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Hey, Quit Letting All The Heat Out!

An interview with Professor Jim Cotton
Energy Researcher, McMaster University

What is waste heat recovery and how does it influence sustainability?

Right now we're developing technologies and doing research around the thermal energy conversion of waste heat, the capture of that waste heat and storage.

What have you achieved so far?

We've just recently managed to convert waste heat from commercial ovens to electricity and thermal energy for the restaurant areas. At the current stage of the research, we've actually managed to capture 100 watts from a single oven and recover 3,000 watts continuously, thermal energy, and that's enough to meet the entire store needs for an entire day.

What does the future hold for your research?

There is an awful lot of waste in our society, and we don't even realize it. The amount of fossil fuels we use, 70% of that potential energy is just wasted to our environment. So our goal right now is to capture that 70%, focus on that, and we're looking at developing systems from a modular scale. Something on the order of a commercial establishment that can be grown, like Lego, to bigger and bigger systems. I'm looking at a building as a generator. So the building can generate electricity and thermal energy, optimize and manage the demand and the generation associated with that building and have capacity to store electricity and thermal energy. So if you get the commodity of scale, you can actually start introducing this at a cost-effective manner. But ultimately, it's about sustainability.