

## 2024 Shareholder Letter

Dear Sparc Shareholder,

I am pleased to provide a wrap of Sparc Technologies' key activities in 2024 and share some insights into exciting developments for the Company in 2025.

*"2024 may well go down as a year of reckoning for the green hydrogen industry. Projects in Australia and globally are being strangled by high electricity prices, representing the main cost input when producing 'conventional' green hydrogen via electrolysis. In addition, the industry is coming to terms with electrolyser technology limitations and social licence issues, particularly associated with transmission lines. These issues and risks are flowing through to heavily out-of-the-money business cases for green hydrogen projects...."*

My half year update provided a view on *conventional* green hydrogen which has come to pass in the form of many large companies pulling back from, or in some cases exiting, projects over recent months. The industry remains dominated by proponents relying on electrolyzers to split water into hydrogen and oxygen—a process requiring vast amounts of renewable electricity. Even with substantial subsidies available it is hard to conceive of a change to the current situation whereby the cost of firm green power needs to fall to levels not seen before, (A\$20 - \$30/MWh), to make these projects viable. Against this backdrop the *"reckoning for the green hydrogen industry"* shows no sign of abating.

Whilst Sparc has undoubtedly felt the ripple effects of the current industry shakeout, I view the current dynamics as a fundamental positive for our Company. My logic is as follows:

- The global economy will continue to move towards reducing and, where possible, removing carbon emissions from current end uses and supply chains.
- The manufacture of goods, including steel, cement, aluminium, plastics etc, contributes ~30% of global carbon emissions, whilst the entire transport sector (cars, planes, ships, trains) contributes ~15%.
- Green electricity alone cannot eliminate the carbon emissions embedded in most of the manufacturing sector and a significant portion of the transport sector.
- To expand on the point above, electricity is not a transportable fuel, nor is it a feedstock that can be used in the manufacturing of chemicals, or iron, or to produce high temperature heat; these are typically referred to as 'hard-to-abate' industries / emissions.
- Low carbon / renewable / green hydrogen is not optional in a low carbon economy, it is essential.
- There is an urgent requirement to decarbonise the **existing** 95Mtpa hydrogen industry which supports the production of ammonia and chemicals and contributes ~2.5% of global carbon emissions.
- Substantial effort and funding will continue to be directed towards making green hydrogen viable, both as a potential low carbon fuel and manufacturing feedstock.

- With the economic gap as wide as ever for electrolysis caused by persistently high electricity prices, opportunity abounds for new ‘step-change’ technologies which can deliver green hydrogen in a **different** way.

This is where Sparc Hydrogen’s next-generation photocatalytic water-splitting (PWS) technology can play a pivotal role. Sparc Hydrogen’s approach is different to most other green hydrogen proponents. Our method de-couples the inextricable link between electricity prices and electrolysis and holds significant potential to deliver the step-change required to make low-cost green hydrogen a reality. In addition, Sparc Hydrogen’s technology is being designed to overcome several additional limitations of electrolysis projects including greater ability to produce at the point of use, scalable and modular design, simple balance of plant and potential for by-product sales in the form of process heat.

This differentiated approach underpins our recent decision—alongside Fortescue and the University of Adelaide—to advance to Stage 2 piloting, even as others are pulling back.

		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 1: Comparison of PWS and electrolysis via solar PV by key end use determinants**

A strong IP portfolio plus a distinct first mover advantage positions Sparc Hydrogen as the leading proponent of PWS technology globally. This will only be reinforced by the construction of a first-of-its-kind pilot plant in Roseworthy, South Australia. The current timeline based on a recently completed FEED study would see commissioning of the plant in mid-2025. The pilot plant will play a critical role in de-risking reactor design, understanding real-world operations and providing a test-bed for world leading photocatalyst materials, including those from our collaborators at Shinshu University. For Sparc Technologies, this pilot plant will showcase the technology to new and existing stakeholders and is a key step towards commercialisation. I look forward to keeping you updated on progress of the pilot plant during 2025.

Switching focus to our graphene-based additive division, I am pleased to report that the commercialisation strategy for **ecosparc**® has materially advanced during 2024. Our updated approach to coatings manufacturers and asset owners is paying dividends, as evidenced by a significant increase in customer interactions over recent months and three end-user trials with substantial asset owners, Govt of SA, Santos and 29Metals.

Our progress, coupled with broader dynamics within the coatings industry, indicate that graphene will be used as a tool to improve anticorrosion well into the future. Sparc Technologies is leading the industry with our **ecosparc**® product which has exhaustive data to support its performance. Our name is now being recognised by several of the largest players in the anti-corrosion coatings industry as the ‘go-to-company’ for graphene. Whilst timing for

first sales of **ecosparc**<sup>®</sup> is uncertain, I am confident that 2025 will be a pivotal year as we begin to see the results of our significant investment in this highly technical yet lucrative area of the coatings industry.

Our value proposition is compelling, as summarised below.

<b>Industry relevant data</b>	Sparc Technologies has compiled >10,000 datapoints over the past 6 years to relevant ISO standards, repeatedly demonstrating the effectiveness and reliability of <b>ecosparc</b> <sup>®</sup> to improve the anti-corrosive performance of industry standard epoxy-based protective coatings.
<b>Graphene selection</b>	Graphene has 18 different properties which makes characterisation and selection critical for end-use performance. Sparc Technologies has reviewed and tested >100 grades of graphene and only a handful are qualified for use in <b>ecosparc</b> <sup>®</sup> .
<b>Method of action</b>	Sparc is the only company globally to conclusively demonstrate how graphene is acting to improve the strength and flexibility of epoxy-based materials, via a 'shock-absorber' principle.
<b>Shelf life / stability</b>	Creating a stable dispersion of graphene in a coating polymer matrix has been a significant challenge in this area of research. <b>ecosparc</b> <sup>®</sup> has shown shelf life stability for >2 years.
<b>Manufacturing</b>	Sparc has a commercial additive manufacturing facility in Adelaide.
<b>Ease of adoption</b>	Sparc has developed <b>ecosparc</b> <sup>®</sup> so that it can be incorporated at the point of paint manufacture without any change to existing processes.
<b>Field trials</b>	Real-world trials on steel infrastructure commenced in mid-2024 with results expected in 2025.
<b>Commercial applicability</b>	Sparc Technologies has modelled an ROI of 46x for asset owners through the use of <b>ecosparc</b> <sup>®</sup> -enhanced coatings through reduced maintenance events.

**Table 1: Value proposition for ecosparc<sup>®</sup> graphene based additive**

In addition to our core projects, we continue to progress work in adjacent technology areas that leverage our skills, particularly in the sourcing, characterisation, and dispersion of graphene in coatings and polymers. Solid R&D progress has been made in the areas of graphene-enhanced plastics and in antifouling through our **biosparc**<sup>™</sup> technology platform. I'm looking forward to sharing more details about progress on these new market opportunities in 2025.

Our financial position is strong and I would like to thank both existing and new shareholders for their ongoing interest and support.

Thank you for your continued support. Wishing you a happy new year and prosperous 2025.

Sincerely,

Nick O'Loughlin  
Managing Director