Advances in Water Heating Technology

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After the Heat of Summer, What’s Next?

Even though the approach of fall means crisp apples, brightly colored leaves, and a greater use of home and commercial heating equipment, it is still difficult for most of us to see summer go. But as we savor the memories of another happy summer, we can ease into fall by perusing this issue of AHRI Trends!

In this issue, we take a look at the latest technological trends in water heaters; an exciting new guide to the proper design and installation of zone control systems (ACCA’s Manual ZR), the importance of carbon monoxide detectors, and a handy primer on AHRI’s certification program and its growing importance in today’s energy-conscious world. In our Policy Watch, readers will learn about what’s happening in Washington, with federal agencies like the Department of Energy busily trying to duplicate successful private-sector programs like AHRI’s certification program and a Congress mired in acrimony and completely occupied by spending curbs and the looming presidential election cycle. All these things have very serious consequences for our industry.

AHRI and its member companies are very active in Washington, in the states, and around the world promoting our industry and our world-class standards and performance certification programs. Together with our association partners, including those that represent contractors, technicians, and distributors, we are working to ensure a level playing field for those who work in our industry.

I hope you enjoy the articles. This magazine is for you. In it, we are committed to providing you with information that you can use in your everyday jobs. Please let us know how we’re doing, and thanks for reading!

Sincerely,

Morrison Carter
AHRI Chairman
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Department of Energy Extends Certification Compliance Deadline by 18 Months

At the urging of AHRI, the Department of Energy (DOE) has extended by 18 months the compliance deadline for new certification requirements specified for commercial heating, refrigeration, and air conditioning equipment; water heating equipment; walk-in coolers and freezers; and automatic commercial ice makers.

The rule was originally published in the Federal Register on March 7, 2011, setting forth onerous new procedures for manufacturers to demonstrate compliance with federal energy efficiency standards. It was immediately followed by a letter from AHRI outlining several concerns, including the fact that the rule would result in increased costs, potential shipment delays, and administrative hurdles for products covered by the rule—all of which are unnecessary given the fact that AHRI already reports compliance with federal minimum efficiency standards to DOE for participants in its certification program.

While the rule was scheduled to go into effect on July 5, it was postponed 18 months to allow DOE to assess ways to reduce the testing burden on manufacturers.

AHRI will continue to closely monitor this rule, and will meet with DOE officials as necessary.

While the rule was scheduled to go into effect on July 5, it was postponed 18 months to allow DOE to assess ways to reduce the testing burden on manufacturers.
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AHRI Praises Rule to Establish Regional Energy Efficiency Standards, Raises Concerns Over Limits on Stand-by Power

The Department of Energy’s (DOE) direct final rule establishing regional efficiency standards for residential furnaces, central air conditioners, and heat pumps was published in the Federal Register on June 27th. The rule mirrors efficiency levels suggested in the consensus agreement crafted by AHRI and several energy efficiency advocacy groups in October 2009.

The minimum energy efficiency standards and the standby power requirements will become effective on May 1, 2013, for furnaces and January 1, 2015, for central air conditioners and heat pumps. The direct final rule is effective October 27, 2011, unless significant adverse comments are received on or before October 17. If the DOE receives adverse comments that are deemed to provide a reasonable basis for withdrawal of the direct final rule, a timely withdrawal of this rule will be published in the Federal Register.

Even with DOE’s announcement, legislation is needed because a key provision of the agreement can only be done via a change to the law. It would allow states to include even higher minimum efficiency levels for heating and cooling systems in their building codes for new construction. The Senate bill also includes standards for several other AHRI products based on similar consensus agreements. [Read more about the Implementation of National Consensus Appliance Agreements Act of 2011 on page 7.]

Based on these standards, a typical new air conditioner in the South will use about 40 percent less energy, and a typical new furnace in the North will use about 20 percent less than one sold before national standards were established in the late 1980s. According to DOE, the updated air conditioner and heat pump standards will save enough electricity over 30 years to meet the total energy needs of 8.7 million typical American homes for a year. The new furnace standards will save about 31 billion therms over 32 years, or enough natural gas over the same period to heat 62 million typical American homes. (One therm is equal to 96.7 cubic feet of natural gas.) The new standards will save U.S. consumers more than $13 billion between their effective dates and 2030.

The signatories to the joint agreement on which the standards are based are: AHRI, the American Council for an Energy-Efficient Economy (ACEEE), the
Alliance to Save Energy, the Appliance Standards Awareness Project (ASAP), the California Energy Commission (CEC), the Natural Resources Defense Council (NRDC), other advocacy groups, and more than a dozen individual furnace, heat pump, and air conditioner manufacturers.

