ASX ANNOUNCEMENT

24 June 2025

Sparc Hydrogen Pilot Plant Opening Ceremony

HIGHLIGHTS

- **Sparc Hydrogen's construction of a first-of-its-kind green hydrogen pilot plant in South Australia is progressing to schedule and on budget**
- **Opening ceremony held today with key stakeholders in attendance at the pilot plant site within the University of Adelaide's Roseworthy Campus**
- **Pilot plant commissioning is expected to commence in July 2025**

Sparc Technologies Limited (**ASX: SPN**) (**Sparc, Sparc Technologies** or the **Company**) is pleased to announce that construction of Sparc Hydrogen's first-of-its kind photocatalytic water splitting (**PWS**) pilot plant is progressing to schedule and on budget with commissioning expected to commence during July 2025.

An opening ceremony is being held today, Tuesday 24th of June, at the University of Adelaide's Roseworthy Campus with key stakeholders in attendance including senior representatives from the Sparc Hydrogen joint venture partners, the South Australian Government and Shinshu University in Japan. The pilot plant represents a major step towards scaling and commercialising Sparc Hydrogen's patented PWS reactor technology delivering next generation green hydrogen production which is modular, scalable and, importantly, requires limited electricity. Sparc Hydrogen is a partnership between Sparc Technologies, Fortescue Ltd and the University of Adelaide which has been developing patented PWS reactor technology since 2022.

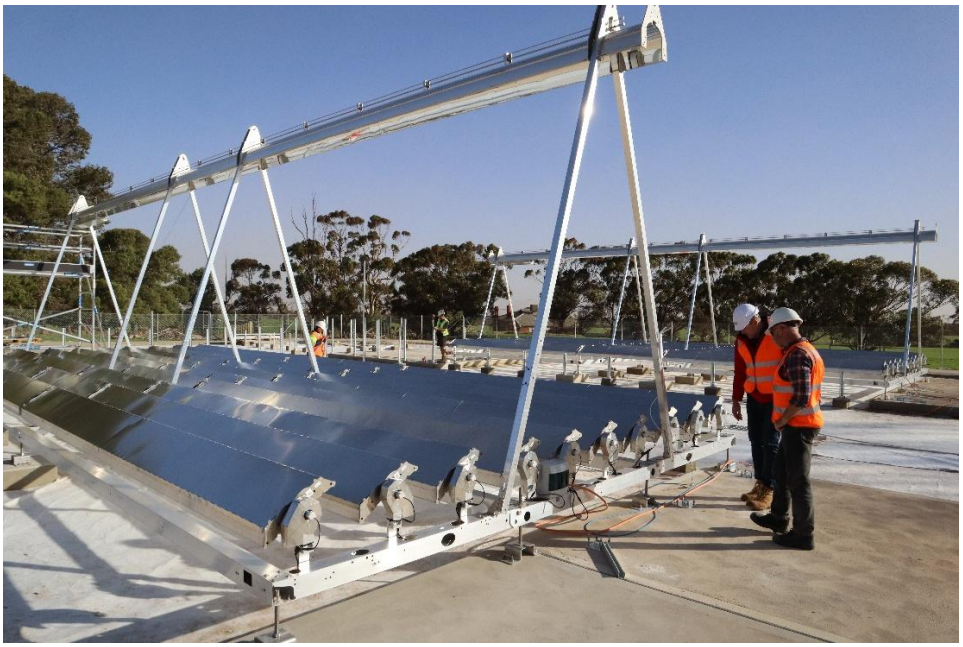

Figure 1: Sparc Hydrogen's Roseworthy pilot plant during June 2025

Sparc Managing Director, Mr Nick O'Loughlin commented:

