



## Mechanical insulation: preventing carbon from entering the air

I hate when I think I'm buying organic vegetables, and when I get home, I discover they're just regular potato chips.

Some things are just not as they seem. Even technology has a way of doing that — giving us a head fake that aptly describes paradox and contradiction: the freedom technology gives us today also shackles and tethers us. I just want to park my car — not download an app. There's always a tradeoff, of course, and sometimes it feels like technology is taking over our lives.

As I sit here watching The Open golf tournament while writing this article, I can certainly appreciate what the cool technological advancements, like sensors and GPS, have brought to the game of golf. Sensor technology has helped golfers in a variety of ways, such as applying distance-measuring lasers and swing sensors as teaching aids. Remote sensors installed throughout a golf course can instantly report soil moisture, temperature and salt concentrations to smart phones and office computers. And don't forget the Trackman Doppler Radar tracking and tracing technology that allows viewers to capture club speed, ball speed, curve, landing spin, launch angle, spin rate, spin axis, apex, carry and more. How did we ever watch golf without that?

But just as technology has brought tremendous gains to the golf experience, there are times in our lives when good, old-fashioned stuff fits the bill very nicely. Our mechanical insulation industry believes that our products fit that mold of good old-fashioned technology. Our mechanical insulation industry believes that unassuming, mechanical insulation could play a larger role in enabling these climate goals if it got more visibility and folks understood the simplistic technology behind it — trapping air.

Insulations of all types don't stop heat transfer, they slow it down. The higher the R value (resistance to heat flow) of a material, the slower, or less efficiently, a material conducts heat and allows hot or cold to move through it. Gases, such as air, are excellent insulators because the molecules are much farther apart than solids or liquids, thereby making heat transfer very inefficient.

Fibrous or foam insulations create

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millions of tiny “dead” air spaces which prevent the circulation of air within the insulation. There are other technological advances that allow for higher R values than dead air, such as higher R value gases, vacuum panels and nano-sized dead-air spaces. For example, argon gas does not conduct heat as well as air (thus it has a higher R value), so it's an excellent insulator and is why double-pane window manufacturers prefer to fill the glass void with argon gas over air.

Mechanical insulation is a great example of a simple low-cost yet highly effective point-source carbon reduction — especially since many applications are at higher temperatures that minimize the CO<sub>2</sub> from being emitted in the first place.

Shannon Global Energy Solutions from New York documented savings on a 350-degree steam system with only 48 fittings. By adding only 1.5 inches of removable/reusable insulation covers to areas such as valves, steam drums, flanges and strainers, Shannon showed a 10-month payback on a \$31,000 installed job.

There are other technologies that are much more sophisticated than unassuming mechanical insulation — they've been developed to reduce CO<sub>2</sub> at the source. More sophisticated technologies actually suck CO<sub>2</sub> out of the air. The federal government and private companies have been investing millions of dollars in new technologies.

Some may feel that sustainability is a problem that should be addressed in the future. However, our industry realizes that many solutions are needed to help reach lofty sustainability goals. It is also important to remember that insulation technology not only helps curb emissions, but also saves money on energy bills the minute it is installed — and the savings continue every day thereafter.

Old-fashioned mechanical insulation: it's not low hanging fruit, it's fruit ripe for the picking.

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