Transformational Technologies for Global Industries

September 2024

ASX: SPN

Disclaimer

The release, publication or distribution of this presentation in certain jurisdictions may be restricted by law and therefore persons in such jurisdictions into which this presentation is released, published or distributed should inform themselves about and observe such restrictions.

This presentation is for informational purposes only and does not constitute an offer to sell, or solicitation to purchase, any securities. Such Offer can be made only through proper subscription documentation and only to investors meeting strict suitability requirements. Any failure to comply with these restrictions may constitute a violation of applicable securities laws. In providing this presentation Sparc Technologies Limited ACN 009 092 068 ("SPN") has not considered the financial position or needs of the recipient.

Persons needing advice should consult their stockbroker, bank manager, solicitor, attorney, accountant or other independent financial and legal advisors.

This document may contain forward-looking statements with respect to the financial condition, results of operations, and business strategy of SPN. These forward-looking statements are based on estimates, projections and assumptions made by SPN about circumstances and events that have not yet taken place. Although SPN believes the forward looking statements to be reasonable, they are not certain. Forward-looking statements involve known and unknown risks, uncertainties and other factors that are in some cases beyond SPN's control, and which may cause actual results, performance or achievements to differ materially from those expressed or implied by the forward-looking statements (and from past results). SPN makes no representation or warranty as to the accuracy of any forward-looking statements in this presentation and undue reliance should not be placed upon such statements. Forward-looking statements may be identified by words such as "aim", "anticipate", "assume", "continue", "could", "estimate", "expect", "intend", "may", "plan", "predict", "should", "will", or "would" or the negative of such terms or other similar expressions that are predictions of or otherwise indicate future events or trends.

The forward-looking statements included in this presentation speak only as of the date of this presentation. SPN does not intend to update the forward-looking statements in this presentation in the future. Certain statistical and other information included in this presentation is sourced from publicly available third-party sources and has not been independently verified.

This presentation is not a disclosure document for the purposes of Chapter 6D of the Corporations Act 2001 (Cth) and does not purport to include the information required of such a disclosure document. It has not been lodged with or approved by any regulatory authority, such as the Australian Securities and Investments Commission or the Australian Securities Exchange.

The information in this presentation does not constitute personal investment advice. This presentation is not intended to be comprehensive or provide all information required by investors to make an informed decision on any investment in the Company. Specifically, this presentation does not purport to contain all the information that investors and their professional advisers would reasonably require to make an informed assessment of the Company's assets and liabilities, financial position and performance, profits, losses and prospects. In preparing this presentation, the Company, did not take into account the investment objectives, financial situation and particular needs of any particular investor.

Corporate Snapshot

96m
Shares on issue

$16m
Market Cap*

$0.17
Share price*

$2.7m
Cash**

~35%
Top 20 s/holders

6.8%
University of Adelaide

Board & Management

Nick O'Loughlin
Managing Director

Stephen Hunt
Non-Exec Chair

Daniel Eddington
NED

Dr Denis Wright
GM Graphene

Kristen Kubank
CFO

Paul Baccanello
Innov., Growth & Sustainability

Key Partners

Fortescue

THE UNIVERSITY of ADELAIDE

Flinders University

* As at 17 September 2024

** As at 30 June 2024

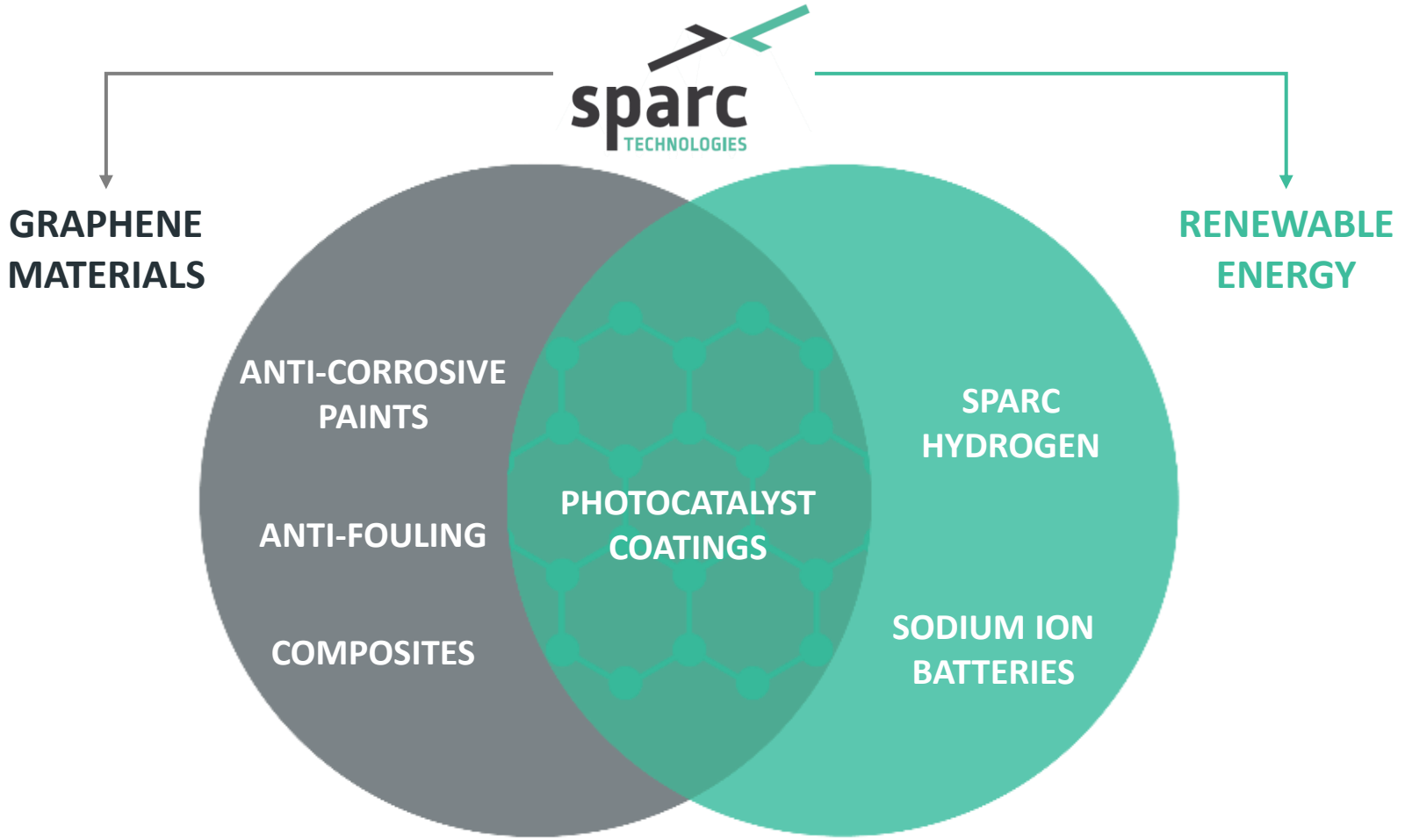
Unique Technology Portfolio

- Sparc is advancing a portfolio **innovative technologies** that align with global **sustainability** and **environmental** priorities

- **Core Technology Areas:**

Graphene Materials
High-performance additives for anticorrosive paints, protective coatings and composites

Renewable Energy
Novel green hydrogen production and sustainable anode materials for sodium-ion batteries