> *"It is fantastic to see the Roseworthy pilot plant taking shape with commissioning to commence shortly. The plant represents a first-of-its-kind demonstration and R&D facility globally for photocatalytic water splitting and is a key step towards commercialisation of the technology. In an environment where major challenges exist for hydrogen projects due to the high cost of power, the requirement for new solutions to unlock low-cost green hydrogen without relying on electrolysers has never been higher."*

Professor Anton Middelberg, Deputy Vice-Chancellor (Research), University of Adelaide commented:

> *"Sparc Hydrogen demonstrates how the University of Adelaide is working with industry partners to develop new pathways for the translation of world-class research conducted here in South Australia. This project aims to respond to one of the great challenges of our times: the development of green energy solutions for a sustainable future for society."*

Michael Dolan, Director of R&D, Fortescue Ltd commented:

> *"At Fortescue, we are investing in a suite of technologies that can accelerate decarbonisation at an industrial scale. The Sparc Hydrogen pilot plant demonstrates the power of partnership in pushing the boundaries of green hydrogen innovation. Photocatalytic water splitting has long held promise and this project is a step toward unlocking its commercial potential."*

Sparc Hydrogen's contracting team has progressed construction of the pilot plant at pace since commencing in March 2025. Civil works were completed in early May ahead of successful installation of four linear Fresnel (**LFR**) concentrated solar modules which were delivered from Spain. The project team expects to complete balance of plant equipment installation and tie-in by early July. Reactor installation and commissioning is expected to commence in mid to late July 2025.

Sparc Hydrogen believes the Roseworthy pilot plant will be a globally leading facility for R&D and commercialisation of PWS, reinforcing its first mover position in this emerging direct solar to hydrogen technology. Once operational, Sparc Hydrogen will test different reactor designs and photocatalyst materials at Roseworthy in order to support and validate laboratory testing. Sparc Hydrogen is not aware of any similar facilities for testing and scale up of PWS under concentrated solar conditions.

Key objectives of the Roseworthy pilot plant (as detailed in the 7 January 2025 announcement of Stage 2):

- Advance Sparc Hydrogen's PWS reactor from TRL-5 to at least TRL-6[1] via semi-continuous operation of an 'on-sun' pilot plant using concentrated solar mirrors.
- Real world demonstration of a concentrated solar field integrated with photocatalytic water splitting for green hydrogen production.
- R&D tool allowing on-sun testing of Sparc Hydrogen's PWS reactors, alternate photocatalysts and balance of plant.
- Benchmarking photocatalyst performance and durability under concentrated solar conditions against laboratory testing.
- Verify detailed optical, thermal and production modelling.
- Understand design and engineering issues to guide further scale up.
- Understand operability of key equipment.
- Establish safety protocols and operating procedures.
- Guide further patenting opportunities.

[1] ARENA, Technology Readiness Levels for Renewable Energy Sectors, Commonwealth of Australia (Australian Renewable Energy Agency) 2014

- Showcase technology to new and existing stakeholders and funding bodies.
- Facilitate engagement with key equipment suppliers.
- Solidify Sparc Hydrogen's leading position in the development of concentrated solar based PWS reactors with ability to test under real world conditions.

Advantages of Photocatalytic Water Splitting (PWS)

Sparc Hydrogen's novel utilisation of PWS technology sets it apart from conventional approaches in the production of green hydrogen. Crucially, PWS removes the reliance on solar and/or wind farms and expensive electrolysers, to produce green hydrogen from water. This addresses a fundamental issue in the nascent green hydrogen industry - the cost of renewable electricity. Sparc Hydrogen's pioneering technology employs a photocatalyst and sunlight to produce green hydrogen directly from water. Hydrogen produced from PWS can serve as a clean fuel or feedstock to decarbonise hard-to-abate industries, including as a replacement green solution for the current market uses for hydrogen, totalling ~100Mtpa.

