids production—like ethanol and biodiesel fuels.
- Industrial manufacturing for durable and nondurable goods production, including automotive, semi-conductors, plastic and rubber products, ceramics, textiles, building materials, and furnishings, among other manufactured goods.
- Pharmaceutical and biotechnology industry buildings, including manufacturing and research facilities.

All these industry owners have significant investments in plants, and they have many of the same desires for installations of mechanical insulation systems in those facilities. Today's owners and their facility managers are universally concerned with the key performance characteristics for mechanical insulation systems discussed below. The responsible teams for company facilities' investment are interested in finding systems that provide the most satisfactory combination of these characteristics to deliver cost-effective investment (capital expenditures, or Cap Ex) and operations costs (Op Ex) over the life of the installation. The concerns of owners and managers have changed over time, and those concerns have been influenced by different forces and needs. OSHA requirements, Environmental Protection Agency (EPA) requirements, process changes, introduction of new materials to receive insulation (e.g., new kinds of metal alloys), solutions to old problems that move the focus to something else, societal desires (such as sustainability), and increasing management focus on operational subjects like safety or energy savings are examples of the kinds of drivers that influence the high-priority needs and desires of the industrial facility owner/operator/manager.

Today's major concerns for the industrial facilities design and operations team relate heavily to safety for personnel and the potential savings or costs associated with a good or negative safety record. This is safety as it relates to personnel and safety as it relates to preservation of facilities, and reducing losses associated with both.

Corrosion and Corrosion under Insulation (CUI)

The top concern on the minds of the industrial facility manager for mechanical insulation systems today is the corrosion contribution properties or ability of the system to reduce corrosion of insulated systems. Owners and managers are interested in materials

that have been demonstrated to be noncorrosive to the piping systems and equipment that the insulation system is applied to. The major drivers for the high concern with corrosion are financial and safety issues. From a financial standpoint, a study conducted in 1998 identified the cost to the industrial manufacturing sector of the United States' economy to be $159.7 billion annually from corrosion in general. From the standpoint of ensuring safety of plant personnel, corroded piping and equipment can present personal injury risk from leaking process fluids capable of causing a range of health problems (from irritation to major heat or chemical burns, and even death); high-pressure fluid or gas leaks that can cause significant personal injury, such as burns or amputation; slip-and-fall injuries caused by the leaked fluids; and collapse of equipment, which can crush personnel in a failure. Methods to control corrosion associated with insulated piping and equipment include selecting insulation materials that have specifically been tested, using standardized test methods, for their contribution to corrosion or compatibility with certain metals, or to demonstrate their content of potential corrosion-inducing components. A second step is to select a combination of system components and application procedures that are demonstrated to resist the intrusion of outside products—such as water or contaminants—that could induce the beginning of corrosion.

Moisture and Moisture Transport Resistance

All insulation materials are subject to moisture retention to some degree and by some mechanism of retention. A complete system is required to keep moisture out of the insulation system. The concern over controlling the movement of moisture vapor or liquid moisture through the insulation envelope is a financial one, driven by potential costs associated with concealed decay or corrosion, possible health and safety concerns related to the impacts of unwanted moisture, and lost energy associated with wet insulation systems.

Moisture is one of the required elements for corrosion to establish itself. If moisture—in either vapor form or liquid form—can make its way into the insulation system, the likelihood of corrosion or decay of insulated components increases, whether the components are constructed of metal or wood. A mechanism of corrosion that can be manifested with microbiological growth in moist industrial environments and processes is called microbiologically induced corrosion (MIC). MIC will cause piping and equipment to corrode to the point of failure, much like the more familiar forms of chemically induced corrosion. All the concerns and costs associated with the more common modes of corrosion are exhibited.

Microbiological growth requires a source of moisture to survive. Keeping this moisture out of the insulation system is key to avoiding personnel health problems induced by microbiological growth facilitated by wet insulation systems. Microbiological growth-induced health issues in the workplace can require personnel to seek medical attention and/or treatment, and they may need to take time off to recover from exposure to this growth. Personnel may need to be reassigned to other work areas, or work areas may need to be quarantined from service while the problem is remediated.

Another common industrial personnel safety concern is slip-and-fall injury. Small puddles of water are common causes of this injury type in ambient or heated industrial environments, and ice patches commonly form in industrial freezer environments. Dry, well-sealed, properly constructed insulation systems avoid this problem by not retaining or transporting moisture to an area where the moisture collects and drips; or by not allowing moisture to form on cold operations systems in warm environments, preventing water formation from condensation.