SPARC HYDROGEN

Next Generation Green Hydrogen Technology

sparc TECHNOLOGIES

Fortescue

THE UNIVERSITY of ADELAIDE

Flinders University

Sparc Hydrogen: Key Highlights

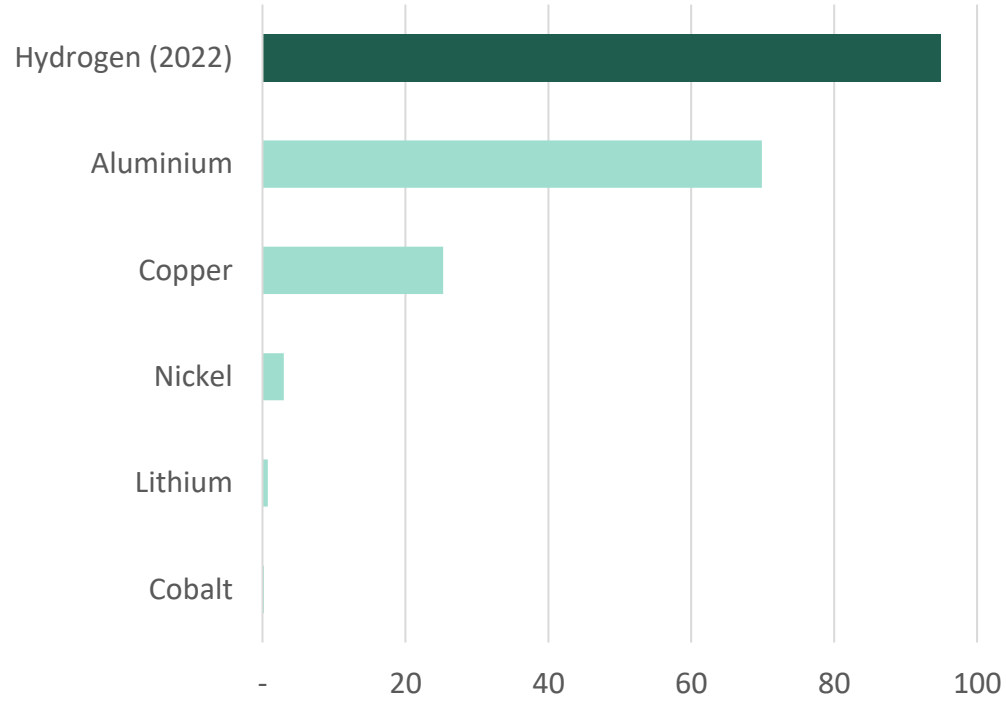
- **Innovative Technology:** Unique green hydrogen production technology with no electrolysers or electricity required to split water into hydrogen and oxygen.
- **Advantages Over Electrolysis**: Simple, cost-effective, scalable alternative to electrolysis with lower energy and infrastructure requirements.
- **Extensive Testing:** ~10 years of R&D at the University of Adelaide & Flinders University and successful real-world prototype testing at CSIRO Energy Centre, completed in 2024.
- **Pilot Plant Progressing:** First-of-its-kind pilot plant development underway; construction decision in Q4 2024.
- **Strong Partners:** Joint venture with industry leaders Fortescue Limited and the University of Adelaide.
- **Existing Market Need:** Targeting the ~95 Mtpa global hydrogen market, which currently contributes over 1Gt of CO_2 emissions annually, similar to the entire aviation sector.
- **Significant Market Growth:** Low-cost green hydrogen will unlock demand from hard-to-abate industries driving a potential sixfold increase in demand by 2050[1].

1. Green hydrogen: Energizing the path to net zero, Deloitte Economics Institute, 2023

Why is **Green** Hydrogen Required?

- **Current Market:** Hydrogen (H_2) is a ~95Mtpa global market, primarily used in ammonia production, petroleum refining, and heavy industry.
- **Environmental Impact:** Current hydrogen production generates over 1Gt of CO_2 emissions annually, accounting for 2.5% of global emissions—equivalent to the entire aviation sector.
- **Existing Need:** There is an urgent need to transition to green hydrogen to decarbonise the current hydrogen industry.
- **Key Role in Hard-to-Abate Sectors:** Green hydrogen is essential for decarbonising sectors like steelmaking, chemicals, cement, high-temperature heating, aviation, shipping, and heavy road transport, with demand projected to increase sixfold by 2050[1].

Commodity demand (Mtpa)



Source: Public filings

1. Green hydrogen: Energizing the path to net zero, Deloitte Economics Institute, 2023

The Current Problem – Electrolysis

Green hydrogen from electrolysis still faces major challenges in achieving commercial and technical viability at scale.

Transmission lines

- Social licence issues
- Lengthy development times

Solar PV + Wind + Batteries

- Mature technologies
- Limited cost improvements
- Social licence issues
- Supply chain risks

Electrolysers

- Expensive
- RE compatibility issues
- Yet to be effectively scaled
- Supply chain risks

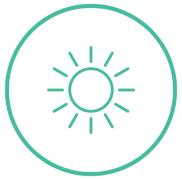
The Future – Photocatalysis

Zero-electricity

Photocatalysis produces H_2 from H_2O without electricity

Low cost

The simplicity of photocatalysis drives potential for very low costs



Solar driven

Sunlight is the only energy input driving the reaction

Scalable

Utilises a concentrated solar system which is inherently scalable

Emission-free

Water + sunlight = green hydrogen

Sparc Hydrogen

Our mission

Sparc Hydrogen is developing next generation green hydrogen production technology through photocatalytic water splitting (PWS), an innovative process that uses only sunlight, water, and a photocatalyst—offering a sustainable alternative to electrolysis.

Our technology

Our patent-pending solar reactor enhances the efficiency of photocatalytic water splitting by utilising concentrated sunlight. This innovative approach, with lower infrastructure and energy requirements, offers a potential cost and flexibility advantage over electrolysis.

Best-in-Class Partners

- 52% Sparc Hydrogen shareholder[1]
- JV management and coordination
- Technology commercialisation expertise

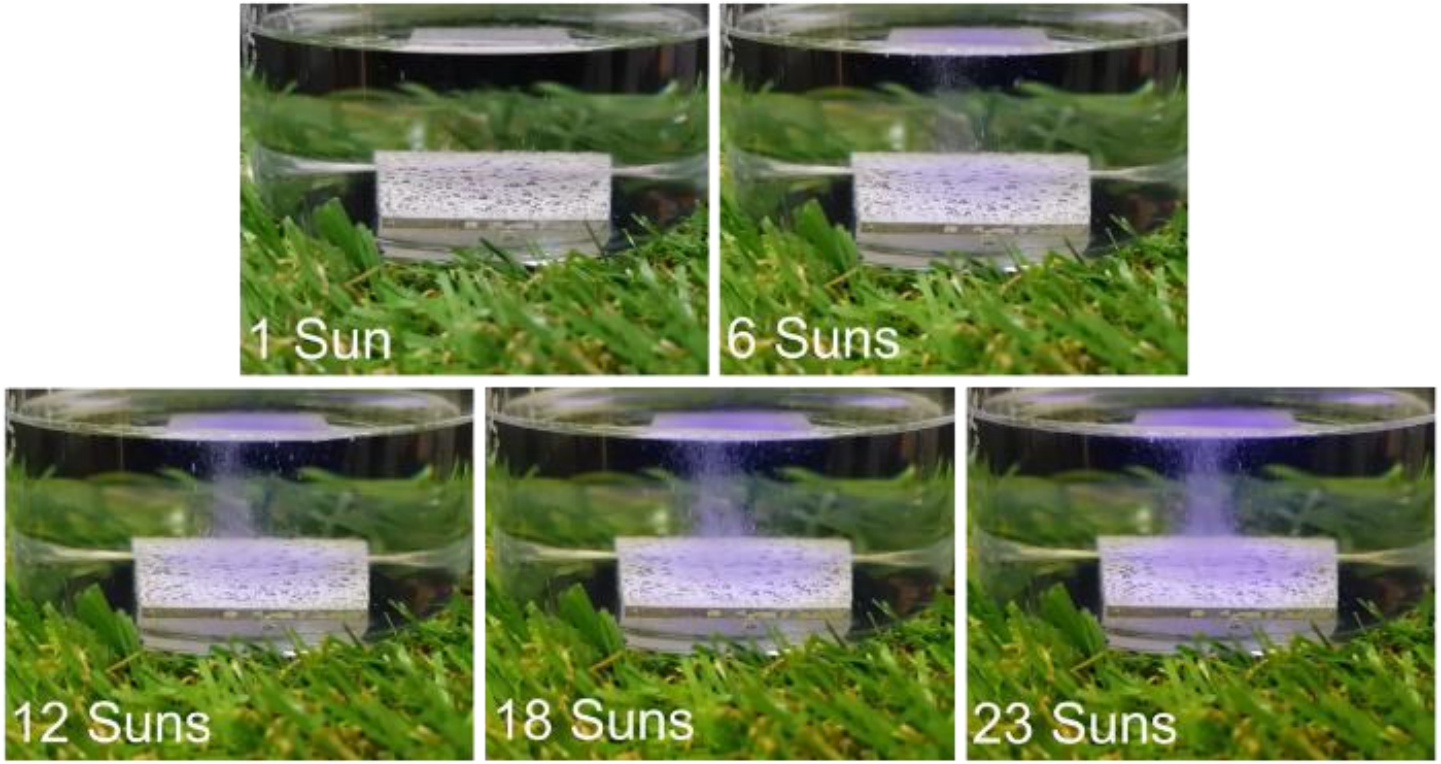
- 20% Sparc Hydrogen shareholder[1]
- Global leader in green hydrogen
- Substantial project development experience