AHRI-supported INCAAA Bill Stalls in the Senate

Early this year, the Implementation of National Consensus Appliance Agreements Act of 2011 (INCAAA) was introduced in the Senate by Energy and Natural Resources Committee Chairman Jeff Bingaman (D-NM) and Ranking Member Lisa Murkowski (I-AK). The bill would enact into law several consensus agreements on new regional standards furnaces, heat pumps, and central air conditioners. It would also enact new federal efficiency levels for heat pump pool heaters, commercial furnaces, service-over-the-counter refrigerators, and small duct, high velocity air conditioners, as well as revisions to water heater efficiency test procedures.

The consensus agreements contained in INCAAA were crafted by AHRI; appliance manufacturers, represented by the Association of Home Appliance Manufacturers (AHAM) and the National Electrical Manufacturers Association (NEMA); and energy efficiency advocates, including the American Council for an Energy-Efficient Economy (ACEEE), the Alliance to Save Energy (ASE), and National Resources Defense Council (NRDC), and the California Energy Commission. The bill enjoys broad support because it would reduce the regulatory burden placed on manufacturers, reduce nationwide energy consumption, and save consumers money on their monthly energy bills.

While Rep. Fred Upton (R-MI), Chairman of the House Energy and Commerce Committee, has expressed support for INCAAA, he has indicated that he will not allow his Committee to consider it until the Senate has acted first.

AHRI staff continues to work with our allies in the House and Senate to enact this bill before the end of the session.
Manufacturers are developing a variety of new technologies in water heating products and systems to meet the demands of homeowners who want greater convenience and lower energy bills—and to comply with new federal energy efficiency standards for such products, which go into effect in 2015.

Among the technologies helping to advance water heater innovation are condensing gas-fired systems and heat pump technology. Manufacturers are also incorporating solar and geothermal equipment into their product lines as these technologies move into the mainstream. Also, as technologies advance, they can be combined. These changes are creating new and innovative products that encourage contractors to have conversations with their customers about how water heating has evolved and can make a significant difference in the home to create greater savings and meet their changing needs.
Moving toward planned replacements

For most consumers, water heating is pretty much taken for granted—the unit is typically in the basement, often in a utility room, rarely seen, but used daily. Consequently, about 90 percent of water heater replacements are of an emergency nature, notes Marc Neufcourt, certification manager at AHRI. Homeowners often don’t plan to replace an existing unit with a higher efficiency model—they typically rely on what the plumber/contractor has available when their water heater fails. While most homeowners will say that they never saw it coming, the expected service life for a residential water heater is 12 to 14 years.

In most cases, the consumer chooses the minimum efficiency model because they may not have any other options. “It’s a matter of how cheaply I can replace the unit, as rapidly as possible,” Neufcourt says of the homeowner’s mindset. “These typically have been the higher sales volume models.”

With new technologies, manufacturers want consumers to think more proactively about water heating products so they can make more informed decisions about selecting the optimal water heater for their needs. Planned replacements also allow the consumer to financially prepare for the purchase and give the plumber/contractor enough time to order the higher efficiency unit.

Federal minimum energy efficiency standards play a role in driving new technology

On April 16, 2015, the Department of Energy’s new efficiency standards take effect. Condensing gas and heat pump technologies will play a significant role in bringing water heaters to the new standards. For electric resistance storage water heaters, heat pump technology will be the only way to achieve the 2015 energy efficiency requirements for units over 55 gallons, Neufcourt says.

“Heat pump technology is more expensive, but with greater manufacturing capabilities, that cost is coming down,” he adds. Federal tax credits and other local rebate incentives from state governments and utilities will also help to make heat pump technology more affordable.

One major manufacturer, for example, is already completing the development of its second-generation hybrid electric water heater featuring heat pump technology. This model will offer new energy saving technologies, enhanced comfort algorithms, and the hybrid industry’s first color touch screen LCD display. “This easy-to-use, interactive touch screen display, similar to those found on other popular consumer electronics, will provide homeowners greater insight into their water heating energy usage and tools to maximize energy savings,” says the director of advanced technology for that company.

While the new standards are almost four years away, manufacturers are already gearing up for the changes, redesigning some products and retooling their assembly lines. A representative from another major manufacturer says water heater technology will “change dramatically” in response to the new standards.

While customer demand usually dictates the market for manufacturers, federal energy efficiency standards will play a role in moving new technology into the mainstream. “Our company prefers to develop products based on customer needs but this is not always the case,” the representative says. “For example, the new 2015 efficiency standards are driving the heat pump water heaters’ development, even though the market for these products is currently somewhat limited.”
Technology to expand to more consumer markets

Recognizing that there are large segments of consumers who have not taken advantage of these new technologies, manufacturers have expanded their product lines to try and reach them. One major manufacturer has introduced a new line of residential and light duty commercial products that offer a number of performance enhancements and diagnostic capabilities that benefit homeowners and contractors.

