Thermco Thrives

A 57-Year Track Record of Success

By Ron Lucas

Thermco Instrument Corp., headquartered in La Porte, IN, has 15 employees operating a 26,000 square foot facility where it designs and manufactures a full line of gas mixers and analyzers.

According to Dennis Richardson, Vice President of Sales and Marketing and part owner, the firm provides both equipment and service to all major industrial gas companies, many of their subsidiaries, and a host of independent distributors. "Our mixers and gas analyzers serve the needs of many different industries including automotive, military, heat treating, food packaging, semi-conductor, and pharmaceutical."

Thermco considers itself one of the major players in gas mixing and binary analysis with a solid reputation for reliability and accuracy built over 57 years. "Our customers know we've always stood behind our products and that's a big reason they keep coming back," affirms Richardson.

Thermco sells its products throughout the US, Canada, Mexico, East Asia, and India. "Although most of our business is in the US, nearly 30 percent is now export," says Richardson.

KEY APPLICATIONS

The primary applications for Thermco's mixers and analyzers include welding shielding gases, food packaging gas, furnace atmospheres, leak detection, blanketing atmospheres, and cylinder fill plants. In addition, it provides customized products for specialized applications involving special atmospheres, metallurgical applications for blanketing magnesium and biomedical applications where they use gas mixes for growing biological cultures.

A HISTORY OF SERVICE AND SUCCESS

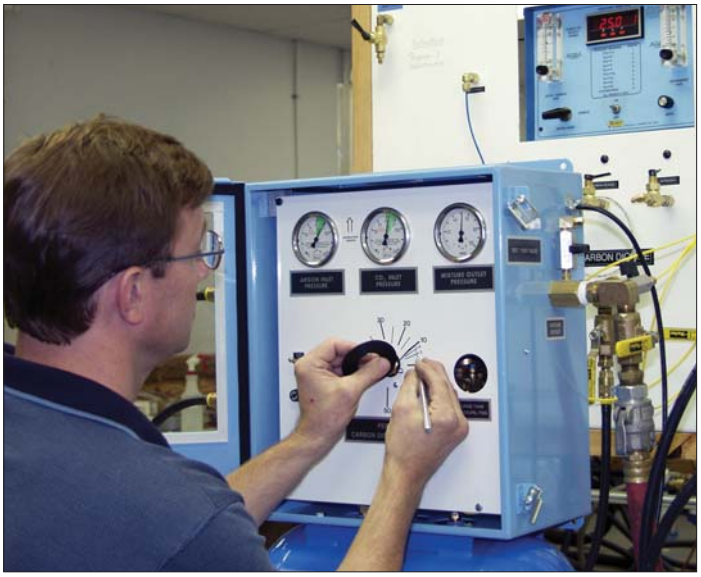
The firm was founded in 1951 by Robert D. Richardson, a pioneer in gas analysis instrumentation and a holder of many patents. "My father was an engineer who had been involved with gas analyzers for many years and finally decided to start his own firm," recalls Richardson.

In its early days the company made a number of different types of specialty gas analyzers for the industrial gas industry. These included paramagnetic oxygen analyzers; purity analyzers for gases such as argon, nitrogen and oxygen; gas chromatographs; and thermal conductivity based binary gas analyzers that are still manufactured today. It also manufactured flue gas analyzers for use on boilers, flues, and furnaces for combustion efficiency.

Richardson recalls the early days of Thermco: "My two brothers and I grew up in the business; it was not unusual for us to discuss high purity regulators or impurities in argon around the dinner table. I went on my first service trip to an Air Products air separation plant when I was 12 years old; I held the wrenches for my father who was servicing an argon purity analyzer. He did most of the service on weekends because he had to run the plant during the week."

In 1964, Thermco made its first gas mixer. "In the 60s we were supplying Liquid Carbonic with purity gas analyzers for welding gases used to build nuclear submarines. After the Thresher tragedy they were seeking new ways to upgrade the quality of the welds. They asked us if we could make a gas mixer that could mix two percent oxygen and 98 percent argon and measure the mixture accurately at the same time it was being mixed. Our technology allowed them to ensure not only the purity of the gases, but of the mixture as well," says Richardson.

A panel is checked for squareness while being attached to a surge tank by Scott Hakes of the Prep & Shipping Departments.



The scale of a Model 8500 gas mixer is applied by Steve Hixon, Gas Mixer Technician.