- 28% Sparc Hydrogen shareholder[1]
- Developer and contributor of IP[2]
- Leading R&D work and providing lab facilities

1. Refer to SPN ASX release 2 February 2022
2. Together with Flinders University

Sparc Hydrogen's Unique Approach

- Sparc Hydrogen is one of the only companies combining concentrated solar with photocatalytic water splitting (PWS), advantages being:
  - Reduced photocatalyst use.
  - Modular and scalable mirror fields.
  - Increased efficiencies and heat generation.
- Sparc Hydrogen's reactor is being designed to:
  - Slot into an off-the-shelf linear Fresnel field.
  - Utilise by-product heat for industry use or power generation.
- Sparc Hydrogen is working with a leading photocatalyst developer incorporating their materials into reactor testing.



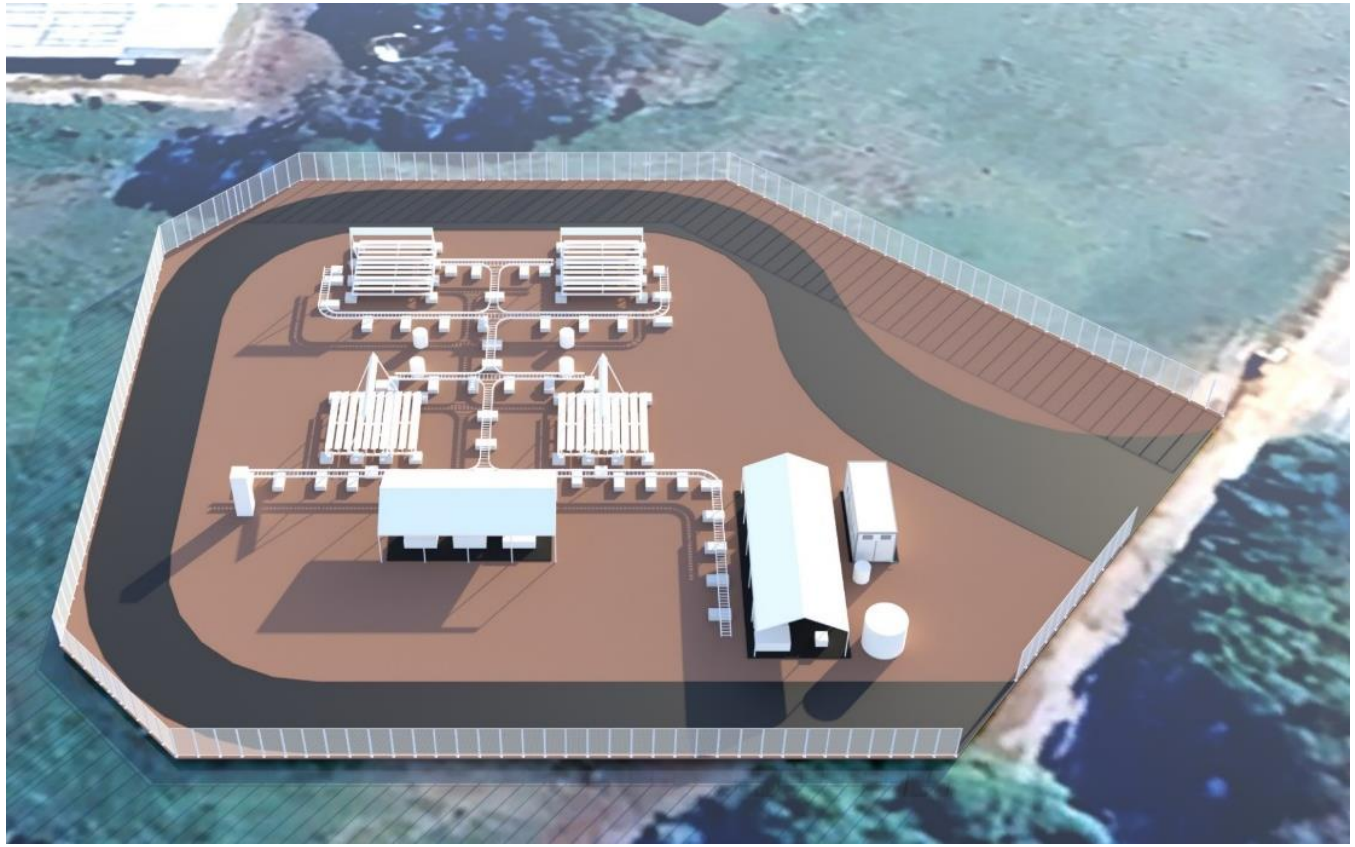
Prototype Testing at CSIRO Energy Centre

- Sparc Hydrogen successfully tested its PWS reactor prototype at the CSIRO Energy Centre in Newcastle, marking the first demonstration of the technology outside of the lab.
- Testing provided critical insights for scaling the reactor towards a pilot plant and advanced the Technology Readiness Level (TRL) from 4 to 5.
- The project received support and funding from CSIRO's Kick-Start Program and the Australian Government's AEA Seed Program.

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

Pilot Plant Development Underway

- Following encouraging results from lab testing and successful prototyping at CSIRO, development of a first-of-its-kind pilot plant utilizing Sparc Hydrogen's concentrated solar based PWS reactor is underway.
- The pilot plant will be located at the University of Adelaide's Roseworthy Campus, ~50km north of Adelaide in South Australia.
- The plant will utilize Sparc Hydrogen's scalable reactor design and will represent a key milestone in derisking the technology.
- FEED study is due for completion early in Q4 2024 and construction is expected to take <6 months.