“While we are a leader in introducing new and innovative niche products, whenever possible we will make new technologies standard across an entire product range,” says the manufacturer’s representative. “Our new system is a ‘game changing’ technology for gas water heaters.”

Another major manufacturer has introduced a new line of gas water heaters that it says costs less to operate and heats water more than 40 percent faster than current models. A representative touts the fact that the new units have a first hour rating of 90 gallons for a 50-gallon tank, meaning homeowners get three times the amount of hot water in an hour than what the tank actually holds, he says.

Tankless water heaters are also becoming a more available option for consumers. One manufacturer recently introduced a line of condensing tankless water heaters that it says are more efficient than its non-condensing tankless units, incorporating two innovative heat exchangers that enable the unit to obtain the optimum heating value for every cubic foot of natural gas or propane. The condensing technology recaptures residual heat from flue gases to pre-heat incoming ground water so less energy is needed to heat the water to its desired temperature.

While the market remains relatively small compared to traditional storage type heaters, Neufcourt says that its numbers are increasing for a variety of reasons. “Sometimes it’s space. Sometimes it’s a matter of saving energy and water heating costs,” he says. While these units are more expensive than a standard hot water heater, expect to see more of them from manufacturers as the market for them matures.

One tankless manufacturer has developed a hybrid hydronic furnace / tankless water heater unit that provides forced air heat and domestic hot water to a home at the same time. “This type of system is very good for retrofit projects,” its representative says. “And because it works with existing ductwork and air conditioning systems, it is an excellent replacement for a traditional gas furnace.”

The system gives priority to the water heating unit so that a home is never without hot water. To accomplish this, a flow sensor in the system detects when there is a hot water demand and temporarily suspends the air heating process until the hot water demand is complete. Air heating resumes once the hot water demand is met.

One manufacturer says that demand for its tankless water heating solutions continues to grow for both whole-home and point-of-use applications. Its new line of such water heaters can, it says, provide an endless supply of hot water to homeowners with 94 percent efficiency.

Solar systems expand

Manufacturers are increasingly offering solar and hybrid solar systems to meet demand in certain markets. The tanks typically have some type of additional system that keeps water hot when the sun isn’t shining, or during periods of high demand.
One major manufacturer has expanded its solar heating products to more than 30 models. “We take a lot of pride in our solar product line,” its representative says.

All manufacturers interviewed see a lot of potential in the solar market, but they acknowledge that the market is still dependent on rebates, such as the federal subsidies that are in place through 2016.

**Easier installation, but less margin for error**

With higher efficiency products comes a smaller margin for installation errors, Neufcourt says, noting that about nine out of 10 early water heater failures are due to an incorrect installation. “Training is important for these new devices,” he says. “Obviously, with less margin for error in the installation it’s important for the equipment to be installed properly and that reduces the number of warranty callbacks and unsatisfied customers.”

One of the manufacturer representatives agrees. He also says that training is critical for contractors to help consumers better understand the products. “Not just on the technical side, but on the sales side as well since consumers look to their contractors as a resource and rely on them for the latest information about what technologies are available.”

While federal standards may be driving demand for more energy-efficient technologies, manufacturers say they are focused on customer needs. “The competitive nature of our industry means that manufacturers are constantly introducing new, more energy-efficient options,” says one manufacturer. “Every company wants to stand out from the crowd and launching improved technologies is a surefire way to get noticed.”

Like many new technologies, appeal for emerging water heating-specific technologies starts with the high-end and environmentally conscious market segments. Interest and demand from early adopters then helps drive mass appeal for these solutions, according to manufacturers. And once contractors start gaining hands-on experience with these technologically-advanced water heating solutions, they’re able to migrate these efficiencies farther into their product portfolios. “This ensures that the most popular aspects of emerging technologies are accessible to consumers with a variety of water heating needs and budgets,” says one manufacturer.

What’s next? There are a lot of innovative companies and individuals who are looking at new ways to come up with new technologies. The current Department of Energy definition for residential and commercial water heaters is very specific, Neufcourt says. He notes that a bill, currently stalled in Congress, would require DOE to do a rulemaking to establish a new test procedure for water heaters. Ensuring that test procedures reflect the current state of the market levels the manufacturing playing field and protects consumers.

Michael Maynard is a business writer based in Providence, RI. He writes frequently on HVACR, construction and architecture issues. Contact him at michael.maynard@lycos.com.
For the homeowner with a zoned HVAC system, there’s nothing like knowing that comfortable cool air in the summer and warm air in the winter goes only to those rooms occupied at a particular time of day. A family feels more comfortable in the home, more comfortable about the cost efficiency of such a system, and they can, literally, breathe easier. But for many contractors, designing a zoned system from the ground up or retrofitting zoning into an existing system can cause them to break out in a cold sweat.

