New benchmark
An AIRAH Awards finalist shows the way.
AC of the future?

The organisers of the Global Cooling Prize believe that eight cooling technologies could change the world, writes Mark Vender.

A global coalition led by the government of India along with the Rocky Mountain Institute (RMI) has announced the eight finalists of the Global Cooling Prize. The international innovation competition aims to promote the development of super-efficient and climate-friendly residential cooling solutions for homes.

The finalist team includes some of the world’s largest air conditioner manufacturers, startups and corporations, and one university. They have pitched a wide range of technologies:

- **Daikin Air Conditioning India** has partnered with Daikin Industries and Nikken Sekkei to produce a vapour-compression cooling system with an improved design and HFO refrigerant integrated with evaporative cooling.

- **Indian AC manufacturer Godrej and Boyce** has partnered with A.T.E. Enterprises to produce a system that integrates advanced vapour-compression technology with proprietary evaporative cooling and solar PV.

- **Gree Electric Appliances** from China has partnered with Beijing’s Tsinghua University. Their solution also uses advanced vapour-compression technology integrated with evaporative cooling and solar PV.

- **The US Kraton Corporation** has partnered with IIT Bombay, Infosys and Porus Laboratories. This finalist uses evaporative cooling and membrane dehumidification for independent sensible and latent cooling.

- **M2 Thermal Solutions** is another US finalist, and its system also uses evaporative cooling and membrane dehumidification for independent sensible and latent cooling.

- **Indian company S&S Design Startup Solution** has designed a two-stage cooling system integrating a water loop and a traditional vapour-compression system with natural, low-GWP refrigerant.

- **Transaera** is another American finalist. Its system combines vapour-compression technology with desiccant dehumidification.

- Finally, **Barocal** is a new startup based on University of Cambridge research (UK). Its solution incorporates solid-state Barocaloric cooling technology.

“It gives me immense satisfaction to say that we have received some absolutely revolutionary cooling ideas,” says Sir Richard Branson, founder and CEO of the Virgin Group and global ambassador for the Global Cooling Prize.

“What makes this competition especially exciting, is the market transformation opportunity. It could be one of the biggest technology-based steps we can take to arrest climate change.”

AIRAH is an official outreach partner of the prize, and CEO Tony Gleeson, M.AIRAH, also offered words of congratulations in a video released by RMI.

“What you do is doing something special,” says Gleeson to the finalists. “It’s doing it more efficiently and more affordably so that the world can be a better place.”

The finalists have been awarded US$200,000 each to develop and ship their prototypes to India for testing in the summer of 2020. The winner will be announced in November of 2020 and awarded more than US$1 million in prize money as well as assistance to take the cooling solution to market.

Based in the ACT, James Spears, M.AIRAH, is principal consultant at DeltaQ. A member of AIRAH’s ACT division committee, he won the Future Leader gong at the 2019 AIRAH Awards.

**Responsibilities**

I currently split my time between project work and managing the Canberra office of DeltaQ.

**Specialty**

Conducting energy audits and making the business case for sustainability and energy efficiency. Many of our clients want to reduce their emissions but have a limited budget, so they want to know what projects will give them the biggest bang for buck.

**Passions**

Building tuning. I enjoy the challenge of finding ways to both reduce energy use and improve thermal comfort at the same time, all by working smarter with the existing HVAC systems and controls.

Data analytics tools have come a long way in recent years and are making the building tuning process far more powerful and effective.

**Challenges**

Plenty of things! Keeping up to date with the latest technologies, products and industry trends, learning how to help manage a small consultancy, and maintaining a work/life balance.

**Pastimes or hobbies**

Running and hiking.

**Inspiring words**

“There’s no better guarantee of failure than convincing yourself that success is impossible, and therefore never even trying.” – Max Tegmark

**Favourite destination**

Road tripping around the USA. So far, I’ve reached 29 of 50 US states.

**Future plans**

Continue to develop and grow the DeltaQ Canberra team and take on more challenging projects, such as targeting carbon neutrality for existing buildings.