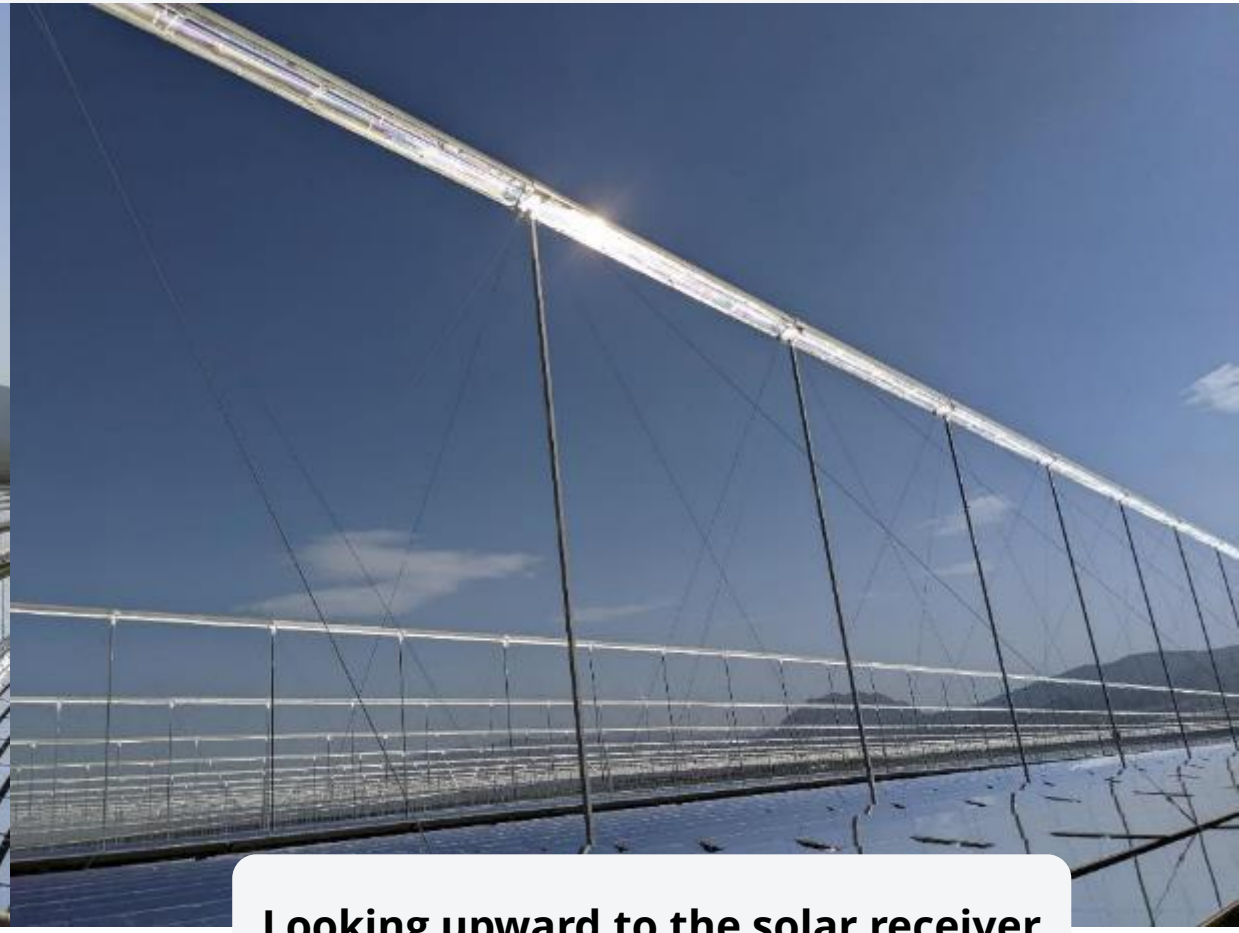


Sparc Hydrogen 3D pilot plant model based on pre-FEED study

Modular and Scalable Infrastructure

Site visit photos from a linear Fresnel field in Europe

View overlooking the mirror field

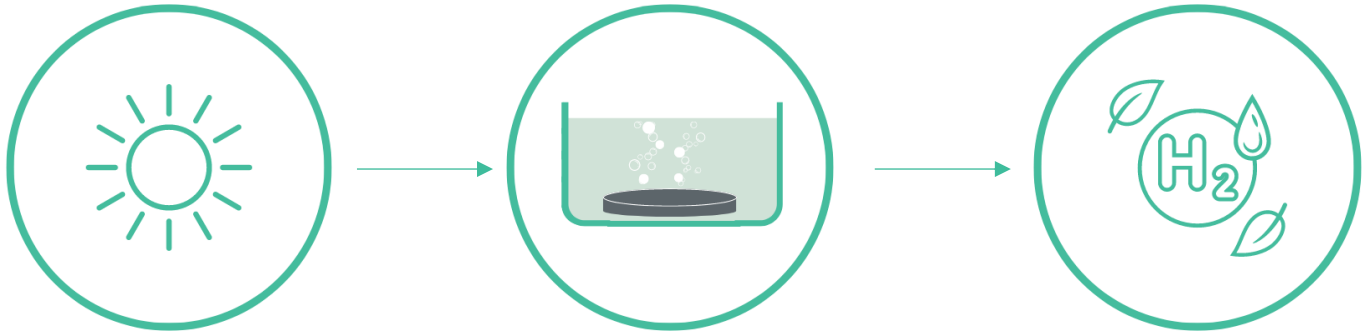


Looking upward to the solar receiver

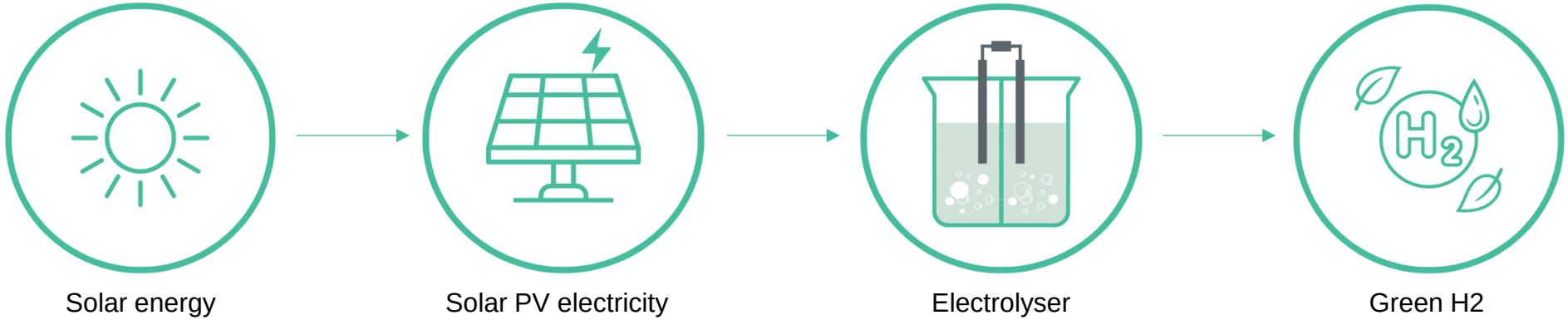
Simplicity Drives Low-Cost Potential

*"Such systems (**PWS**) offer great potential for cost reduction of electrolytic hydrogen, compared with conventional two-step technologies." (CSIRO)*[1]

Photocatalysis



Solar PV Electrolysis



1 Sourced from Bruce S, Temminghoff M, Hayward J, Schmidt E, Munnings C, Palfreyman D, Hartley P (2018) National Hydrogen Roadmap. CSIRO, Australia