Through commissioning and utilisation of the pilot plant, Sparc Hydrogen will aim to test and demonstrate the following key potential advantages of producing green hydrogen via PWS over solar PV with electrolysis, which include:

- Photocatalysis does not use electricity to split water into hydrogen and oxygen, decoupling green hydrogen production from power costs.
- The simplified direct solar to hydrogen process offers the potential for very low production costs.
- Sunlight is the sole energy input into the PWS reactor, delivering emissions free hydrogen and industrial heat.
- Sparc Hydrogen uses commercially available, scalable and flexible concentrated solar infrastructure.
- PWS has a comparative advantage over electrolysis in off-grid and remote locations.

		Sparc Hydrogen Photocatalysis	Solar PV Electrolysis	Implications for potential end uses
Use case determinants	High solar resource	✓	✓	• Lowest cost production is suited to high solar (DNI) regions
	Remote and/or off-grid	✓	✗	• Photocatalysis can serve mine sites, remote power & refuelling, agriculture where electrolysis can't
	Flexible scale & modularity	✓	✗	• Photocatalysis is better suited to onsite / near site industrial uses
	Comingled gas product	✓	✗	• Suits combustion use cases assuming safety can be managed
	Industrial heat co-product	✓	✗	• Dual H2, heat product users may include alumina, paper & pulp, ammonia

Figure 2: Comparison of Sparc Hydrogen's PWS process and solar PV coupled with electrolysis by key end use determinants.

-ENDS-

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About Sparc Hydrogen

Sparc Hydrogen is a joint venture between Sparc Technologies, the University of Adelaide and Fortescue developing next generation green hydrogen technology using a process known as photocatalytic water splitting. This process requires only sunlight, water and a photocatalyst to produce green hydrogen, without an electrolyser. Sparc Hydrogen's patented reactor utilises concentrated sunlight to improve the economics of PWS and to deliver a modular, scalable system. Given lower infrastructure requirements and electricity use, PWS has the potential to deliver a cost and flexibility advantage over electrolysis.