Properly designing and installing zone control systems requires the contractor to fit the specific requirements of the homeowner. While zoning equipment manufacturers have encouraged proper design and installation techniques through courses and design guides (based on their products), and technical schools have offered coursework in this area, there has never been a comprehensive reference manual for contractors to rely on for guidance or advice.

The Air Conditioning Contractors of America’s (ACCA) Manual J (Residential Load Calculation) and Manual D (Residential Duct Design) were written before the growth of zoning solutions and only briefly touched on it—not enough to provide a contractor with specific information on its design and installation. But for those who have been searching for such a resource, your wait is almost over: Say hello to Manual ZR, a new guide to be published shortly.

**Filling a void in zoning education**

Manual ZR is organized for contractors who need a sound resource for designing and installing zone systems. When a question arises—whether the contractor is planning a job or is already on the job—Manual ZR is designed to have the information they need. “It’s designed to help the contractor do a much better, quality installation to achieve the goals of the customer,” says Warren Lupson, AHRI’s Director of Education, and a representative to the ACCA Technical Committee.

Organizing the proper methods of zoning and encouraging the development of design and installation best practices had been topics among zoning manufacturers since the Zoning Marketing Alliance (ZMA) was formed in 2002. Once the ZMA was folded into the AHRI Zone Control System Technology (ZCST) product section, it prompted greater discussions about getting the message out regarding zoning products in general.
Meanwhile, ACCA had developed its Quality Contractor programs and its success in recognizing “best practices” in zoning gave AHRI a natural partner. “The ACCA manuals have been an important part of the HVAC industry for years,” says one major manufacturer, “and when they recognized the need for more information on zoning, the match with the goals of the AHRI Zone Controls section seemed well aligned.”

The section became a contributing sponsor in helping ACCA develop Manual ZR. Two representatives from the ZCST Engineering Committee served on the review committee and assisted in the development of much of the manual’s content.

A comprehensive approach to zoning design and installation

The end result is a guide that includes: General Guidance; Zone Damper Systems; Zoning with Multi-Split Equipment; Zoning with Distributed Equipment; and Advanced Topics and Related Guidance, which includes appendices.

General Guidance for Zoned Systems provides an overview of understanding zoning issues as they pertain to the structure, the equipment, and the occupants. It summarizes the benefits of zoning, the zoning methods and equipment options, guidance on how to produce a zone plan, and load calculations for zoned systems.

The manual’s section on zone damper systems includes the types of zone damper systems, equipment and components used for air zoning, zone damper system design, and managing excess air. The issues around zoning with multi-split equipment are also addressed, providing contractors with a greater understanding of ductless split-coil cooling systems and ductless split-coil heat pump systems that have two or more indoor units.

Issues pertaining to zoning with distributed equipment and how they apply to the one-piece-of-equipment-per-zone concept are also included, with sections related to the system capabilities and arrangements around ductless single-split equipment and single-package equipment, convective and radiant heat and, for a very large home or compound, central chiller and boiler with air handlers.
There is also a series of appendices highlighting expanded support for some of the concepts and guidelines within the manual, including duct system design, balancing zone damper systems and condensation calculations.

Another important key to the credibility of Manual ZR will be its eventual designation as an ANSI standard. Lupson says that having ANSI approval is important to the credibility of the final product. "It's about peer review from just about every angle you can possibly think of. It's an open, precise way of knowing if something is good, bad, or indifferent before it's ever released," he says.

An important component in the education process

Manual ZR is not intended for the contractor who is just starting out in zoning or for the DIYer. Instead, the manual is designed for contractors with duct design and equipment selection experience. Manufacturer and wholesaler training and education will remain an essential part of how contractors learn about equipment and proper zoning techniques, as will the courses taught by trade and technical schools. But Manual ZR will fill some significant gaps in the learning process.

"What was lacking was a more thorough discussion of air flow as opposed to product education," says a manufacturer. "The issues with airflow today are substantial." Multiple stage equipment and new airflow strategies create opportunities for targeting areas of service and accommodating the changing requirements of residential systems, he points out.

Another major manufacturer says he hopes Manual ZR will help legitimize zoning among those who don't believe it to be a viable option. "The manual confirms much of what my company has stated for over 50 years when my dad began selling the first motorized dampers, registers, and diffusers for forced air zoning," he says.

When he was a contractor, Lupson says, a Manual ZR would have helped tremendously. "Sometimes my zoning jobs didn't work out the way I expected them to," he says. "If I had a manual like this, I would have had a better understanding of design and the impact of any retrofit changes," he says.

One contractor feels there are too many HVAC contractors who are afraid to take on zoning, which is another issue that he hopes Manual ZR’s publication will address. "In my opinion, if a homeowner asked a contractor to install zoning, more often than not that contractor would add a separate system of mini-splits," he says. He points to a consumer survey in which more than 60 percent of homeowners would buy zoning. "The problem is most contractors simply don't offer it."