Moisture in the insulation system also results in excessive costs caused by inefficient operation of processes, bringing the need for greater energy input to temper the process, cold or hot. Wet insulation systems do not slow thermal energy flow and turn into energy conductors. This conduction of energy is usually not desired, and it impacts the cost of energy required to operate the process. Another expense of a process that cannot operate at the proper temperature is a failed process, which causes cost through lost productivity, manifesting itself in poor-quality

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product(s) that cannot be sold, increasing cost through generation of scrap. Additional cost also results from a process that must operate at a rate other than maximum efficiency to avoid poor-quality, unsalable finished product. The savings from an insulation system designed and installed to keep water out can be very attractive when saved energy and the efficiency of a properly operating process are considered.

Compression Resistance

Industrial facility owners/managers routinely ask for mechanical insulation systems that resist compression from applied loads. Typically, a load or impact comes from a plant operation that unintentionally imposes force on the insulation system, which results in permanent crushing of certain systems that have not been designed to resist compression loads. The most common scenario for compression force being applied is maintenance and repair operations, when the insulated system is walked on (such as a duct top), used as a stepping surface (like a pipe that is used as a ladder rung), or when access equipment is leaned against the system for support. Another common situation that results in unintended crushing impacts is where there is a high-traffic area with lower headroom or tight passageways for the intended access. Truck traffic, forklift routes, materials handling, or process activity are conditions in the industrial facility to consider when thinking of insulation systems that will be durable and serviceable in the face of heavy imposed loads and impacts.

The costs associated with compressed/crushed insulation systems come from the need to repair or replace the damaged areas of the system, the extra expense associated with operating a system that has excessive energy input to make up for the energy losses associated with compressed insulation systems, and the loss of effective operation of the system/process associated with excessive thermal energy conduction.

The repair/replacement expense is self-explanatory. Early design, material selections, and installation practices can avoid this expense. Many times, insulation system component combinations are selected for considerations other than the ability to resist compressive force. Like many choices, not considering compression resistance can be expensive if the repair/

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1. ASJ Max Jacket does not support mold growth when tested in accordance with ASTM C1338.
2. RSMeans Company, LLC (2019). Installation Comparison of Fiber Glass Pipe Insulation.

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replacement expense becomes a repeated, planned activity. One time incurring repair cost is painful enough, if the damage is unanticipated. Repeated repair and replacement is unfortunately commonplace, as facility managers replace damaged systems with new materials/components of the kind that were originally installed, even if the system does not provide the desired impact/crushing resistance.

With mechanical insulation, *systems thinking* is as important as the piping and equipment that it is covering.

Crushed insulation systems change the transfer rate of energy in direct proportion to the amount of crushing/compression. If a system is compressed 50%, energy transfer increases 50%. These changes in heat transfer rate, either gain or loss, can severely impact process operations; and these impacts can exhibit themselves in process output rates or product quality, much the same as with wet insulation systems. The effect is the same: higher-than-planned energy conduction. In addition, many times, a compressed insulation system leads to a wet insulation system, so the process eventually suffers doubly from both conditions.

Selection of insulation system components—the insulation product, the protective finish/barrier, and the proper methods of installation—is key for compression resistance. Component selections can yield a long-lived, cost-effective system that does what is desired; or they can yield a high-cost, short-lived system that delivers sub-par performance. There is the choice of lower compressive-strength insulations with highly durable finishing materials meant to carry loads and resist impact/compression. The other choice is higher-strength insulation materials that provide harder substrates to support less resilient finish materials and practices. It is important to consider what really is needed from the finished system, as a system.

Fire Resistance

Industrial facility owners and managers are acutely aware of the fire-resistance and combustibility properties of systems; and fire resistance ranks alongside corrosion as a top-priority concern for industrial operations. Industrial fires are a common occurrence, present a high level of threat to the safety of employees, and are very expensive; so any way to mitigate the impact of or avoid the potential for a fire in the industrial environment is sought out. The drivers for insulation systems that offer exceptional fire resistance are safety for personnel, risk reduction, insurance expense reduction, and loss reductions.

First and foremost, plant management has concern for personnel safety in all aspects of operations. Fire safety, both in the form of potential for support of combustion and the generation of products of combustion, is a prime consideration in materials chosen for many industrial projects/facilities. Insulation systems components, in the industrial environment, are often qualified for initial consideration or rejection based on potential fuel contribution (fuel for), support of fire (flame spread), and volume generation and contents of combustion gases (smoke generation/hazardous gas content). Fire resistance is critical for personnel safety by allowing more time for escape before a fire stops evacuation, lessening threat to safety during egress, or offering more safety in the event a person has to take refuge in the facility. Evaluation of insulation system components for lower levels of smoke and hazardous gas emission is significant because smoke and toxic gases are well documented to be more lethal in fires than heat.

Systems that provide low levels of fuel or minimal support for combustion are desired. Lower potential for burning reduces the risk of a fire starting, reducing losses experienced from industrial fires. Low-contributor systems, composed of low-contributor materials, have the impact of limiting the spread of and damage from a plant fire. Systems with low-fuel contribution assist in controlling and extinguishing a fire, limiting the losses in the event a fire starts.