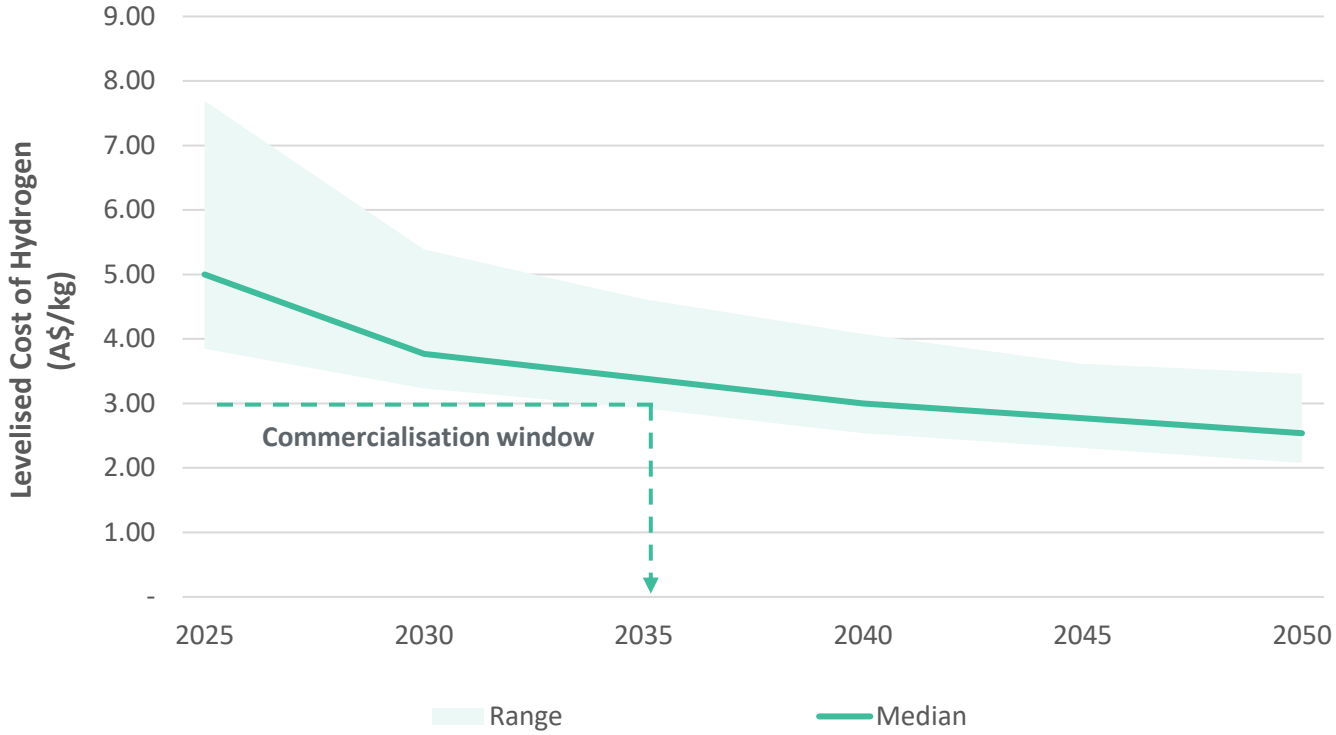
Broad Potential Use Cases

		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
	Flexible scale & modularity	✓	✗	• Photocatalysis is better suited to onsite / near site industrial uses
	Industrial heat co-product	✓	✗	• Dual product users may include alumina, paper & pulp, ammonia

The Green Hydrogen Race is On...

- Conventional green hydrogen (electrolysis) projects will not reach industry and Government cost targets until well into the mid 2030s, at best.
- There is a **substantial window of opportunity** for **new technologies** such as Sparc Hydrogen to commercialise **low-cost hydrogen** production.
- Sparc Hydrogen is well placed to benefit from funding support from Australia, the US, EU and other jurisdictions with clean hydrogen policies.

Forecast cost of green hydrogen via electrolysis[1]



1. Green hydrogen: Energizing the path to net zero, Deloitte Economics Institute, 2023

GRAPHENE

Unique Approach to a Next Generation Super-material

ecosparc® : Key Highlights

- **Addressing a Global Challenge:** Corrosion costs ~US$6 trillion per annum and corroded steel replacement accounts for up to 3.4% of global GHG emissions[1].
- **Revolutionary Additive: ecosparc®** is a graphene-based additive that significantly enhances the anti-corrosive properties of existing marine and protective coatings for steel infrastructure.
- **Significant Value-in-use:** Extended maintenance intervals corresponds to cost, emissions, productivity and safety benefits for asset owners.
- **Market Opportunity:** Targeting the growing global anti-corrosion coatings market, projected to reach nearly US$43 billion by 2029[2].
- **Real-World Validation:** Growing list of global coatings companies testing in their products and field trials underway with the SA Government and 29Metals on relevant steel infrastructure.
- **Platform Technology:** Sparc's expertise in graphene and coatings for anti-corrosion is leading to other opportunities in fast growing areas such as bioplastics and anti-fouling.

1. Iannuzzi, M., Frankel, G.S. The carbon footprint of steel corrosion. *npj Mater Degrad* **6**, 101 (2022)
2. Sourced from Exactitude Consultancy https://exactitudeconsultancy.com/reports/3960/anti-corrosion-coatings-market/

The Problem – Corrosion of Steel

The Cost and Carbon Problem

- **~US$6 trillion** direct and indirect costs associated with the impact of corrosion globally per annum[1]
- Corroded steel replacement accounts for up to **3.4% of global greenhouse gas (GHG) emissions[1]**

The Business Interruption Problem

- Asset shutdowns
- Productivity loss
- Safety risks

1. Iannuzzi, M., Frankel, G.S. The carbon footprint of steel corrosion. *npj Mater Degrad* **6**, 101 (2022)

About ecosparc®

What is it?: **ecosparc®** is a graphene-based additive additive - Sparc is not a paint company.

Performance Boost: Added in small amounts, **ecosparc®** significantly enhances existing protective coatings used on steel assets to combat corrosion.

Key Benefits: By extending the time between maintenance cycles, **ecosparc®** delivers substantial cost, emissions, productivity and safety benefits.

lower maintenance costs[1]

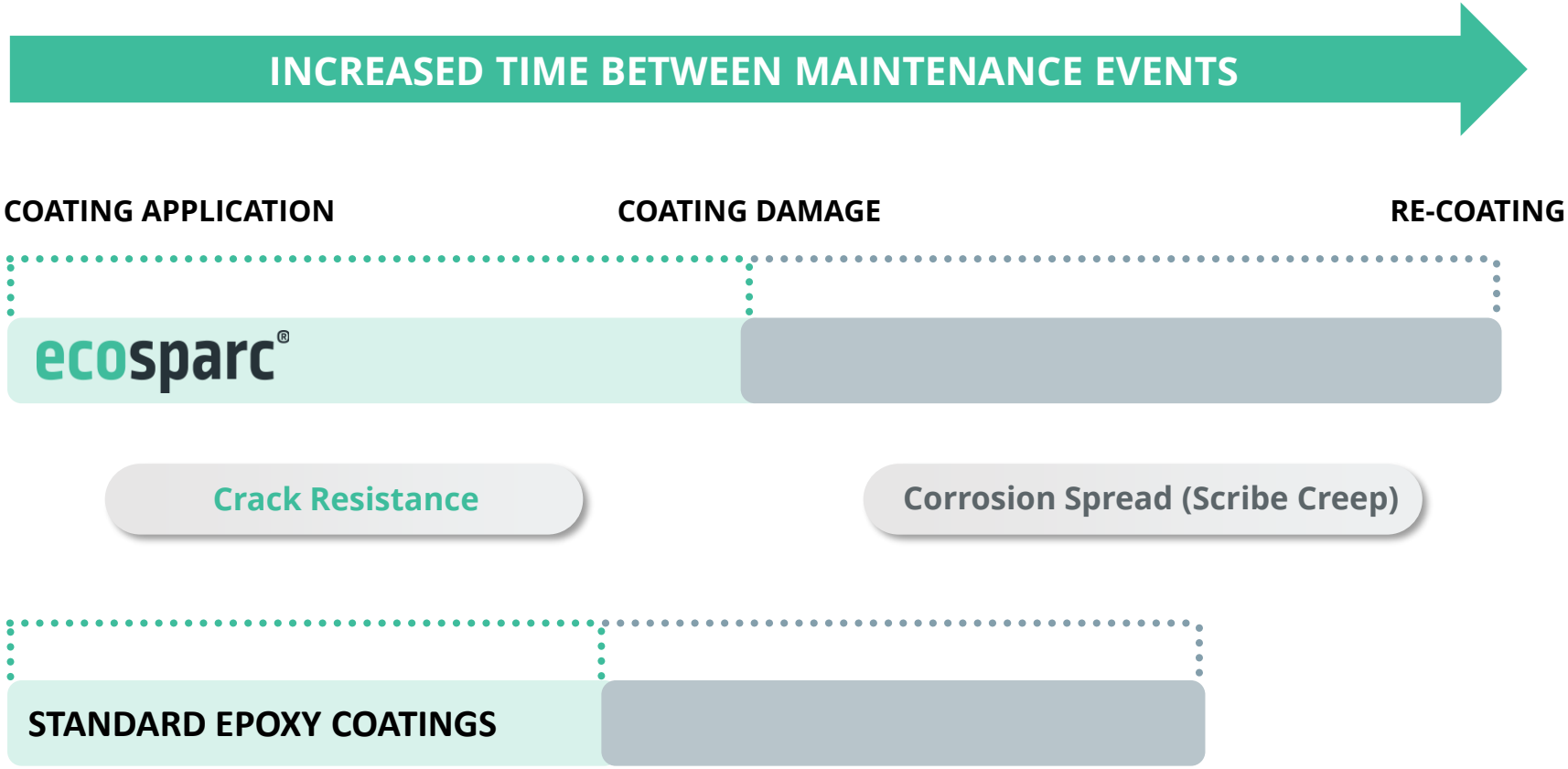
reduction in carbon emissions[1]

