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Harnessing energy in a bid to lower CO2 emissions

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by Aleisha Johnston

SCIENCE AND TECHNOLOGY

(L-R) Esther Galindo (University of Barcelona), Dr Martin Belusko (UniSA), Dr Kevyn Johannes (University of Lyon) Associate Professor Frank Bruno (UniSA) and Dr Ming Liu (UniSA).

Researchers from UniSA's Barbara Hardy Institute are part of a new international research project that aims to reduce climate-damaging CO2 emissions through the use of low-cost energy storage.

Known as INNOSTORAGE, the project is set to make breakthroughs in energy storage technologies that could be commercialised for both domestic and industrial use.

UniSA's Associate Professor Frank Bruno says the project will bring together experts from around the world in a bid to develop an environmentally friendly and low-cost energy storage solution for the future.

He says the UniSA research team's contribution to the INNOSTORAGE project will focus on the use of Phase Change Materials (PCMs).

"PCMs are one of the most promising thermal storage technologies," Assoc Prof Bruno says.

"PCMs are materials which are able to store and release large amounts of energy when they melt and solidify at a certain temperature. PCMs can absorb and release heat when the material changes from solid to liquid, and vice versa.

"This technology is likely to provide a low-cost, improved energy storage solution that can support the expansion of renewable energy, which will help reduce energy cost and CO2 emissions."

Over the next four years, researchers will evaluate different energy storage systems using PCMs. They will look at common PCMs such as paraffin, salts and fatty acids, because these substances have high energy storage capacities within a small temperature range.

Assoc Prof Bruno says UniSA has already undertaken significant research into PCMs.

"We have already commercialised our PCM research for the refrigeration industry. We hope to make improvements to this commercial research and expand it to other areas such as air conditioning and solar power plants," he says.

As part of the research project, UniSA will host leading international experts in the field of energy storage. The project will also involve joint workshops and collaborations, as well as providing UniSA staff with opportunities to teach and conduct research in Europe.

Leading the INNOSTORAGE project is the University of Lleida in Spain, with a total budget of €142,800 (AU$202,540) from European Union funds.

Joining the project are more than 30 experts from around the world, thanks to the Marie Curie International Research Staff Exchange Scheme. These researchers will bring together a body of knowledge from a number of international universities, including the University of Barcelona (Spain), University of Lyon (France), Ben-Gurion University of the Negev (Israel), University of Auckland (New Zealand) and Auburn University (USA).

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