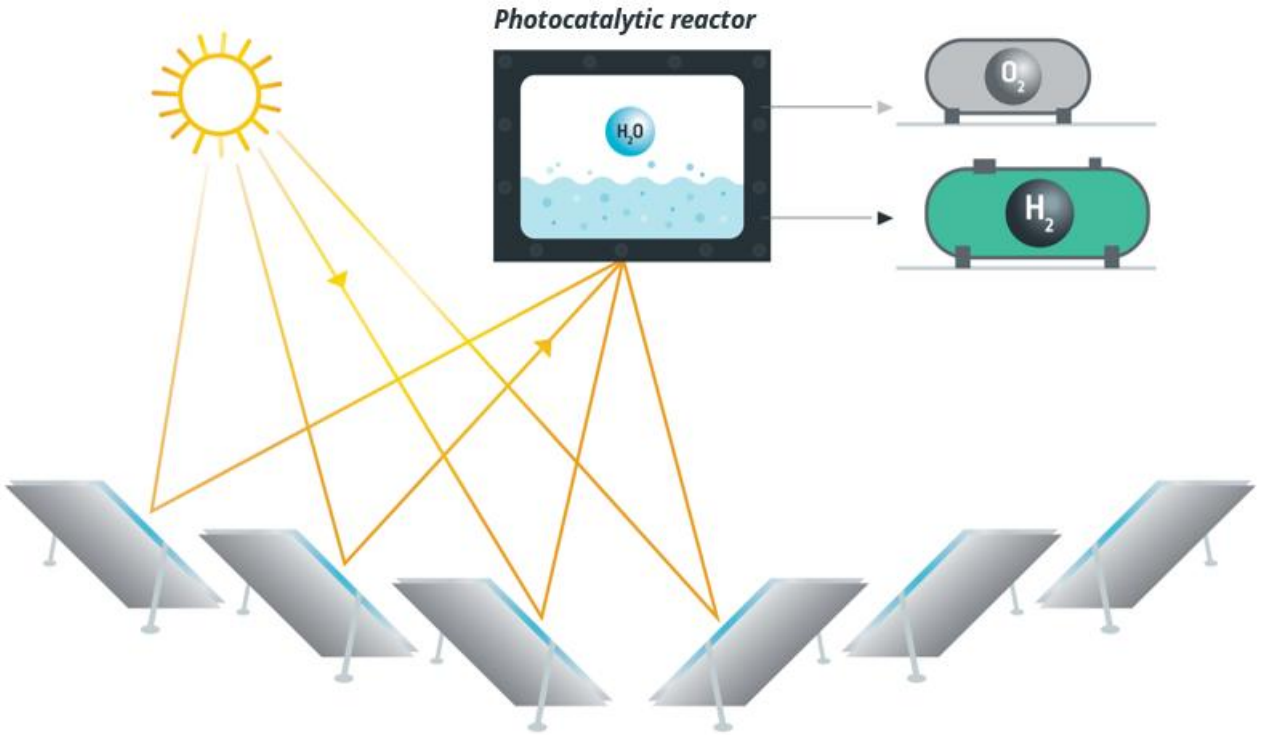
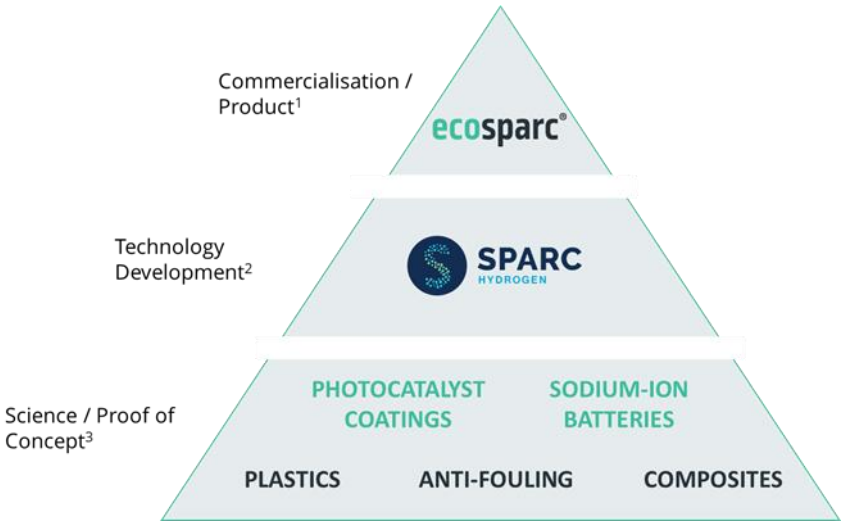


Figure 3: Sparc Hydrogen schematic demonstrating combination of concentrated solar and photocatalytic water splitting

About Sparc Technologies



Sparc Technologies Limited ('Sparc', ASX: SPN) is an Australian technology company developing solutions that enhance environmental and sustainability outcomes for global industries. Sparc has two transformative technology areas in which it works: green hydrogen and graphene enhanced materials. Sparc conducts research and development in-house and has extensive engagement and relationships with the university sector in Australia and globally.

1. **Sparc Hydrogen** is a joint venture between Sparc Technologies, Fortescue Ltd and the University of Adelaide which is pioneering next-generation green hydrogen production technology. Photocatalytic water splitting (PWS) is an emerging method to produce green hydrogen without electrolysers - using only sunlight, water and a photocatalyst. Given lower infrastructure requirements and energy use, PWS has the potential to deliver cost and flexibility advantages over existing hydrogen production methods.

2. Sparc has developed and is commercialising a **graphene based additive** product, **ecosparc®**, which at low dosages significantly improves the performance of commercially available epoxy-based protective coatings. Sparc has commissioned a manufacturing facility to produce **ecosparc®** and is engaging with global coatings companies and large asset owners on testing, trials and commercial partnerships.

For more information about the company please visit: sparctechnologies.com.au

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