Risk of a fire even starting is reduced by selecting systems that offer high levels of fire resistance;

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and reducing the risk that a fire may start can yield a reduction in insurance premiums for the industrial facility owner.

Some insulation systems are selected and installed to prevent damage to facilities in the event of fire, or they are meant as fire-containment systems. The combination of certain system components may offer a strong level of resistance to combustion and an ability to control heat being conducted at high temperatures. This can prevent other materials from catching fire or failing due to heat fatigue and melting. Stopping fire from affecting certain installations is particularly important in facilities that produce and/or store highly flammable products, like petrochemical facilities.

Reduced First Cost of Facilities

Industrial facility owners and managers are under constant pressure to deliver capital investment projects less expensively, while still delivering facilities that produce finished goods with the level of service and quality desired. Business metrics like return on assets and return on equity to measure efficiency in use of money are high-visibility key performance indicators for an industrial company, and especially important to the capital-intensive nature of industrial production. Insulation systems fall in the category of investments that are capital, hence subject to this financial review.

Some insulation systems, components, and installation practice developments deliver both cost advantages and the performance levels needed, including first-cost savings. These savings come in the form of easier, faster-to-install systems, including more factory-fabricated/assembled components. Product developments have introduced more durable products at lower cost—products that change what is used for a particular part of the system. As long as there is the financial performance drive, there will be developments targeted to meet the need for reduced first cost in the insulation industry.

Acoustical Control—an Up-and-Comer

A need that is increasing in terms of both public awareness and consideration recently is acoustical control in industrial facilities. This need is being driven by safety considerations for personnel, regulatory actions restricting sound levels (both inside and outside the facility), and the goal of cost control via managing losses due to medical and noise-abatement suits from the surrounding community. Personnel safety concerns relate to avoiding hearing losses associated with long-term employment in loud industrial environments. Regulatory actions and rulings implemented by OSHA to address the same concern are reducing noise exposure levels in the workplace. One way to reduce the noise level in an industrial environment is to add acoustical insulation systems to piping and equipment, or to build sound enclosures engineered with insulation systems to reduce process-generated noise. The EPA has been regulating environmental noise levels from certain industrial facilities, as they are constructed, to restrict the sound emanating from the facility. Again, these regulated levels can be achieved quickly and cost-effectively with sound-control constructions/systems built using current components in the market.

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The Bottom Line: Solutions Do Exist that Will Meet Industrial Facility Owner and Manager Needs

The properties discussed above all have standardized test methods for materials to demonstrate and quantify the characteristic sought. The same cannot be said for systems. It is up to an industrial facility's engineer and manager to evaluate the components for inclusion in a system that will provide these priority needs, as well as the basics. Continuing to use prior practices that do not meet needs is an exercise in waste, given the possible selections and combinations available in today's mechanical insulation market. Solutions exist for the conditions experienced in the kinds of common industrial facilities described in this article. It may take some time and creativity on the part of the industry to get the correct solution for the challenge at hand, and some solutions are less popular or promoted, but some very creative solutions to difficult problems exist in the industry, including from smaller suppliers of products and services. Do not give up! Keep asking and the right answer will be found.

DARRELL PEIL *holds the position of Business Development Manager/Commercial & Industrial for Knauf Insulation (*www.knaufinsulation.com*), serving North America. Currently a member of ASHRAE and ASTM, he serves on several committees related to mechanical insulation, systems, and components. He is the current Chair of NIA's Technical Information Committee, a past chair of ASHRAE's TC 1.8 Handbook Subcommittee, and a member of the editorial committee for the* National Commercial and Industrial Insulation Standards manual *(MICA manual). Mr. Peil has been associated with the building mechanical systems industry since 1982, holding various roles in the contracting, distribution, and manufacturing segments of the industry. During that time, he has served in several positions requiring in-depth work with business and product development, systems design, specifications, standards, and codes applying to a wide range of applications. He can be reached at* darrell.peil@knaufinsulation.com.

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Virtual Presentations and Meetings Require New Approaches for Success

By Dave Zielinski, SHRM

As more people work from home, many are being asked to take on tasks and use technologies with which they have only a passing familiarity, such as leading team meetings and presenting online rather than in person.

NIA partner SHRM Online spoke with experts about the different strategies required to succeed in those scenarios, as well as how to use the features embedded in videoconferencing and Web-conferencing platforms.

Presenting Online

Giving presentations online rather than in person requires thinking about how to design PowerPoint slides, keep remote audiences engaged when they are facing more distractions than usual, and troubleshoot technology snafus that arise in these situations.