Other contractors agree. A mini-split may not be ideal for a space, one says, but contractors with inadequate zoning installation training may prefer to install what they know—even if it isn't right for the space—rather than risk trying something unfamiliar." "They are doing what they know how to do," says the manufacturer. "They really don’t care that the mini-split is too big for the space being conditioned. They really don’t mind charging for a second install and the maintenance on two systems going forward."

Even for those contractors who do zoning, the zoning design in new construction is typically handed down by the developer-builder and there’s a lack of information on the use pattern or the needs of the occupant, the manufacturer adds. "Historically, I hear few contractors happy with the layout of the supply and returns called for in most new construction projects. Most of these systems were designed based on ease of installation and cost."

On the retrofit side, contractors must be knowledgeable about airflow, and manufacturers must be flexible on the application of their products. "In the field, creativity and attention to system demands are key skills for a successful retrofit contractor application," one manufacturer says. This is where the majority of the zoning opportunities exist today, he adds.

A new appreciation for meeting customer needs

Zoning addresses many issues that are near the top of homeowner concerns: comfort, energy savings, and convenience. They're no longer as willing to accept hot or cold spots in rooms; rather, they want better ways to cut their energy bills, and they don’t want to think about how it all comes together. What also makes zoning an attractive option is the way people use their homes today with finished basements, bonus rooms, and home offices. Those applications need to be conditioned differently if homeowners want to be productive using that space for a new purpose.

"Homeowners wouldn't have to be uncomfortable in their home or office if contractors would just install zoning on every installation," says another manufacturer. He uses the example of lighting to make his point. "Just like you have a light switch in every room, why not a thermostat? The cost to heat and cool your homes is a lot more
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than lighting, so why waste it in zones you’re not using or that might already be comfortable?”

He notes that the sales of zoning systems over the last few years have declined, a trend that mirrors the decline of the housing market. While zoning has grown as more zoning manufacturers have gotten into the market, the manufacturer says that it is still less than 4% of the shipment of HVAC systems. “Miniscule if you consider the number of homes in the country with forced air,” he says.

“The person who ends up reading this manual understands that zoning is a very good option for them and makes sure that their customer is comfortable,” Lupson says. “Zoning is one of those things that people can do to increase comfort in their house, and save energy.”

As consumers take greater control in making decisions about their home comfort and they become more aware of zone options, they will press contractors on this issue. As consumers drive zoning sales from the bottom up, the challenge for manufacturers will be to raise awareness from the top down. Manual ZR can help to fill the gap in the middle, supplementing the other training and educational programs.

“Manual ZR is important because it means our products are recognized as important tools for contractors. That point is clear,” says a manufacturer. “The implementation of that tool remains subject to the products we develop and our ability to engineer solutions that speak to the opportunities contractors see to serve their customers.”

One major Midwest manufacturer, for example, has a two-day course with hands-on training using zone dynamics in its manufacturing facility. In addition, the manufacturer trains with its distributor partners and offers webinars and downloadable literature. “We are committed to contractor education and increasing the opportunities for business our contractors see in this difficult recovering economy,” says one of its representatives.

Another major East Coast manufacturer said his company has led training sessions for contractors, engineers, and wholesalers for more than 35 years. He says the zoning industry has fallen short in how they train contractors. “I’ve taught about the controls and duct design. It’s sad that so many in our industry are only focused on the box: the basic furnace and the air conditioning unit,” he says. “Very few contractors will look to the duct system, after the installation, to improve the performance, comfort, and energy savings of the overall system.”

While Manual ZR will provide real value to contractors on zoning designs and installations, the most important element remains in understanding the customer’s needs. Too often, one manufacturer says, contractors start solving issues before they have fully communicated with the customer. “I am confident that those contractors who care about customers will learn the proper methods, use some of the Manual ZR theories and continue to solve customer issues,” he says.

“The book is being produced to make sure that a good product is available to the end user and that everybody involved has a good understanding of what needs to be done, what should happen, and what will happen if they take a short cut,” Lupson says.

Manual ZR will be available within the next six months.

Michael Maynard is a business writer based in Providence, RI. He writes frequently on HVACR, construction and architecture issues. Contact him at michael.maynard@lycos.com.

Zoning addresses many issues that are near the top of homeowner concerns: comfort, energy savings and convenience.
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AHRI-certified products are subjected to annual random testing to ensure that the manufacturers’ performance claims are accurate.