1. Bontick, P.A. (2023), Carbon footprint of ecosparc graphene additive for protective coating applications, Lifecycles, Melbourne, Australia

Dual Anti-Corrosion Mechanism

ecosparc® enhanced epoxy-based coatings:

- Demonstrate increased strength and flexibility leading to less cracking.
- When cracking does eventually occur, corrosion spread is reduced by **26% - 79%** based on internally formulated and commercially available coatings[1].

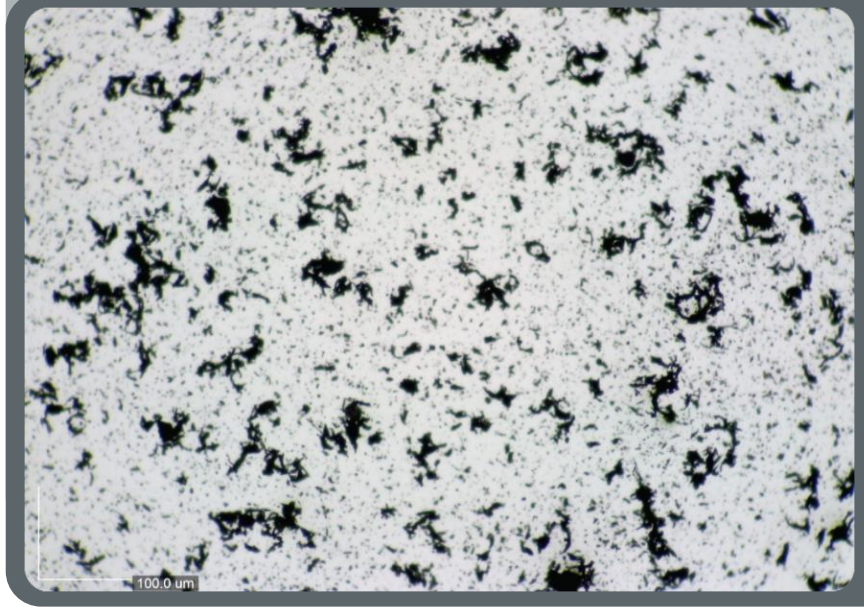


1. Based on scribe creep data from ISO 12944 cyclic corrosion testing. Summary results shown on slide 26.

Overcoming the Graphene Challenge

*Sparc Technologies are world leaders in the **long-term stable dispersion** of graphene to facilitate its effective integration into polymer-based materials.*

