In today’s wired world, zoning has evolved from wired to wireless.
RUGGED, DURABLE AND BUILT FOR PRESSURE. IT’S TIME YOU MEET YOUR TWIN.

Introducing hilmor’s ruggedly durable 4-Valve Aluminum Manifold, featuring a forged aluminum body, easy-to-read gauges and high-impact boots. Finally, a manifold built to handle anything thrown its way. We’re sure you can relate.

EASY TO READ
Improved graphics and high-contrast colors for precise readings.

FAST, PRECISE READINGS
Get faster vacuum pulls with a true 3/8” bore.

COMFORT GRIP
Rubberized handles are optimally sized for easy turns.

See all the innovations you can put to work at hilmor.com.
Because of changing internal and external load conditions induced by solar, wind, lighting, appliances and people along with the laws of physics—cold air drops and hot air rises—you can often see a 6°F–12°F difference between an upstairs and a downstairs room.

The needs of the many

“Since a thermostat can only control the temperature where it is located, end users reach out to the contractor for solutions in solving the temperature fluctuations throughout the home. Forced air zoning can be the key to providing comfort levels in any space being served by a single HVAC system,” notes Phil Kimble, Product Development Manager at Jackson Systems.

Deciphering the complaints a customer has, ruling out the need to replace a system, and offering a solution like zoning are critical factors. According to Kimble, the right zoning system, including the thermostats, can be configured for a home or building owner by acquiring the following information from the customer or the contractor:

- Type of equipment: heat/cool, heat pump, fossil fuel, single or multi-stage (panel selection);
- Number of zones (panel selection);
- Cooling tonnage (selection of bypass damper when required);
- Type of thermostats: programmable or nonprogrammable, brand preference; and
- Zone damper size and type: (2-wire, 3-wire, round, rectangular, side-mount or bottom-mount).

“It doesn’t matter how many zones there are in regards to a piece of equipment. Basically, it all revolves around good HVAC design and being able to zone individual areas that may have different load characteristics. The typical problem with residential homes, especially two-story homes, is that the thermostat is usually located in the hallway and we don’t live in the hallways,” says Kimble. “Because of changing internal and external load conditions induced by solar, wind, lighting, appliances and people along with the laws of physics—cold air drops and hot air rises—you can often see a 6°F–12°F difference between an upstairs and a downstairs room. With zone control, you can maintain desired thermostat setpoint levels in any zone, but it’s not limited to the number of zones. In commercial applications, our largest panel will go up to 20 zones, in our residential it will go up to 12 zones, and it all depends on the application and the number of zones you want to control.”

Both Kimble and Ron Jackson, President of Jackson Systems, agree that proper zoning provides not only comfort to building occupants, but significant energy savings when the system or individual zone thermostats can be scheduled to achieve energy savings.

Kimble says, “When you use programmable thermostats or a central scheduling system to provide automatic occupied and unoccupied scheduling, the energy savings can be significant.”

Case in point

While no two jobs are ever the same, consider one contractor’s zoning experience with a residential system that allows a single HVAC unit to have up to five separate zones. The heating and cooling equipment for this installation was
WHY BUY A HYBRID GAUGE?
LET’S START WITH THAT FLASHLIGHT IN YOUR MOUTH.

Get out of the dark ages with the industry’s first hybrid gauge featuring backlit displays. hilmor’s Electronic Gauge with Vacuum Sensor offers true analog capabilities with unmatched digital precision. All within 1% accuracy.

**TWICE THE CONFIDENCE**
Pairs analog needle with LCD display for twice the confidence.

**QUICK IDENTIFICATION**
Backlit gauges change color to match selected refrigerant.

**RUGGED + DURABLE**
Ruggedly durable due to a high-impact protective boot.

See all the innovations you can put to work at hilmor.com.
a custom-built residential chiller. The chiller was set up as three stages. The air handlers were typical chiller/hot-water fan coil units.

The thermostats from each zone had a primary relay and the pumps had a primary relay. There was a “master” thermostat that was used to determine the heat or cool mode based on manual user input. This particular end user was seeking a five-zone system with automatic changeover for heating and cooling. The application required the ability to interpret the signals from the five zone thermostats and determine whether the system needed to be in heating or cooling mode based on majority call.

The comfort system was configured for majority call to determine the mode of operation. The equipment outputs were used to activate/deactivate the chiller or hot-water controllers based on what mode the zoning system initiated.

Commercial series controllers were used for staging the chiller, water heaters and pumps. Using these controllers allowed control of lead/lag stages, reset control operations and a host of other operational parameters. The digital I/O inputs were used to activate or deactivate the controllers from the zoning systems.

When it calls for cooling, the chilled water controller initiates chiller staging using the Y1 signal from the zoning system to the digital I/O relay of the controller. The same sequence occurs for heating, all based on the “majority wins” rule.