By Lisa Murton Beets

Products that bear the AHRI Certified® mark are subject to annual random testing to ensure that they will perform as stated by the manufacturer. Certified performance instills confidence in:

• Specifying engineers – that the system will perform as specified when their reputation is on the line.
• Building owners – that the product will deliver comfort, real energy savings, and accurate return on investment.
• HVACR contractors – that they can have confidence in what they are selling to their customers.
• Consumers – that they will indeed receive what they assume they are paying for and will qualify for applicable rebates and other incentives.
• Regulators – that they will have unbiased and accurate evaluation of heating, water heating, ventilation, air conditioning, and commercial refrigeration equipment when developing policies related to energy efficiency goals.

While it is true that systems must also be properly designed, installed, operated, and maintained to achieve intended results, certifying that the equipment itself will perform as promised is an essential starting point.

AHRI serves as the organization that works with manufacturers and other stakeholders to develop rating methods and certification programs and also administers the programs once they are in place. At present there are certification programs for 36 different product categories.

In 2009, AHRI introduced the new AHRI Certified® mark to replace the ARI Performance Certified, GAMA Efficiency Rating Certified, and I=B=R marks. While the new AHRI Certified mark is currently in
effect for some programs, all remaining programs will use the unified mark by January 1, 2012. Learn more at www.ahrinet.org.

Birth of a Program

Consumer needs and/or industry demand drive the development of new certification programs. Energy issues, along with the desire to generate greater market penetration of specific solutions, are often motivating factors.

Before a new certification program can be developed, there must first be a rating standard and method to test equipment. AHRI member companies (the manufacturers of the equipment) work with AHRI staff and other industry associations, such as ASHRAE, to develop these standards and methods. After that, a proposed Operations Manual, which governs how the program is to be administered, is written. The manual must then be circulated, finalized, and approved. A qualification testing period follows before any data can be published.

Once a program is underway, a manufacturer can apply to have its products tested. Performance is measured and verified, and if the equipment meets the rated performance, the manufacturer will be granted the right to use the AHRI Certified® mark. The company’s data are also uploaded to the AHRI Directory of Certified Product Performance, which is accessible at www.ahridirectory.org.

Participation is voluntary and open to all foreign and domestic original equipment manufacturers (OEMs) and private brand marketers (PBMs) whose products fall within the scope of one or more certification programs. OEMs and PBMs do not have to be AHRI members to participate, and their products do not have to be sold in North America.

New Programs on the Horizon

Two new certification programs are currently underway: one for variable refrigerant flow (VRF) equipment and one for indoor pool dehumidifiers. The VRF program will be rolled out first. The first step was the development of AHRI Standard 1230, Performance Rating of Variable Refrigerant Flow (VRF) Multi-Split Air-Conditioning and Heat Pump Equipment, which took approximately three years.

“It can take a short time to develop a certification program, or it can take a long time,” says Jon Lemmond, AHRI certification engineer. “VRF equipment is quite complicated. We started the initial testing in August. Once we are satisfied with our testing requirements, we will publish data. The tests are very detailed and rigorous.”

Lemmond says there are already five manufacturers of VRF equipment seeking certification, and the program is expected to grow very rapidly. “There is already a lot of interest, with people asking when the program is going to start. We’re also getting a lot of inquiries from VRF equipment manufacturers that are not AHRI members.”

While VRF equipment is relatively new in the United States, it has been used for many years in Europe and Asia. “We are essentially moving to certify a globally used piece of equipment,” says Jim Walters, AHRI’s vice president of international affairs. “The global manufacturers drove this, and it’s a real testament to the global relationships that AHRI has.”

AHRI Director of Certification Sunil Nanjundaram reports that the certification program for indoor pool dehumidifiers is about one step behind the VRF program, but that it is progressing well—testing should begin before the end of this year. “We’re also in the early phases of developing programs for chilled beams, unit coolers, and variable frequency drives (VFDs),” he notes.

“We’re always looking to increase our certification portfolio,” adds Walters. “Our industry is subject to many regulations, and more certification programs mean more avenues to show our positive performance. When you look at the larger picture of what is happening today environmentally, our certification program is an important building block in any environmental effort. For example, our test data can prove that when a manufacturer says its equipment uses less energy, the statements are true.”

HVACR contractors are encouraged to explain AHRI certification to their customers. “When you can say, ‘this product is AHRI certified to do this and to do that,’ you are educating the customer and building credibility to make the sale. It enables the customer to better understand the equipment and helps them feel confident about what they are buying,” Walters says.

To learn more about AHRI certification programs, go to www.ahrinet.org/certification.aspx.
Appliance improvements and standards have made our daily living more convenient and safer. Even with more gas and oil-fired furnaces, water heaters, and stoves in service around the country the annual carbon monoxide (CO) poisonings from appliances are fewer each year; however, one number continues to climb. Consumers can be at risk when they improperly use gas generators, charcoal grills, and fuel-burning camping heaters and stoves inside their homes or in other enclosed or partially-enclosed spaces. CO poisoning can also occur when fuel burning appliances that have not been professionally inspected can produce excessive levels of and leak CO into the home. Automobiles, fireplaces, barbeque grills, portable gas-fired pressure washers, and generators generate CO as a byproduct of combustion and can contribute to CO poisoning.

