

Preface: SolarPACES 2023, 29th International Conference on Concentrating Solar Power and Chemical Energy Systems

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The SolarPACES 2023 International Conference was held from 8th October to 13th October, 2023 in Sydney, Australia. Each year this is the leading international conference and network for advancing commercial deployment and research and development of concentrating solar-thermal power (CSP) and related technologies and this year lived up to expectations.

The conference brought together more than 350 participants from 27 countries. The technical presentations and plenary sessions highlighted exciting advances in state-of-the-art commercial deployment and next-generation research and development. There was a good emphasis on the symbiotic relationship between commercial deployment and R&D. There was also good focus on the use of solar thermal and storage for the industrial process heat market, which is a huge contributor to GHG emissions but has historically proven difficult to decarbonise. The other important market is sustainable aviation fuels and other chemicals, including hydrogen – this was also a strong focus.

This year's technical visit was to CSIRO's National Solar Energy Centre in Newcastle north of Sydney. This facility hosts two research level solar towers where Australian and international researchers have developed and tested several different high temperature receivers and reactors since its commencement in 2006. On display was the latest in falling particle and sodium receivers, as well as state of the art heliostats and control systems. The technical tour was followed by a very nice lunch overlooking a nearby beach, with some well-timed whales in view.

Australia has a target of 82% renewable electricity and 43% of 2005 GHG emissions by 2030. It boasts the highest direct normal solar irradiance (DNI) of any continent. Australia is also one of the highest energy exporters in the world. As such the potential for CSP with its inherent thermal storage is huge. The conference heard that longer duration energy storage such as offered by CSP would have a strong role to play in meeting these targets, especially as our reliance on coal-fired power drops sharply due to plant retirements.

The 2023 conference covered important contributions in all of these areas and more, across 14 technical tracks, coordinated and chaired by international experts in each field. The delegates experienced high quality contributions across the board, including 199 oral presentations and 157 posters. Additionally, the plenary sessions brought together leading experts on energy storage, Australian and global markets for CSP technologies, with a specific focus on fuels and industrial decarbonization.

On behalf of SolarPACES, I thank all of the conference participants, authors, presenters, track chairs, and the conference organizing committee for a highly successful conference.

Wesley Stein

2023 SolarPACES Conference Chair