The idea of integrating a gas analyzer with a gas mixer proved to be a popular idea. Most previous gas mixers depended upon flowmeters for measuring the gas proportion; these were not very accurate. With Thermco's integrated system, customers could now have continuous monitoring of the gas mixture along with attached alarms that could alert them if they were moving out of specification.

Over time the flue gas analysis was phased out. "We recognized that most of our engineering strengths were in gas mixers and mixture analyzer technology, and our best relationships were developing with industrial gas companies involved in welding and heat treating," notes Richardson.

INTRODUCING THE DIGITAL BINARY ANALYZER

In 1991, Thermco marked another milestone when it patented its Binary Gas Analyzer Model 6900. "For the first time we had a device that could accurately measure two gas mixtures in nine different binary combinations," recalls Richardson. "We could now process the signals coming from our thermal conductivity cell for all these mixtures and show the results on a digital readout using just one analyzer." Unlike previous technology, this analyzer did not need to use calibration gases each time an analysis was performed.

NEW FACILITY

In 1999, Thermco designed and built its current 26,000 square foot state-of-the-art manufacturing plant. The new building provided larger areas for research, manufacturing, testing, and shipping. "The investment enabled us to increase production and boost customer service—it more than doubled our size and capacity," says Richardson.

Robert D. Richardson passed away in 1982 and the firm is now owned and operated by his three sons: Kent Richardson, President and Plant Manager; Glen Richardson, Engineering Manager; and Dennis Richardson, Sales and Marketing.

TIGHT FOCUS

Thermco zeroes in on a carefully defined market niche. "We do not try to do everything for everyone in this industry. For example, our mixers operate at capacities up to 50,000 cubic feet per hour. We'll turn down requests for extremely large mixers at 100,000 cubic feet per hour used for mixing blanketing gases in steel annealing processes. We also avoid lab applications that require mixing three or four different gases and constantly change proportions. We stick within our area of expertise — industrial applications," explains Dennis Richardson. "Maintaining a tight focus allows us to accomplish a lot with a small group of employees and remain profitable."

THE LATEST INNOVATIONS

Thermco's latest technical innovation was the incorporation of its digital solid state pressure switch model SWTCHPRE-01 in the gas mixers. The switch controls the pressure in a gas mixer's surge tank.

"In 2003 we began to transition from the older mechanical pressure switches with separate analog gauges mounted next to them. All products since then have the new technology," affirms Richardson.

The digital switch has a life cycle of 100 million activations. "The vast majority of installations never reach that level of demand. In effect these switches last the lifetime of the typical gas mixing system," notes Richardson. The benefit of a long service life means users don't have to change switches as often, thereby saving on maintenance and costs related to downtime.

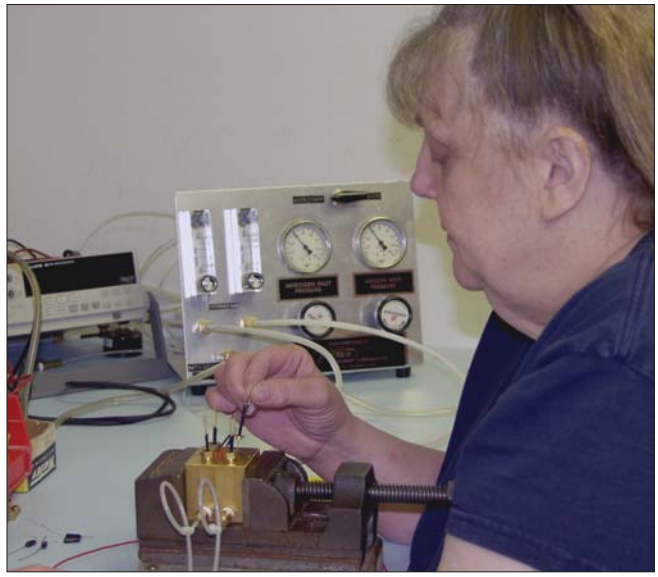
The new system boasts a digital readout of gas pressure and a solid state sensor. The large LED digital readout is easier to read and more reliable than interpreting a moving needle on a mechanical pressure gauge. The solid-state sensor and switch combination controls the pressure in the surge tank more reliably than previous types as well. "When pressures climb to the upper setpoint, the switch de-energizes the solenoid valve. This stops flow into the tank and the pressure in the tank will drop to the lower setpoint. Then the solenoid valve is energized to start increasing pressure and the cycle repeats. The setpoints are so stable the unit does not have to be adjusted over the entire service life of the gas mixer. Another benefit is that a red light on the switch illuminates whenever the surge tank is filling. This gives the operator a quick visual confirmation that the process is underway," explains Richardson.