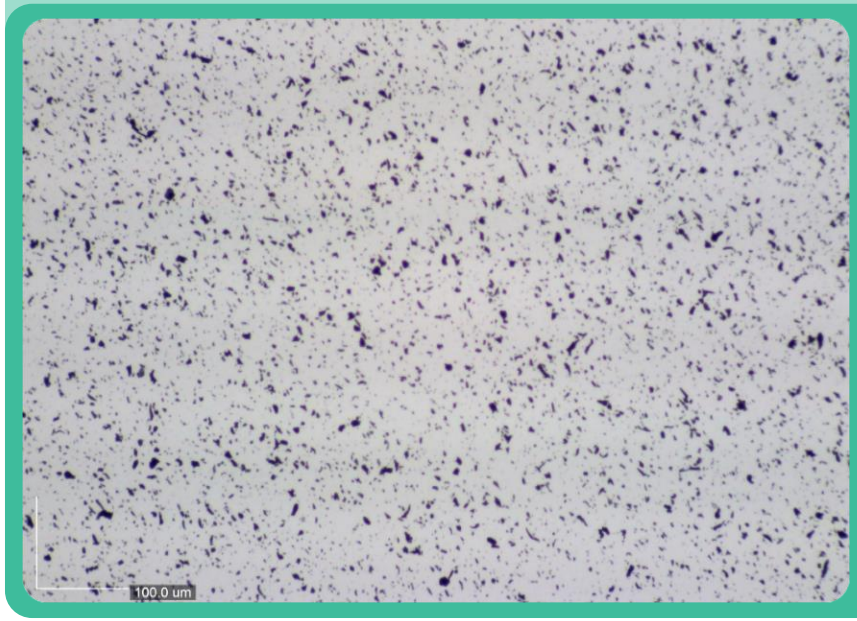
Reagglomerated Graphene Post Dispersion



Dispersion Level

< 20%

ecosparc®



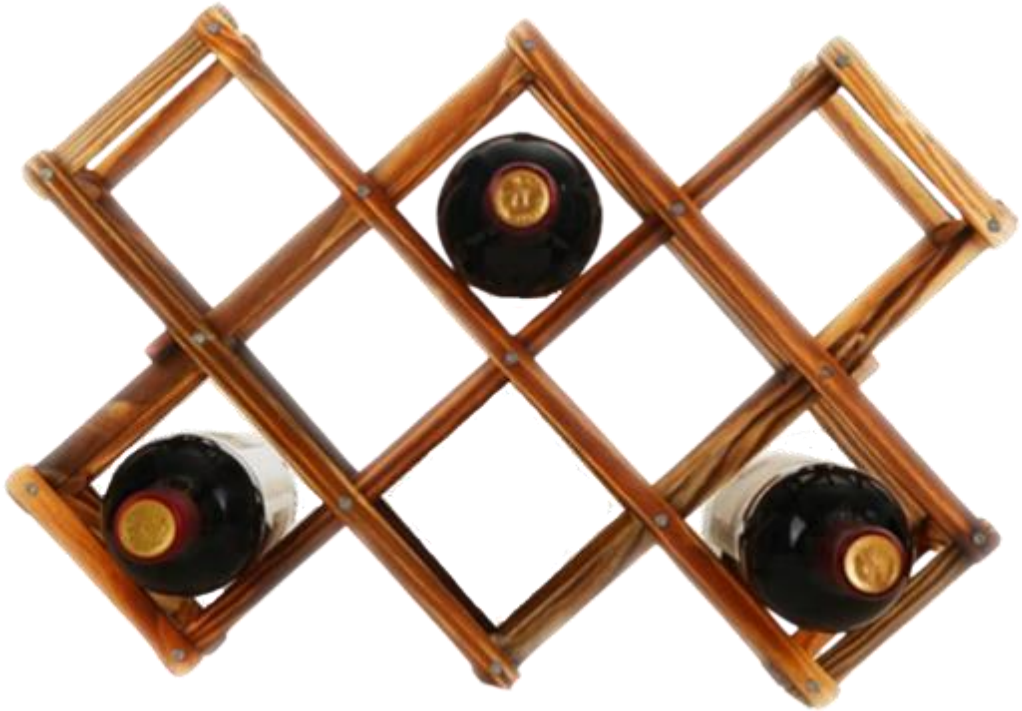
Dispersion Level

94%

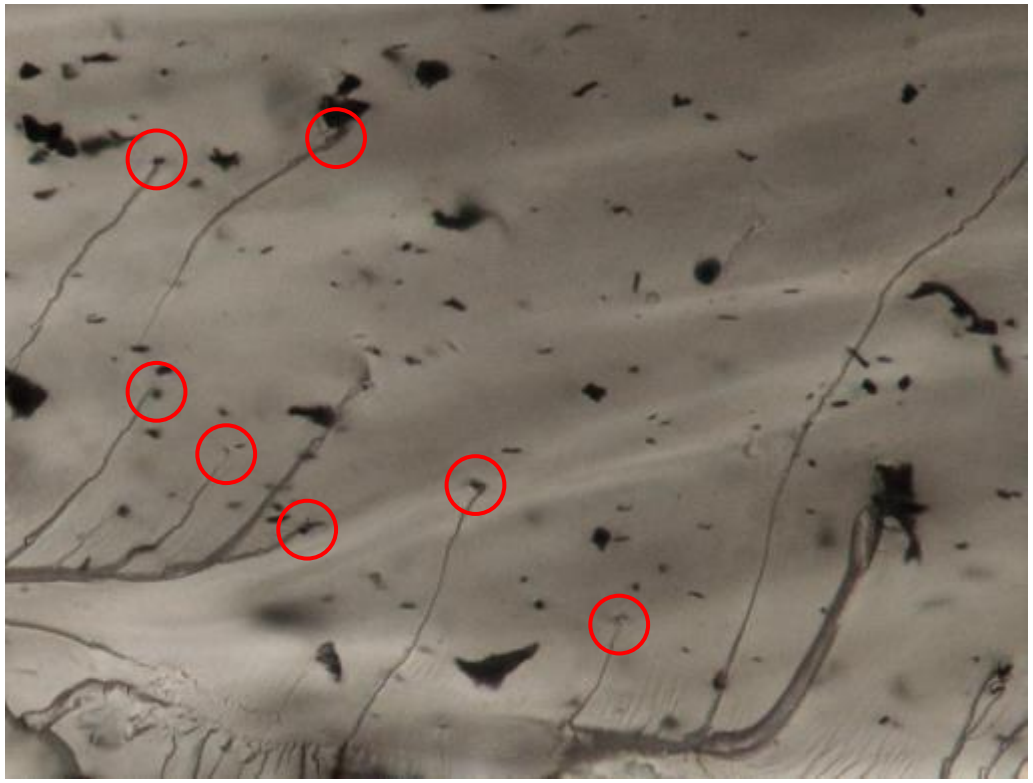
Effective dispersion of graphene particles has been a significant problem for the graphene industry since 2004

The dispersion level is the ratio of non-agglomerated particles to the total number of particles.
Results are determined using computer vision and machine learning

How Graphene Inhibits Cracking



- Wine rack analogy – graphene flexes laterally and takes up stress from the polymer matrix, increasing resiliency.



- Fractured surface of graphene modified epoxy at high magnification shows cracks terminating at graphene particles.

Repeatable Improvement in Scribe Creep

- Scribe creep is the standard industry metric used to assess anti-corrosion performance.
- Sparc has completed **eight rounds** of cyclic corrosion testing on **over 4,200** panels to ISO standards, demonstrating significantly improved scribe creep compared to control panels without graphene.
- Sparc's extensive and consistent corrosion data with graphene-based additives is believed to be unmatched in the industry.

Round	Standard	Duration (hrs)	Relative improvement	Benchmark
A	ISO 9227	1,000	34% (1 coat) 79% (2 coat)	Test bed formula
B	ISO 12944	1,680	72%	Test bed formula
C	ISO 12944	4,200	42%	Commercially available
D	ISO 12944	1,680	**	Commercially available
E	ISO 12944	4,200	26%	Commercially available
F	ISO 12944	1,680	47%	Commercially available
G	ISO 12944	4,200	32%	Commercially available
H	ISO 12944	4,200	31%	Commercially available

** Inconsistent data which was repeated in subsequent rounds

Ease of Manufacture and Use

- Sparc has commissioned a commercial additive production facility in Adelaide.
- **ecosparc®** is simple and easy to incorporate into existing coatings with only 2% w/w of additive required at the point of manufacture.
- No change to current paint application or removal methods.

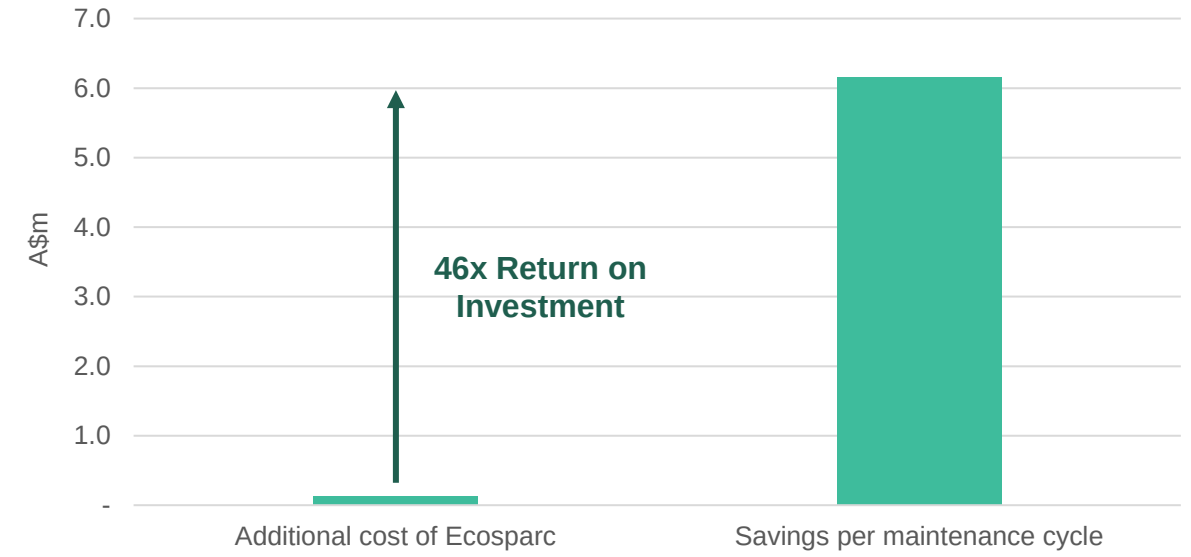
The specialist **ecosparc®** formula is manufactured at our Adelaide facility

Ecosparc is added to conventional coatings at the point of paint manufacture

To produce graphene enhanced high performance coatings

Significant Value-in-Use for Asset Owners

- Independent **lifecycle assessment** (LCA)[3] completed in August 2023.
- Modelled impact of using **ecosparc®** enhanced paint on a major Australian port with 57,883m^2 of re-coatable steel.
- Cost and emissions savings over 50-year asset life were based on a conservative 26% improvement in corrosion resistance[4].
- The analysis did not include any benefits from the potential for life extensions of steel infrastructure.