The contractor faced a wiring challenge when trying to isolate the digital I/O signal for each commercial controller. By using the RH and RC circuits on the zoning system panel independently, the contractor was able to solve this challenge easily. This configuration also allowed the contractor to centrally locate the commercial controllers and zoning panel.

Programming thermostats and scheduling zones helps to achieve the highest energy savings.

“Speaking of wire...less
As zoning systems increase in popularity, among end users and industry professional alike, retrofitting existing structures continues to see its share of issues. This problem is mainly due to wiring and a contractor’s/technician’s inability to see through walls. Combined with the fact that more and more end users are wirelessly plugged in—to their systems and otherwise—wireless options are increasingly making their way into homes and businesses.

“As a company,” Kimble says, “we were a bit reluctant several years ago to believe that wireless communications would become such an important feature in thermostat technology but it has, both residentially and commercially. We have sold quite a few communicating thermostats both in the residential and commercial marketplace. As the technology improves and the cost of components decreases, wireless for residential applications becomes more affordable. Five years ago it was almost prohibitive because the cost was extremely high.

Wireless options are a very affordable alternative that allows people offsite or remote access to control their environment.
ONE TOOL. ZERO TRIPS TO THE TRUCK. GET USED TO SIMPLE MATH.

Keep your cool in any climate with quick, easy calculations. hilmor's Dual Readout Thermometer is the industry's first to offer two digital readouts to simplify the calculation of superheat and subcool in seconds. And it attaches to any manifold.

SIMPLIFIES CALCULATIONS

Superior versatility

Fast, precise readings

See all the innovations you can put to work at hilmor.com.
and only those who could afford it were interested in being able to remotely control their heating and air-conditioning. Now it is becoming a daily item in residential applications."

Jackson adds, “Wireless options are a very affordable alternative that allows people offsite or remote access to control their environment.”

In addition to being able to monitor energy usage and remotely control heating and cooling temperatures, wireless systems have proved beneficial to contractors and technicians as well. Kimble explains that the most costly part of installing a retrofit zoning system is trying to pull wire. With wireless technology, the contractor or technician merely needs to install a battery-powered wireless thermostat in a zone. It will then communicate to a receiver module on or wired to a zoning panel that is located near the equipment. This saves time and money having to snake wire up through walls that are already enclosed.

In addition to wireless thermostats, wireless damper motors are also available on some communicating zoning systems. As an example, in some retrofit applications, it may be difficult for the contractor to run 24-V wire from the zone control panel to power the zone damper. This is especially true in an upstairs zone where the damper has to be installed in an attic duct serving ceiling registers. In most cases, 120 V is available from circuits feeding lighting and household outlets. The contractor can use a step-down transformer to provide power to the damper. In wireless zoning, each damper is given a unique address for the zone being served. The zone control panel sends a wireless signal to the damper actuator to open or close the damper blade. Multiple dampers serving a single zone can be wired in parallel and given the same address so they all open or close together.

Wireless thermostats can also be used in these systems to further eliminate the need to pull wire.

**Future of zoning**

In addition to good installation practice, contractors and technicians should know appropriate installation/troubleshooting issues that come up with zoning. After all, the system needs to work. According to Kimble, the most common issues relate to improper thermostat configuration, improper wiring, equipment and duct-sizing problems.

“When we receive a call from the field, we can very quickly assist the contractor or technician in finding and fixing the problem through simple process of elimination and diagnostic tests,” states Kimble.

Of course, understanding efficiency standards that an end user should know about when trying to sell a zoning system can also help.

“Many states already have new codes that state the temperature difference between upstairs and downstairs can’t be more than 3°F”, says Kimble. “This is true in North Carolina, for example. So, zoning is an economical solution when you have a home that only has a single split heating/cooling system.”

Selling a customer on a zoning system may not always be a challenge. As prices for systems continue to fall and savings achieved continue to increase, zoning systems may become standard on every new home built.

“Within the next five to 10 years, most new homes will have zoning in them,” said Jackson. “It is inexpensive if you do it at the time the house is being built. “We’re talking $1,500 which is what a contractor might charge for a two to three zone system in a new home,” explains Jackson. ”

The most common issues relate to improper thermostat configuration, improper wiring, equipment and duct-sizing problems.
YOUR NEW BAR BET: BENDING TUBES WITH ONE HAND.

Brains and brawn. The new hilmor Compact Bender is quite the catch. Intelligent design allows for a quick and easy 90-degree bend in any environment. Now, you no longer need big pipes to bend them.

ONE-HANDED OPERATION
Spring-loaded ratcheting lever allows for one-handed bends.

SUPERIOR VERSATILITY
Universal crossbar and color-coded mandrels add simplicity.

RUGGED + DURABLE
Quick-release button to easily free the tube without damage.

See all the innovations you can put to work at hilmor.com.

Circle Reader Service No. 21