Pick up the pace. Attention spans dwindle during virtual presentations. "That doesn't mean you need to cut the amount of your presentation content, but rather that you spread it over more slides so there is more frequent on-screen change for audiences," said Roger Courville, a Portland, Oregon-based speaker and trainer who teaches people how to communicate online and is the author of *The Virtual Presenter's Handbook* (CreateSpace, 2009).

Be proactive in guiding audience attention. Presenters should assume that some people are multitasking during an online presentation, Courville said. "You have to ask what the audience is taking away if at times they only glance at what you're presenting," he said. "One thing you can do is make sure the titles on your slides are more descriptive and capture the main point of the slide."

Virtual presenters also should use their voices to guide viewer attention, Courville said. Do not rely only on slide pointers or annotation tools provided on Web-conferencing platforms.

"What happens if some people aren't looking at their screens for a while?" he said. "A presenter might say something like, 'What do you see below the picture of the woman on this slide?' or 'Look at the data on the right-hand portion of your slide.'"

Courville said presenters should monitor audience attention levels by checking whether people are actively participating on chat features or submitting questions during a moderated Q&A. Some Web-conferencing platforms also have a feature called an attention indicator that detects the active application on audience members' screens. If a conference participant has switched

to checking email, for example, the tool would register the change. Courville said that while the tool should not be used punitively, it can help presenters get a read on when attendees may be drifting away so they can switch tactics, such as by introducing an audience poll or a short Q&A session.

Remember: Unnecessary flair can cause technical problems. The use of animation and complex transitions on slides might work well in person, but they can cause problems online, said Bethany Auck, Founder and Creative Director of SlideRabbit, a presentation design and production company in Denver, Colorado.

Web-conferencing platforms handle slide upload and display differently, and experts say it is best to go simple when designing slides, keep file sizes low, and avoid the use of animations or complicated transition techniques between slides.

Consider slide contrast issues and viewer screen size. Assume that many will be viewing your online presentation from smaller laptop screens or even on mobile devices, said Ken Molay, President of Webinar Success, a Web-conferencing training and consulting company in Cary, North Carolina. "Design your slides as if you're creating them for viewers in the back of a large auditorium," Molay said. "Use larger fonts and plenty of white space, and don't put things near the edges of your slides."

Keep in mind that you will not be able to see how your slides display on your audiences' screens, and your viewers' computer settings for contrast, brightness, and color may vary widely. "Remember that light colors can easily wash out online. Stick with high-contrast color designs, and avoid using subtle tone variations that can be difficult for virtual audiences to see," Molay said.

Giving presentations online rather than in person requires thinking about how to design PowerPoint slides, keep remote audiences engaged when they are facing more distractions than usual, and troubleshoot technology snafus that arise in these situations.

Leading Small-Group Virtual Meetings

Many of us have been conditioned to hold hourlong meetings, but experts say that standard should be reconsidered with today's new reality.

"One of the most powerful tools built into videoconferencing solutions is the instant meeting," Courville said. "You can easily set up virtual meetings and collaboration sessions in short blocks of time as needed. There are product development teams I know who hold 15-minute videoconferences every morning. The medium can be used as flexibly as a phone call."

Leaders, mute yourself when others are speaking. "Many of us use words like 'OK' or 'uh-huh' as confirmation that we're listening when others are speaking," Molay said. "But in an online meeting, especially if you're the leader or a person of higher authority, others often hear that and they stop talking, wondering if you wanted to interrupt to say something or even that they might have said something wrong. If you stay completely silent, it lets people complete their thoughts."

Note that not all technology platforms are created alike. If you

have not yet purchased a videoconferencing or Web-conferencing platform (most major providers are offering discounts or free trial versions of products during the coronavirus outbreak), Molay said it is important to understand the differences between systems.

For example, the videoconferencing platform Zoom is among those that Molay said have a useful "push to talk" feature that is handy for small-group virtual meetings.

"Everyone enters the meeting in a default mute mode, but when they hold down the space bar, it opens up their microphone," he said. "It only stays open while it's pressed and people are speaking, like the old walkie-talkie."

Molay said the feature is good for group discussions in which everyone wants a chance to participate but a leader doesn't want all microphones open at once, since they're likely to pick up background noise when participants work from home.

You also may want to compare audience polling tools in different systems, Molay said. "Some only allow for a few response choices, while others offer more," he said. Many users likely will also want a polling feature that allows participants to select the best answer, rather than all that apply, he said.

Question management tools—a helpful feature for more structured and moderated Web conferences—also can vary by platform. These tools give session leaders a way to prioritize audience questions.

"If you have 100 people in a Web conference, you'll want a way to mark that certain questions might be a high priority to address on air versus a lower priority that you can follow up on later," Molay said. "Some platforms are better than others in how they allow you to reorder and organize questions."