The switch was the result of years of testing by Thermco. "We tested it for accuracy, resistance to input voltage fluctuations, maintenance of accuracy over ambient temperature changes, and ease of use," says Richardson.

Thermco was flooded with positive feedback from its customers. "We quickly developed conversion kits so that those with older installed mixers could upgrade from their mechanical switches to the digital model. Many chose to do just that," notes Richardson.

CUSTOM DESIGNED PRODUCTS

Unlike many firms, Thermco is not worried about introducing a new product every year. "There are a couple of reasons," confides Richardson. "First, in our niche a new product simply is not needed every year. Second, the term 'new product' is really a fuzzy idea. We build custom products on an ongoing basis. So you could say that in effect each one is a 'new product.'"



A thermal conductivity cell is assembled by Karen Shepherd, Gas Analyzer Technician.

In fact, Thermco's engineering staff does work closely with customers on numerous one-of-a-kind products for highly specific applications often requiring special pressures and accuracies.

MANUFACTURING OPERATIONS

As a customized operation Thermco does not mass produce its products. The products are assembled by technicians mostly one-at-a-time. "We do a few products in batches, but we basically run a hands-on operation with everything carefully assembled. We believe it is better to do a job

Dana Wooten, Gas Analyzer Technician, prepares an analyzer for temperature testing in the environmental chamber.

The gas analyzer is adjusted during gas mixer testing by Christian Coley, Gas Mixer Technician.

right the first time rather than try to find and fix a problem later," affirms Richardson.

The firm buys most of the components. "We spend a lot of time talking to our suppliers to make certain the parts will be constructed to our exact specifications and quality requirements," observes Richardson.

TESTING AND QUALITY ASSURANCE

Thermco maintains its reputation for reliability by attention to detail. It runs a battery of tests on all manufactured units including those for high and low flows and various input pressures. "In addition, all our mixing systems and gas analyzers are run for 24 hours or longer on the same gases they will be mixing in the field," declares Richardson. The firm pays extra special attention to all major components such as gas regulators and solenoid valves. "We take most components apart and examine them carefully before we assemble them into a mixing system to ensure there are no manufacturing defects or foreign particles that could produce a bad mixture in the field."

Why take the time and expense to perform such extensive levels of testing? According to Richardson, these products are part of multi-million dollar production systems. "If they break down it's extremely costly for the end-user in terms of repair and downtime. With that in mind, we want our customers to know they can depend on our products over the long haul. That's why our goal is to make sure that our products are as accurate and reliable as possible."

A FAMILY-OWNED BUSINESS

Thermco believes that remaining a family-run business is a key reason for its success. "We can make decisions based on the long term good of the company rather than jumping at quick fixes to boost the next quarter's numbers. It means we can focus on doing what's best for the customer with every product, every day. It frees us to concentrate on quality. Our customers, in turn, know we intend to be there for the long term — and that builds relationships," affirms Richardson.

As a family-run company Thermco has also earned a high degree of employee loyalty. Richardson explains, "We have many employees with more than 25 years of experience who have gained a vast amount of knowledge. You can't put all the information into drawings and manuals. Our people can handle service questions from customers still running systems built over 20 years ago. With today's turnover rates, the operator, who once knew how to keep a system running, may have left or retired. His replacement may not know how to handle an unforeseen problem."

CONSERVATIVE PHILOSOPHY

According to Richardson, another factor in its long term success is maintaining what he terms a conservative philosophy. "We are cautious about introducing new products into the market or new parts into our products. We want to know they will run properly and offer a long service life."

He adds: "We also make conservative decisions about how we run the business. For example, we don't make gas mixing systems for toxic gases to limit product liability as well as to protect our own workers here in our plant."

A STRATEGY OF SERVICE

Customer service is a top priority at Thermco. The firm is dedicated to providing customers with rapid product delivery, ongoing technical support, and a long-term commitment.

"We provide technical support whenever it's needed," declares Richardson. "Thermco finds most problems can be handled by phone or email but we do send technicians into the field throughout the US, Canada, and Mexico both for problem solving and new installations."

He goes on to add that speedy delivery is another important service. "Once an installation is underway there are bulk tanks, manifolds, and piping on order. End-users typically need a mixing system on-site as soon as possible. We can deliver most within five weeks. On occasions when a customer had an extremely tight schedule we try to adjust our production schedule to meet the accelerated delivery requirement."

