

# Stillwater's MaxQ: Innovative new materials for health care, construction and beyond

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**STILLWATER** — Shoaib Shaikh reached for the door on what appeared to be a 1970s model Frigid-aire, and opened it. There were no cans of soda or jars of mayo inside.

This was a scientific machine called a thermal test chamber, and it is located in a laboratory at the Stillwater headquarters of an Oklahoma startup called MaxQ.

"It looks like a refrigerator, but what it allows us to do is set the environment inside from minus -10 degrees Celsius up to 60 degrees," said Shaikh, a co-founder of MaxQ. "What we can do is test boxes inside this. Hot, cold. Day, night. Alaska, Phoenix."

The boxes sentenced to this atmospheric torture chamber are a patented innovation created by MaxQ's team of scientists. Made of insulating and high impact resistant materials, the boxes are used for transportation of temperature sensitive payloads such as blood, vaccines and pharmaceuticals.

"Compared to other products in the market, our boxes are lighter and can be used to transport



Jim  
Stafford

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products for a longer duration," said Saravan Kumar, Ph.D., MaxQ's director of research. "And they are reusable."

Founded in 2012 by a team of then-OSU students, MaxQ generates revenue from sales of the boxes to blood banks, organ banks, hospitals and pharmaceutical companies. The Mayo Clinic is one high-profile customer.

So, how did this idea of super insulation get its start?

The company's young founders originally submitted a concept of a thin insulation for cube satellites to NASA. They named their company MaxQ to represent the maximum dynamic pressure on a spacecraft escaping the earth's atmosphere.

NASA's review panel did not oblige, but suggested they seek more earthly applications.

"The feedback from

NASA encouraged us to compete for a different market," Kumar said.

Today, MaxQ owns one patent on the box technology, has filed for a second on a compartmentalized vacuum insulation and is working on a third for highly insulating foams its scientists developed themselves.

The company is now innovating for the construction industry, operating out of a 6,200 square foot building that provides room for both R&D and manufacturing. It created a new structural insulation using foam filled honeycomb materials that provide four to five times the thermal protection of current solutions.

In addition to Shoaib and Kumar, full-time team members include Balaji Jayakumar, Ph.D., director of operations, Arif Rahman, Ph.D., research scientist, Jessica Shelton, director of design, and a part-time mechanical engineer.

Boot-strapped as a startup, the founders have since raised more than \$1 million through state and federal grant funding, business plan competitions, accelera-

tor programs and awards from Venturewell. They have yet to take any large private investment.

Two Small Business Innovation Research grants from the National Science Foundation provided almost \$850,000.

A \$200,000 Oklahoma Applied Research Support grant from the Oklahoma Center for the Advancement of Science and Technology (OCAST) backed development of the new foam insulation technology.

"The biggest thing I'm most proud is that all of us graduated from OSU and had this opportunity to start something on our own that is now helping people all over the world," Jayakumar said. "That's big."

Added Kumar: "We've been lab rats at the university for six to eight years and never saw any of our work go into the real world. But here, we're seeing people use our solutions. That's a real impact"

Jim Stafford writes about Oklahoma innovation and R&D topics on behalf of the Oklahoma Center for the Advancement of Science & Technology (OCAST).