Although the popularity of carbon monoxide (CO) alarms has been growing in recent years, it cannot be assumed that everyone is familiar with the hazards of carbon monoxide poisoning. Often called the silent killer, carbon monoxide is an invisible, odorless, colorless gas created when fuels (such as gasoline, wood, coal, natural gas, propane, oil, and methane) burn incompletely. It is not heavier or lighter than air but mixes with the air in a room or building. Breathing CO at high enough concentrations can be fatal or cause permanent injury. Sources of CO in buildings include: fire, malfunctioning or improperly vented combustion appliances, improperly used or placed engine-driven tools, charcoal grills, camp stoves, and automobile exhaust.

While AHRI believes proper installation and maintenance of appliances is the most effective way to avoid incidents that involve gas and oil-fired appliances, the installation of CO alarms can alert occupants if the CO level in a home increases as a result of any source.

Several states and municipalities have introduced legislation that would require CO alarms in residences with fossil fuel-powered appliances; however, not in all-electric homes. These attempts to require protection for occupants fall short of real CO alarm protection from all possible sources. The death toll from carbon monoxide associated with generators and other portable equipment has been steadily rising in recent years. Detection and alarm protection is needed not just for fossil fuel powered appliances but also for fireplaces, automobile garages, and portable gas powered tools and equipment. Contractors, service providers, or a neighbor’s portable,
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The death toll from carbon monoxide associated with generators and other portable equipment has been steadily rising in recent years. Detection and alarm protection is needed not just for fossil fuel powered appliances but also for fireplaces, automobile garages, and portable gas powered tools and equipment.

A gas-powered tool such as a pressure washer placed outside a window, doorway or vent can fill a home with CO in minutes.

Every year, there are documented CO poisoning events associated with power outages due to weather, where people find ways or use other methods to supply heat and light, or cook indoors. In the coldest months of winter, storms leave CO poisoning deaths in their wake. According to the Consumer Product Safety Commission (CPSC), about 140 people die each year from unintentional exposure to carbon monoxide associated with consumer products. Many of these deaths occur after hurricanes, ice storms, and blizzards when portable generators and barbeque grills are used for light and heat during an electrical service outage.

In January 2007, CPSC required manufacturers to place a danger label on all new generators and the generators’ packaging.

AHRI supports the installation and use of carbon monoxide (CO) alarms in all one- and multi-family dwelling units in the United States. The CO alarms should:

- Be listed to ANSI UL 2034, Standard for Single and Multiple Station CO Alarms or CSA 6.19, Residential Carbon Monoxide Detectors,
- Be installed according to NFPA 720, Standard for the Installation of Carbon Monoxide (CO) Warning Equipment in Dwelling Units, and
- Have a battery backup to operate during power outages.

Along with supporting the installation of CO alarms in all residences, AHRI encourages continued research and development to further improve durability and reliability of CO alarms.

The CPSC and the United States Fire Administration (USFA) urge consumers to take these important steps to protect themselves against CO poisoning:

- Never use portable generators inside homes or garages, even if doors and windows are open. Use generators outside only, far away from the home.
- Never bring a charcoal grill into the house for heating or cooking. Do not barbeque in the garage.
- Never use a gas range or oven for heating.
- Open the fireplace damper before lighting a fire and keep it open until the ashes are cool. An open damper may help prevent build-up of poisonous gases inside the home.
- Have home heating systems (including chimneys and vents) inspected and serviced annually by a trained service technician.
- Install battery-operated CO alarms or CO alarms with battery backup in your home outside separate sleeping areas.
- Know the symptoms of carbon monoxide poisoning: headache, dizziness, weakness, nausea, vomiting, sleepiness, and confusion. If you suspect CO poisoning, get outside to fresh air immediately, and then call 911.
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The National Fire Protection Association (NFPA) recommends:

- Installing CO alarms (listed by an independent testing laboratory) inside your home to provide early warning of accumulating CO. Carbon monoxide alarms should be installed in a central location outside each separate sleeping area. If bedrooms are spaced apart, each area will need a one.

- Calling your local fire department’s non-emergency number to find out what number to call if the CO alarm sounds. Post that number by your telephone(s). Make sure everyone in the household knows the difference between the fire emergency and CO emergency numbers (if there is a difference).

- Testing CO alarms at least once a month and replace CO alarms according to the manufacturer’s instructions.

- Knowing the difference between the sound of smoke alarms and CO alarms. CO alarms are not substitutes for smoke alarms.