He added that other key system features to evaluate are the number of participants allowed on video calls, the ability to automatically record Web conferences for later viewing, and tools that allow you to easily edit recordings or create transcripts of online meetings.

Watch how you position yourself on webcam. Do not position yourself in front of bright windows, which will place you in shadows. Raise your laptop so the camera is at eye level or higher.

"Laptop webcams are sitting lower and often shoot straight up into your nostrils," Molay said. "That's not the best look for most people."

Troubleshooting Technical Problems

People will inevitably experience problems with video, audio transmission, or other functions in virtual settings. "The first thing to do is isolate whether it's just that person having the issue or everyone," Courville said. "In most cases it's just one person, but you usually don't want to stop the whole meeting or presentation just because one person is having a problem."

Molay said leaders can afford to spend only a limited amount of time trying to fix an individual's issues. "It's easy to focus on squeaky wheels in online settings, but you don't want to slow down 30 people to satisfy one person."

Meeting leaders also can mute and unmute participants on most platforms if people are having technical issues and bothering others, Courville said.

Auck, SlideRabbit's founder, said one tactic she uses when leading virtual presentations or workshops is to keep a second computer in view and log in as an attendee. "It won't account for all of the variables of people logging in remotely, but you'll have a tighter view of any lag in how your slides are advancing for viewers," she said.

Mike Fasciani, Senior Research Director at research and advisory firm Gartner, said employees who reside in bandwidth-challenged areas can take steps such as turning off video and joining meetings using dial-in audio options, while still seeing the content being shared through a browser.

Remote workers also can use their 4G-enabled smartphones rather than laptops or desktops in virtual meetings, he said. "Many video-meeting and workstream collaboration applications were built with a mobile-first design intent and so work as well as, if not better than, the desktop and Web client access," he said.

DAVE ZIELINSKI *is a freelance Business Writer and Editor in Minneapolis, Minnesota.*

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NEWS BRIEFS

Nonresidential Construction Employment Expands in September

The construction industry added 26,000 jobs on net in September, according to an Associated Builders and Contractors (ABC) analysis of data released by the U.S. Bureau of Labor Statistics. During the last 5 months, the industry has added 689,000 jobs, recovering approximately 64% of the jobs lost since the start of the pandemic.

Nonresidential construction employment added 4,000 jobs on net in September. Two subsegments, nonresidential building and nonresidential specialty trade, experienced employment gains, adding 5,300 and 2,100 jobs, respectively. Heavy and civil engineering partially offset those gains, however, losing 3,400 jobs on net.

The construction unemployment rate was 7.1% in September, up 3.9 percentage points from the same time last year. Unemployment across all industries fell from 8.4% in August to 7.9% in September.

"The economic recovery that began in May is losing momentum, as Congress has failed to pass another stimulus bill to offset the continued impacts of the pandemic on travel, tourism, energy production, and many other industries," said ABC Chief Economist Anirban Basu. "With many states still suffering high positivity rates and the economy not fully reopening, combined with the uncertainties of an especially contentious presidential election, elevated financial market volatility, and looming winter weather, the near-term outlook will continue to deteriorate absent further stimulus."

"While nonresidential construction employment expanded in September as some projects that had been postponed or interrupted came back to life, the number of jobs gained was rather unimpressive," said Mr. Basu. "In May and June, nonresidential construction added more than 228,000 and 76,000 jobs on net, respectively. But commercial real estate conditions are poor, credit conditions have tightened, and state and local government finances have been undermined. Developers and others continue to contemplate the longer-term implications of corporate bankruptcies, recent layoff announcements, remote work, and the possibility of a second recession."

"Anecdotal information suggests that bidding opportunities are becoming scarcer and competition for new projects fiercer, as indicated by ABC's Construction Backlog Indicator," said Mr. Basu, "although a significant stimulus package—especially with a substantial infrastructure component—could offset construction employment decline during the winter months."

For more information, visit *www.abc.org*.

Construction Spending Rises 1.4 Percent in August: Residential Boom Outweighs Private Nonresidential Decline and Flat Public Categories

Construction spending increased by 1.4% in August, as strong gains in residential construction outweighed decreases in most private nonresidential segments and many public categories, according to an analysis of recent government data by the Associated General Contractors of America ("Association"). Association officials cautioned that nonresidential construction demand will likely continue to stagnate without new federal measures to offset the economic impacts from the coronavirus.

"The August spending report shows a stark divide between housing and nonresidential markets that appears likely to widen over the coming months," said Ken Simonson, the Association's Chief Economist. "With steadily rising business closures and worker layoffs, and growing budget gaps for state and local governments, project cancellations are likely to mount and new starts will dwindle."

Construction spending in August totaled $1.41 trillion at a seasonally adjusted annual rate, an increase of 1.4% from July's upwardly revised total. Residential spending jumped by 3.7%, while private and public nonresidential spending inched down by a combined 0.1%.

