

QUT engineer develops electricity-free home cooling system

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(Phys.org)—A QUT researcher is developing a solar cooling and heating system for the home that will run independently of the electricity grid and generate domestic hot water as a by-product.

Paolo Corrada, a PhD student in QUT's Faculty of Science and Engineering said the system he has designed cuts [energy consumption](#) by 90 per cent.

"My target is to make it 100 per cent so that the system is self-sufficient to run off the main grid, costing the home owners nothing to run," Mr Corrada said.

"Heating and cooling account for about 65 per cent of energy

consumption in a house, whereas cooking accounts for only 6 per cent so it is easy to see why air conditioning devices are the main targets to reduce our energy consumption."

He said the system is based on the use of an absorption chiller which is a well-proven, efficient technology.

"An absorption chiller uses a chemical process to reject heat and, when using [waste heat](#) or heat generated by renewable energy, is more effective than the more common mechanical process of vapour compression at deflecting heat," he said.

"By using renewable [energy from the sun](#) we are providing an excellent technology to slash [power consumption](#) and the peak demand, especially in subtropical remote areas.

"The design is revolutionary because it incorporates also a desiccant wheel to remove moisture from the air and it uses the rejected heat from the absorption chiller to regenerate itself and to produce hot water for the house."

The combination of the two technologies together increases the unit's efficiency by 40 per cent when compared with the current solar cooling systems on the market, he said.

Mr Corrada said the system's [innovative design](#) meant it was also much quieter because it used a small pump instead of a compressor like the standard split systems.

Provided by Queensland University of Technology

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