- Having fuel-burning heating equipment (fireplaces, furnaces, water heaters, wood and coal stoves, space or portable heaters) and chimneys inspected by a professional every year before cold weather sets in.

- Selecting products tested and labeled by an independent testing laboratory when purchasing new heating and cooking equipment.

- Open the flue for adequate ventilation when using a fireplace.

- Never using your oven to heat your home.

- Having a qualified technician evaluate the integrity of the heating and cooking systems, as well as the sealed spaces between the garage and house, when buying an existing home.

- Removing a vehicle from the garage immediately after starting it if you want to warm it up. Do not run a vehicle, generator, or other fueled engine or motor indoors, even if garage doors are open. Make sure the exhaust pipe of a running vehicle is not covered with snow.

- During and after a snowstorm, make sure vents for the dryer, furnace, stove, and fireplace are clear of snow build-up.

- Only using barbecue grills—which can produce CO—outside. Never use them in the home, garage, or near building openings.
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North American Technician Excellence, Inc. (NATE) is truly an organization that is on the move and achieving new heights in its service to the HVACR industry. As an ANSI/ISO Accreditation Applicant, NATE continues to set the bar on excellence in testing, validating, and certifying installation and service technicians within our industry. To date, some 50,000 industry technicians have been NATE certified. Over 20,000 individual tests are administered annually to technicians nationally—and that number is growing incrementally. I am thoroughly excited about the future for NATE and believe that, through our industry’s collective efforts, certification of HVACR professional technicians will continue to evolve into a mainstream requisite in the marketplace.

Since I came aboard as NATE’s new President and CEO last September, an underlying theme seems to have emerged that I have been focused on. That theme is “MAKE NATE EASIER TO DO BUSINESS WITH.” Currently NATE has embarked on a number of initiatives that tie into that theme—from investigating mechanisms to further standardize and simplify the process of sitting for our examinations, to increasing the use of the web to help candidates manage the process of preparing for, achieving, and maintaining certification. There is not a day that goes by when we don’t, as a management team, challenge the status quo and work to develop better and more efficient ways to market NATE certification to our industry. Part of this is to drive interest in sitting for NATE examinations electronically and I am pleased to note that metric is increasing to a monthly average of 29 percent. Another part of these efforts is to begin the process of creating Spanish language equivalents for NATE examinations and KATEs (Knowledge Areas of Technician Expertise). It is our ambition to execute this initiative in the near term and in so doing expand the reach of NATE certification.

Speaking on behalf of our management team, we want NATE to continue to be more customer-driven. To that

“Winds of Change” at NATE
end, we are focusing on what I refer to as high touch, personalized service to all individuals whom we serve.

NATE also has been working diligently to become more of a safe harbor for its designees and designee candidates. We have accelerated our work to more effectively reach out to HVACR technicians and support them in their continuing professional development. Part of that strategy encompasses expanding the number of vocational schools and training organizations with which we work, increasing our testing center base, and becoming a destination portal for training and testing opportunities on a national platform, via a newly designed NATE website. My personal ambition is to truly create a home base for NATE-certified technicians that they regard as a positive and necessary resource in their ongoing professional development.

NATE, in my estimation, is poised to assume an expanded role in the forward movement of energy efficiency and to that end we have initiated outreach programs to establish NATE certified installation and service as critical components of the sustainability equation.

Likewise, NATE is developing a new Energy Performance Standards certification in conjunction with ACCA and RESNET, which is slated for introduction in early 2012. It is the first in what we hope will be a suite of “whole-house” certifications that NATE will develop and in so doing expand its reach to additional segments of the weatherization and efficiency market.

Last spring NATE embarked on its first-ever national consumer advertising campaign. That initiative, using prime time nationally syndicated radio commercials, will continue this fall during NFL and NCAA football games, and CBS News. It is part of NATE’s commitment to market quality installation and service by certified technicians to the public. This year, in addition to the consumer media campaign, NATE has developed new collateral pieces, accelerated its electronic marketing, and expanded its participation in regional and national industry trade events—all with the objective of promoting the value quotient of NATE certification.

NATE continues its commitment to helping advance the collective efforts of a united HVACR industry—to do all we can to promote our industry and NATE Certification from a value-added standpoint. Contractors and technicians alike need to believe unequivocally in the financial benefits of investing in certification—that NATE certifications are rungs on the ladder of their financial success. And equivalently, we all need to demonstrate through public and industry awareness campaigns that our industry is fully supportive of its NATE certified technicians and market their significance as the “elite” of their profession from the standpoint of reliability and competence. As our industry continues to evolve and grow, NATE will strive to continuously increase the value quotient of certification to all sectors of the HVACR industry, governmental agencies, and the consuming public. That is NATE’s challenge, and ultimately that is NATE’s mission.

Peter W. Schwartz is president and CEO of NATE. Visit NATE on the web at www.natex.org.
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