Private nonresidential construction spending contracted by 0.3% from July to August, with decreases in 9 out of 11 categories. The 2 largest private non-

residential segments, power construction and commercial construction—comprising retail, warehouse, and farm structures—each shrank by 1.1%. Among other large segments, manufacturing construction rose 2.2%, and office construction slipped 0.3%.

Public construction spending edged up 0.1% in August, but 8 of 13 categories declined. Despite the increase in August, public construction spending has trended down by 2.5% from its high point in March.

Private residential construction spending increased by 3.7% in August, powered by a 5.5% jump in single-family homebuilding and a 3% gain in residential improvements. In contrast, new multifamily construction spending dipped by 0.1% from July.

Association officials noted that demand for nonresidential construction was being impacted by broader economic challenges brought about by the coronavirus. These challenges are impacting demand for many commercial projects, while also impacting state and local construction budgets. The construction officials urged Congress and the White House to work together to enact new recovery measures to help boost economic activity and demand for construction.

"One of the biggest challenges facing the construction industry is the lack of demand for many new types of commercial and local infrastructure projects, especially after the current crop of projects is completed," said Stephen E. Sandherr, the Association's Chief Executive Officer. "Washington officials can give a needed boost to construction demand and employment by boosting infrastructure and putting in place liability protections for firms that are protecting workers from the coronavirus."

To learn more, visit *www.agc.org*.

OSHA Issues Frequently Asked Questions (FAQs) Confirming N95 Respirators Protect Against the Coronavirus

OSHA has published a set of FAQs on how N95 respirators effectively protect wearers from coronavirus exposure. OSHA is aware of incorrect claims stating that N95 respirators' filter does not capture particles as small as the virus that causes COVID-19. OSHA's new FAQs explains why an N95 respirator is effective at protecting users from the virus.

Visit OSHA's COVID-19 web page at *www.osha.gov/SLTC/covid-19* for further information and resources about the coronavirus.

Dodge Momentum Index Increases in September

The Dodge Momentum Index rose 3.7% in September to 130.8 (2000=100) from the revised August reading of 126.2. The Momentum Index, issued by Dodge Data & Analytics, is a monthly measure of the first (or initial) report for nonresidential building projects in planning, which have been shown to lead construction spending for nonresidential buildings by a full year. Both components of the Momentum Index rose during the month. The commercial component rose 3.9%, while the institutional component moved 3.2% higher.

The Momentum Index has made steady, albeit slow, progress since hitting a nadir in June. In the third quarter, the Momentum Index gained 2.2% over the previous 3 months. The commercial side of the Momentum Index gained 7.4% in the third quarter, led by a large number of warehouse projects entering planning as e-commerce retailers, such as Amazon Inc., continue to push projects forward. Somewhat surprising is that office projects entering planning also posted a tepid gain, despite concerns that office work is shifting to remote settings. The institutional component, however, lost ground in the third quarter, dropping 6.8%. Education projects have borne the brunt of this drop, as state and local government revenues declined, creating the need for budget cuts across the country.

In September, 7 projects (each with a value of $100 million or more) entered planning. The leading commercial projects were a $120 million office project in San Jose, California, and a $110 million Georgia-Pacific distribution facility in De Pere, Illinois. The leading institutional projects were the $275 million EV Smith Research Center at Auburn University in Auburn, Alabama, and a $250 million arena in Palm Desert, California.

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Johns Manville Shares Product News

Johns Manville (JM) recently announced that its duct liners, Linacoustic RC and Linacoustic RC-HP, are now GREENGUARD® Gold Certified at all available thicknesses. The GREENGUARD Gold Certification verifies that Linacoustic RC and RC-HP meet Underwriter Laboratories' standards for low chemical and volatile organic compound emissions. Now certified as low-emitting, Linacoustic RC and RC-HP are designed for applications in schools, hospitals, and offices where low-emitting materials are typically required. For more information, visit *https://bit.ly/3ktFZA9*.

JM also announced the release of 1-inch thick, VVSD (very, very small diameter) Spiracoustic Plus Spiral Duct Liner, which is a pre-kerfed, single-wall, spiral duct insulation engineered for spiral ducts with an outer diameter of 6 to 8 inches. Benefits include:

- Specifically engineered for insulating 6- to 8-inch diameter ducts;
- Excellent thermal and acoustical control;
- Available in 1-inch thickness;
- Features Permacote® acrylic coating, for added airstream surface protection; and
- Laminated with a tough, reinforced FSK facing.

To learn more, see *https://bit.ly/3jfjzkG* and visit *www.jm.com*.