~750t
Lifetime reduction in carbon emissions[1]

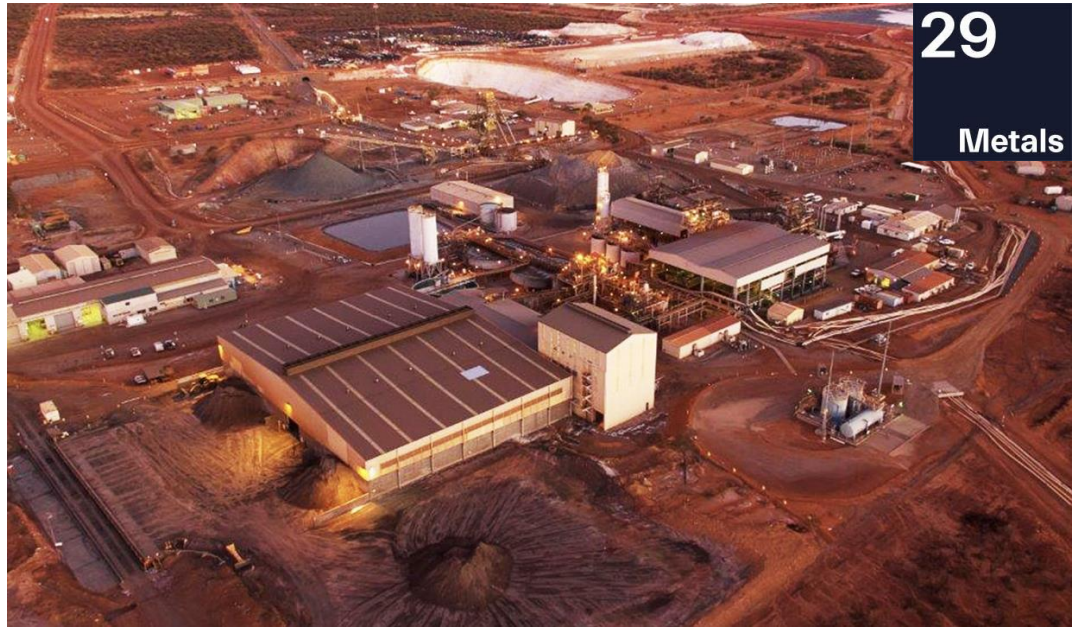
~A$34m
Lifetime savings in steel recoating costs[1,2]

1. Bontick, P.A. (2023), Carbon footprint of ecosparc graphene additive for protective coating applications, Lifecycles, Melbourne, Australia
2. Cost savings accruing from both the reduction in paint use and fewer maintenance events
3. See ASX Announcement 30 August 2023
4. See ASX Announcement 12 September 2023

Field Trials Underway

- Sparc has recently commenced collaborative field trials using **ecosparc®** enhanced coatings on relevant steel infrastructure in a variety of operational environments including:
  - At Streaky Bay Jetty and West Beach Bridge with the South Australian Department for Infrastructure and Transport; and
  - 29Metals' processing plant infrastructure at the Golden Grove mine in Western Australia.

Streaky Bay Jetty, Eyre Peninsula, SA



Golden Grove Processing Plant, Yalgoo, WA

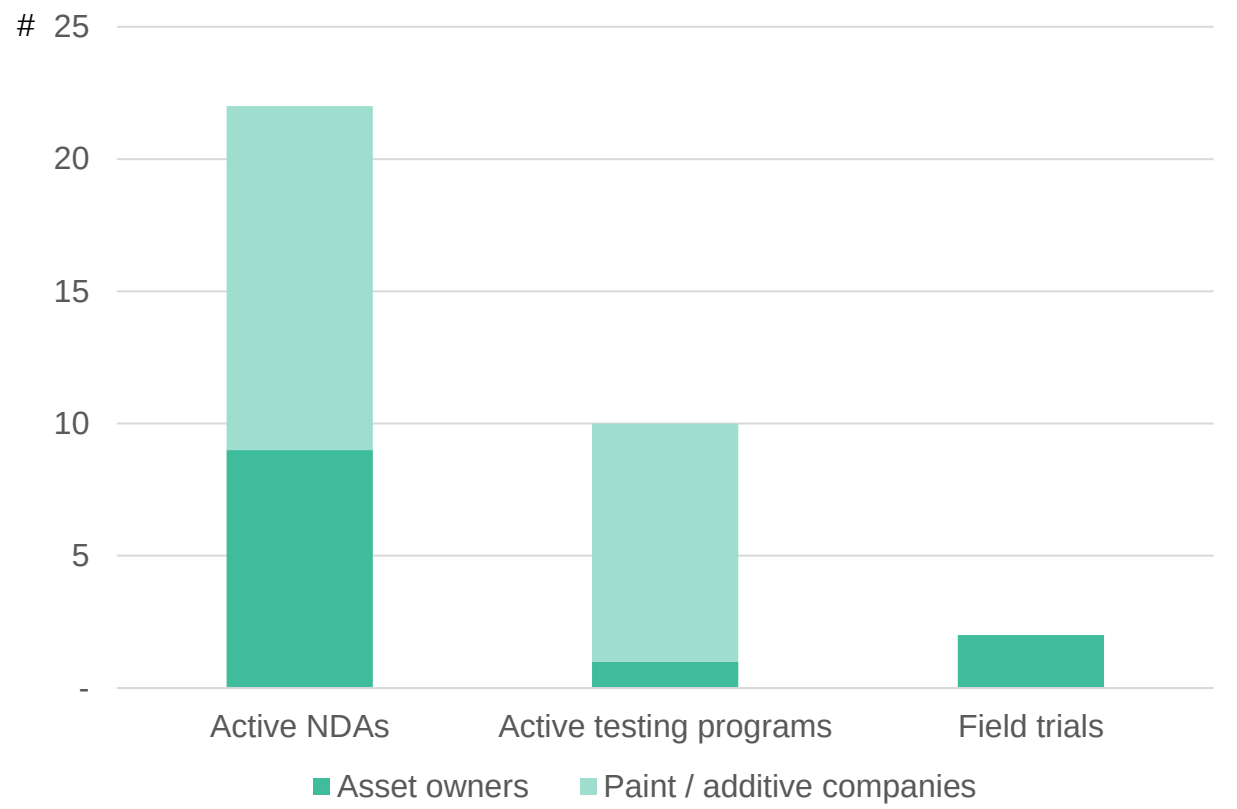
Pathway to Market

Dual track approach to commercialising ecosparc® within the US$43 billion[1] global anti-corrosive coatings market:

1. Sparc is actively working with global coatings companies, regional coatings companies and additive suppliers on testing and trials.

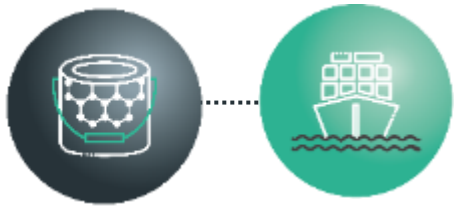
2. Partnering with large **asset owners** to test **ecosparc®** on relevant steel infrastructure under real-world conditions via field trials. Infrastructure owners being targeted include government, defence, mining, and oil and gas companies.

Customer Engagement Status[2]



1. Estimate of the global anti-corrosion coating market by 2029. Sourced from Exactitude Consultancy https://exactitudeconsultancy.com/reports/3960/anti-corrosion-coatings-market/
2. As at 16 September 2024

Other Target Applications



Anti-fouling Coatings

- Fouling is the result of accumulation of marine growth, resulting in reduced vessel speed, increased bunker consumption and the accrual of cleaning costs.
- Sparc is developing antifouling technology (**biosparc™**) which substantially reduces fouling on marine vessels and structures.
- Global market size is estimated to be growing at 8.2% CAGR reaching US$13.5bn in 2028[1].

Composites & Bioplastics

- Composites are two or more distinct materials that, when combined, create a new material with enhanced properties.
- Bioplastics are sourced from non-fossil fuel-based polymers and are being designed for compostability.
- Sparc's graphene additives are being tested in multiple applications in composites and bioplastics targeting improved flexibility, strength, conductivity and elasticity.

1. Sourced from imarc group 2022 https://www.imarcgroup.com/antifouling-paints-coatings-market

Sparc's Value Proposition

Sparc has tested 100's of grades of graphene, the vast majority of which do not work in anti-corrosive coatings

Sparc only works with the right grades, in the right dispersions, to produce industry relevant additives

Sparc is among the only companies globally with extensive coatings data to support product performance

Hundreds of grades of Graphene

sparc TECHNOLOGIES

- Screening and Selection
- Formulation
- Processing

ecosparc®

Graphene Based Additive

Paint Company

ecosparc®

Enhanced Protective Coating

Contacts

Nick O'Loughlin

Managing Director

info@sparctechnologies.com.au

Aiden Bradley

Investor Relations

aiden@nwrcommunications.com.au

+61 414 348 666