In addition, when customers need modifications or specially designed systems, Thermco is flexible. "We support them in any way we can, even when it's only marginally profitable because we know it cements our long term relationship," explains Richardson.

Perhaps most importantly, he explains that Thermco maintains its commitment to servicing its products over a long stretch of time. "We have files that go back 40 years — far longer than most firms, and our technicians can answer questions on those older systems and fix them if parts are available. That's a huge benefit to end-users because if they can't fix a single component on a 12-year-old system, they have to purchase a whole new gas mixer."

Kevin Berk, Gas Mixer Technician, left, explains to seminar attendees how to zero the gas analyzer on a gas mixer.

TRAINING SESSIONS

Customer support also includes providing training sessions for distributors and gas suppliers. The firm holds one-day events, usually every spring and fall at its La Porte, IN, headquarters. Topics include the theory of operation, installations, normal running conditions, troubleshooting, analyzer calibration, and preventative maintenance.

"We have an hour of classroom instruction on theory in which we cover what happens when pressures inside gas mixers change, potential failure modes, and practical information they need to fix them. After class, attendees break out into groups for hands-on experience taking apart mixers," explains Richardson.

THERMCO'S NICHE

How do Thermco's products and systems fit into what the gas industry considers gas blending systems? "We are one of the major companies in the field. More importantly, because we make gas analyzers, we are more oriented than others toward integrating analyzers and mixers. A lot of other firms buy their gas analyzers and merge them with their mixers. We think that our units are more reliable because they are designed to fit together as a total system from the drawing board to the installation."

He then adds, "We're also more nimble in delivery of final product. Manufacturers that have to purchase a gas analyzer may have to delay delivery by several weeks."

REACHING OUT TO CUSTOMERS

Thermco reaches out to new customers through advertising and trade shows. New customers also find them through the Company's website or are recommended by a parent corporation. They then place orders by phone or email. "We actually don't have to spend a lot of time on marketing because the majority of our customers already have established long term relationships with us," confides Richardson.

GROWTH IN EXPORTS

One of the biggest changes for Thermco in recent years has been the growth in its export business. New business comes from global industrial gas companies referring Thermco to their subsidiaries abroad.

"The current exchange rates have given us a boost," admits Richardson, "but the biggest driver has been the expanding economies of China, Mexico, Korea, Taiwan, India, and Malaysia. We are now exporting products to 45 different countries and consider ourselves one of the world's major gas mixing suppliers." He notes that Thermco supports its overseas customers primarily with technical advice by phone. "We are mostly working with companies that already have sufficient expertise. We ship them the device, and they install and maintain it. Of course, customers can always send their people to our training sessions if they wish."

INDUSTRY TRENDS

Richardson sees an industry trend towards increased accuracy and accountability with gas mixers. "I think competitive pressures are driving manufacturers to look for more ways to improve quality and reliability in the products they make." He also observes that many manufacturers now have systems running 24 hours a day. "That means if an inaccurate gas mix causes a breakdown at 3 a.m. it's extremely costly. So reliability has become more important than ever."

Also, ISO requirements make accountability more important. "Manufacturers now have to document the gas mixtures they've used during a welding process. So monitoring, and in turn gas analyzers, are critical. They need today's analyzers that can continuously read out the gas mixture as flow conditions change with the process."

Richardson cites robotic welding as another example. "Robotic welding operates at close tolerances and high speeds, and it's extremely expensive when they go down. We have customers that operate over 300 robots off a single mixer. If that manufacturer is held up for even a short period of time large losses can be incurred."

He also sees a trend toward the purchase of larger mixing systems. "We are selling more of our larger mixers that ever before. I believe that's because factories as a whole are becoming larger as a result of consolidation."

THERMCO AND THE NEW ECONOMY

Although sales have remained steady, Thermco, like other firms, has seen an increase in material prices. They've been affected mostly by price increases in steel and brass. "We've coped by becoming more efficient — making numerous small improvements in our daily operation and talking to our suppliers to negotiate the best prices we can," confides Richardson.

Whatever the future holds, based on its long track record of success, Thermco remains optimistic about its future in the industry. "Our customers can rely on our products and they can rely on us — we're here to stay," concludes Richardson.

Ron Lucas is a contributing writer to CryoGas International *and has written on gases, equipment and technologies used in the medical, specialty and industrial gas markets for eleven years. He can be reached at rlucas44107@yahoo.com.* ❑