Mascoat Introduces 2 Primers for Use under Thermal Insulating Coatings

Mascoat, a thermal insulating and sound-damping coatings manufacturer, announced 2 new primers for use in conjunction with the company's line of industrial coatings. The addition of these primers to its technology backbone will allow Mascoat to better serve its customers with a single source for coatings systems that protect equipment from corrosion for 20+ years. In addition, the complete system solution will simultaneously provide energy retention, radiant heat gain protection, and a personnel shield from burns.

Mascoat 250P Epoxy, an aluminum high solids epoxy mastic primer, provides excellent corrosion protection over marginally prepared substrates up to 250˚F (121˚C). The 2-part coating, with a useful pot life, is formulated to perform under Mascoat's insulating coatings. It can also be top coated with epoxies, polyurethanes, and polysiloxanes. The technology will be predominantly used on

structural steel surfaces, including steel tanks, barges, refineries, petrochemical plants, power plants, railcars, pulp and paper mills, and other facilities.

Mascoat 400DFP, a dry fall modified copolymer primer, is designed for heated substrates up to 400˚F (200˚C). After application, this single pack technology will dry to a powder within 10 to 20 feet. Importantly, it can be safely used in areas where overspray damage to nearby cars and equipment would be a concern. It assures maximum adhesion and corrosion protection, even in limited surface preparation areas, and it does not require a heat cure. Engineered specifically for heavy industrial equipment, Mascoat 400DFP may be used on any service area ranging from ambient to 400˚F (200˚C) for corrosion protection.

"Our water-based insulating coatings require a primer when applied to ferrous substrates, and these primers allow us to fully service a client's needs for an application," said Robert Browning, Vice President of Sales for Mascoat. "Customers will have a single source for materials needed for an insulating coatings application. Whether they are trying to save energy costs, protect workers from burns on hot substrates, or reduce solar loading, they can be confident that their assets will be fully protected for years to come with Mascoat's line of performance primers and insulating coatings."

To learn more, visit *www.mascoat.com*.

Please send your press releases to *editor@insulation.org*.

***Insulation Outlook*, Statement of Ownership, Management and Circulation**
This statement is required by 39 U.S.C. 3685 and in accordance with E216.3 of the Domestic Mail Manual, showing the ownership of *Insulation Outlook*, publication number 36-8050. The magazine is published monthly, except April/May, at 516 Herndon Parkway, Suite D, Herndon, VA 20170. The annual subscription price is $69/member and $98/non-member. Sr. Director of Publications/Publisher, Julie McLaughlin, National Insulation Association. Copy Editor, Leslie S. Emery. Complete mailing address is 516 Herndon Parkway, Suite D, Herndon, VA 20170. The publication does not have bondholders, mortgages, or other security holders. The purpose, function, and nonprofit status of this organization and the exempt status for federal income tax purposes have not changed during the preceding 12 months. The average number of copies of each issue during the preceding 12 months, and the actual number of single issue nearest to filing date (October 2020), respectively, are as follows: (a) Total Number of Copies (net press run): 11,396/11,610. (b) Legitimate paid and/or requested distribution: (1) outside county paid/requested mail subscriptions: 8,054/8,050; (2) In-county paid/requested mail subscriptions: 0/0; (3) Sales though dealers and carriers, street vendors, counter sales and other paid or requested distribution outside USPS: 0/0; (4) Requested copies distributed by other mail classes through the USPS: 0/0. (c) Total paid and/or requested circulation: 8,054/8,050. (d) Non-requested distribution: (1) Outside county non-requested copies: 3,177/3,500; (2) In-county non-requested copies: 0/0; (3) Non-requested copies distributed through the USPS by other classes of mail: 0/0; (4) Non-requested copies distributed outside the mail: 0/0. (e) Total non-requested distribution: 3,177/3,500. (f) Total distribution: 11,231/11,550. (g) Copies not distributed: 197/60. (h) Total: 11,428/11,610. (i) Percent paid and/or requested circulation: 71%/70%. Requested and Paid Electronic Copies: 0/0.

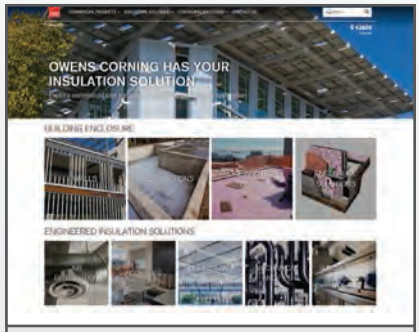
I certify that all information furnished on this form is true and complete.

Julie McLaughlin

HOTLINKS

Knauf Insulation North America
www.knaufinsulation.us

Knauf Insulation is a leading global manufacturer of thermal and acoustical glass mineral wool insulation for residential, C&I, and OEM applications. Our mission is to challenge conventional thinking and create innovative solutions that shape the way we live and build in the future, with care for the people who make them, the people who use them, and the world we live in.



