Asuncion australia solar power

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As early solar research was taking off in the 1950s, our researcher Roger Morse and his team of 40 developed and commercialised some of Australia’s first solar technologies, including the first solar hot water system.

The IEA’s Renewables 2024 report projects solar photovoltaic (PV) will be the world’s largest renewable energy source by 2030.

Today, solar technologies operate from the subsurface and the ocean surface to outer space, poweringeverything from kitchen cooktops to factory furnaces and transport. They work day and night, using alternative materials and flexible new forms to improve efficiency and affordability.

Concentrated Solar Thermal (CST) technologies enable solar energy to be used day and night. CST systems use mirrors to focus sunlight onto a target, generating high temperatures. Heat is captured and stored in a material – either a fluid or a solid – for use on demand.

Our CST technology uses abundant and low-cost ceramic particles to store sunlight as heat, enabling long-duration energy storage to support industrial processes, green fuel production and reliable, dispatchable power.

What sets our CST technology apart is our innovative receiver, heat exchanger, and ceramic particles that efficiently collect, capture and transfer solar energy. This technology can reach temperatures above 1000 degrees Celsius and stores heat for up to 16 hours. This is a game-changer for energy-intensive heavy industries, offering a cleaner alternative to coal or gas.

To commercialise our research, we’ve partnered with utility leader Osaka Gas and advisory firm RFC Ambrian to launch FPR Energy. The new company is focused on reducing industrial emissions, which make up 20 per cent of Australia’s carbon footprint.

We"ve also partnered with Mars Petfood as their renewable heat partner to help their Wodonga factory achieve 100 per cent renewable energy by 2026.

Mike Collins: Solar thermal energy works by concentrating sunlight using mirrors. The light is then shone up on top of the tower where there’s a solar receiver and in that receiver there’s a panel of tubes which steam is flowing inside. That steam is heated to high temperatures and then it flows back down the tower to a turbine at the bottom of the tower, a steam turbine. The steam flowing through that turbine spins the generator to generate electricity.

Robbie McNaughton: The temperatures that we’ve obtained are over 550 degrees and at pressures above 24 mega Pascals. This is called supercritical steam generation and it’s a state where steam actually transforms without boiling.

The steam conditions that we’ve achieved are comparable to what is running at the moment in fossil fuel power stations. So we’re able to actually either displace the steam that goes into these, reducing the fossil fuel reliance, or in some cases maybe even replace fossil fuel completely.

It’s really exciting to work on these types of projects. Doing a world first is always exciting but in this case what we’ve actually been able to do is potentially make a step change in the way solar thermal power is generated.

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