Owens Corning
www.owenscorning.com/insulation/commercial

Owens Corning develops, manufactures, and markets insulation, roofing, and fiber glass composites. Global in scope and human in scale, the company's market-leading businesses use their deep expertise in materials and manufacturing to develop products and systems for commercial and residential buildings.

Polyguard Products, Inc.
www.polyguardproducts.com/mechanical

Polyguard is committed to providing innovative, cost-effective insulation systems and accessory products to the mechanical insulation industry. Our products include the Alumaguard® Family of weather-proof claddings; Insulrap™ and Zero Perm vapor barriers; RG2400® corrosion gels; Polyphen phenolic, and Dow XPS for pipe insulation fabrication.

ADVERTISEMENT INDEX

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INDUSTRY EVENTS CALENDAR

Due to COVID-19, many 2020 events have been canceled, and organizations have shared their 2021 events. We recommend confirming the status of any event with the individual organization in case of cancellations.

NATIONAL INSULATION ASSOCIATION (NIA)

703-464-6422
www.insulation.org/events/calendar
events@insulation.org

NIA Meetings

Virtual Fall Summit 2020
November 3–6, 2020

Education and Training

February 10–11, 2021: Part 1, NIA's Introduction to Mechanical Insulation
February 17–18, 2021: Part 2, NIA's Thermal Insulation Inspector Certification Course
Registration Deadline: January 26, 2021

May 11–12, 2021: Part 1, NIA's Introduction to Mechanical Insulation
May 18–19, 2021: Part 2, NIA's Thermal Insulation Inspector Certification Course
Registration Deadline: April 26, 2021

Regional Insulation Meetings

www.insulation.org/events/regionalcalendar
events@insulation.org

Central States Insulation Association (CSIA)
Contact: Rachel Pinkus
937-278-0308
www.csiaonline.org

2021 CSIA Spring Conference
April 26–28, 2021
Marriott Griffin Gate
Lexington, Kentucky

Eastern States Insulation Contractors Association (ESICA)
Contact: John F. DeLillo
516-922-7855
www.esica.org

2021 ESICA Spring Conference
May 5–7, 2021
Myrtle Beach Marriott Resort at Grande Dunes
Myrtle Beach, South Carolina

Midwest Insulation Contractors Association (MICA)
Contact: Tom Shimerda
402-342-3463
www.micainsulation.org

NIA's Understanding Specifications for Insulation Virtual Course
October 14, 2020

Southeastern Insulation Contractors Association (SEICA)
Contact: Phil Davenport
757-536-8437
www.seica.org

Spring 2021 Conference
June 27–29, 2021
The Breakers
Palm Beach, Florida

Southwest Insulation Contractors Association (SWICA)
Contact: Linda Tracey
713-977-0909
www.swicaonline.org

EXPO 2021
February 4, 2021
Pasadena Convention Center
Pasadena, Texas

Thermal Insulation Association of Canada (TIAC)
Contact: Robin Baldwin
613-724-4834
www.tiac.ca

2021 Annual Conference
August 11–14, 2021
Delta St. John's, St. John's
Newfoundland, Canada

Western Insulation Contractors Association (WICA)
Contact: Robert Bergman
801-364-0050
www.wica1.com

2021 Annual Convention
September 12–14, 2021
The Phoenician
Scottsdale, Arizona


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MADE BY FAMILY,
FOR FAMILY
Our customers are more than names and faces. They're family, who trust us to keep their homes and businesses safe and insulated. That's why from our products to our services, we're devoted to giving every member of our Knauf family the very best.
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To find out more visit knaufnorthamerica.com.

Polyguard®

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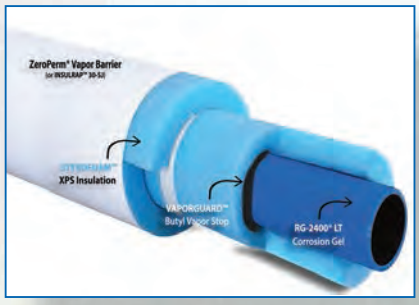
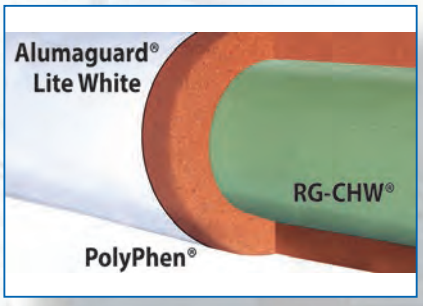
Long known for its weatherproof cladding and vapor barriers, Polyguard's Mechanical Division now offers superior insulation systems (including corrosion protection for CUI) targeting below ambient and chilled water applications.

Alumaguard

RG-2400



Styrofoam™ XPS



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214-515-5000 Mechanical Division

For a complete list of products, visit www.Polyguard.com/mechanical