

31 January 2025

ASX:14D

## Quarterly Activity Report - December 2024 & Appendix 4C

### Highlights

- \$5.2m affordable hydrogen project is on track
- Aurora BESS continuing through approvals process
- Company fully funded for SiBox® and SiPHYR™ commercialisation
- Commercial team engaging integration partners to advance customer project agreements
- SiBrick® progressing toward low-cost mass manufacturing
- General Manager - Operations appointed to enhance project delivery and operational efficiency

**1414 Degrees Ltd** (ASX: 14D) ("1414 Degrees", "14D", or the "Company") is pleased to release the following activity report and Appendix 4C for the period ending 31 December 2024.

Dear Shareholders,

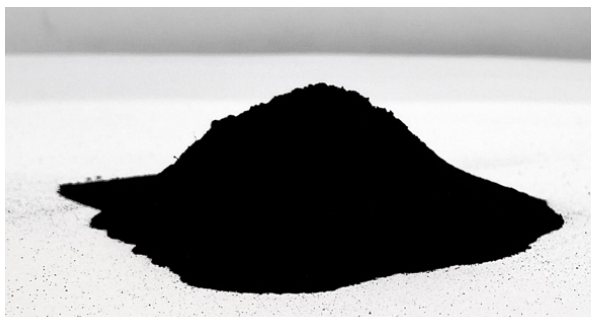
As we enter 2025, I want to acknowledge both the significant progress your Company has made and the challenges we continue to navigate in delivering value for shareholders. Our priority is to build a long-term business that ensures renewables are a reliable and affordable option for heat-reliant industries.

We are advancing project agreements with substantial potential customers, and the Board remains committed to securing revenue from the Aurora Battery Energy Storage System (BESS) and SiBox contracts. With projects fully funded we are executing our strategy and transitioning our technologies toward large-scale commercial adoption.

SiBox remains the only thermal energy storage system proven to deliver consistent, stable, high-temperature heat for industrial processes — an essential requirement for decarbonising high-temperature heat. No other available technology matches its ability to provide stable, scalable heat; positioning 1414 Degrees uniquely in the global energy transition.

Our R&D team continues to make strong progress in the development of mass-manufacturable SiBrick, achieving over 100 successful cycles with a new production formula. This work supports our SiBrick patent as it advances through the international Patent Cooperation Treaty (PCT) phase, expanding our intellectual property portfolio and reinforcing our scalable energy storage solutions.

In response to market demand, we are developing a SiBox product suite of up to 100MWh and engaging international engineering firms to provide cost-effective solutions that help high-temperature industrial customers overcome process electrification challenges. While commercial arrangements are taking longer than anticipated, SiBox's ability to convert intermittent renewable electricity into stable, high-temperature heat remains a compelling value proposition.



*Figure 1 Solid carbon produced by SiPHYR project*

The SiPHYR technology, which will produce hydrogen and solid carbon from methane via methane pyrolysis, is progressing well. We have successfully demonstrated hydrogen and solid carbon production in a smaller-scale atmospheric reactor, marking an important milestone in our efforts to develop a low-emission, commercially viable alternative to traditional methane reforming or expensive electrolysis.

Our joint development of the Aurora BESS project is also progressing, with the generator performance standards now undergoing due diligence by the transmission utility (Electranet) and BHP progressing the term sheet for connection to the National Electricity Market.

While recent capital raisings have impacted the share price, the Board is confident that acquiring customers will ultimately demonstrate the Company's value. We are working toward selling practical solutions for electrifying industrial processes and are developing hydrogen technology for future fuels. Our SiPHYR methane decarbonisation technology is a potential game changer for gas-reliant industries.

We have been pleased to welcome Mr John O'Donnell as General Manager - Operations, which took effect 12 November 2024. John's extensive leadership experience is enhancing our operational capabilities as we scale our industrial decarbonisation technologies.

The energy transition is complex, and progress will not always be linear. However, we are well-positioned to meet the demand for industrial decarbonisation solutions that address the intermittency of renewable energy generation.

Thank you for your continued support as we work towards commercial success.



Dr Kevin Moriarty  
Executive Chairman

## COMMERCIALISATION UPDATE

### Scaling SiBox and SiPHYR technologies for industrial applications

Our commercialisation efforts continue to advance with key activities during the December quarter including:

- engaging with Australian manufacturers to integrate SiBox systems into their operations to reduce gas usage
- progressing opportunities to transition industrial steam processes to renewable energy-powered SiBox solutions, with potential government grant support.

We continue to refine cost estimates and financing structures in collaboration with integration and engineering partners to support future project delivery.

### Expanding Global Opportunities: Showcasing 1414 Degrees' Technology in India

Dr Jason Chaffey, our Commercial Manager, and Dr Mahesh Venkataraman, our Chief Technology Officer, visited India during the quarter, where they showcased our energy storage capabilities to potential business partners. They met with multinational service providers and industrial firms, gaining insights into India's energy market and the economic drivers for clean energy adoption. Unlike Australia, India has no industrial gas users, relying instead on coal-fired thermal generators, which struggle to respond quickly to changing demand. Our thermal energy storage solutions could help address these challenges, and the trip identified multiple potential applications for our technology.

Discussions also highlighted opportunities to establish partnerships and license our solutions in India, where market adoption is often rapid once a technology proves economically viable. We look forward to furthering these relationships and advancing our technologies globally.

## HILT-CRC UPDATE

In alignment with the Australian Government's recent \$2 billion investment in green aluminium, 1414 Degrees is actively contributing to the decarbonisation of heavy industry through our strategic membership of the Heavy Industry Low-carbon Transition Cooperative Research Centre (HILT CRC).

The HILT CRC, a collaboration of over 50 organisations from industry, government, and academia, focuses on developing low-carbon technologies for critical sectors such as steel, iron, alumina, and cement. Through this partnership, we are contributing to solutions for heavy industry decarbonisation, positioning 1414 Degrees to leverage the emerging opportunities.

These long-term initiatives not only underscore our commitment to sustainable industrial practices but also strategically position 1414 Degrees to leverage emerging opportunities in the global energy transition.

### Alumina refineries' next-generation transition (AlumiNEXT™) project

1414 Degrees is partnering with the HILT CRC and leading academic and industry partners on the AlumiNEXT project, which aims to explore innovative pathways to decarbonise alumina refineries.

This includes:

- transitioning refineries from natural gas combustion to hydrogen or electrification in the calcination process
- achieving net-zero steam generation and recovery within the Bayer Process (which refines bauxite ore into alumina)
- de-risking high technology readiness level (TRL) technologies that can be retrofitted into existing alumina refineries to reduce emissions
- developing novel technologies to enhance efficiency, reduce CO2 emissions, and reduce cost in next-generation net-zero refineries.

1414 Degrees' thermal storage technology is directly relevant to this project and will be assessed for its potential to provide practical, high-impact approaches to decarbonisation in alumina refineries.

For more information about the project visit: <https://hiltcrc.com.au/projects/alumina-refineries-next-generation-transition-aluminext-project/>

### Evaluating Thermal Storage for Alumina and Hydrogen-DRI Processes

In addition to the AlumiNEXT project, 1414 Degrees is contributing to the HILT CRC's initiative "Advancing the Viability of High-Temperature Thermal Energy Storage for Industrial Applications – Phase 2." This project aims to enhance our understanding of integrating thermal energy storage into key heavy industry processes by developing case studies, conducting techno-economic analyses, and addressing feasibility challenges. The focus is on processes such as alumina calcination, bauxite digestion, and hydrogen-based direct reduced iron (H<sub>2</sub>-DRI) production. The goal is to identify a promising use-case for a pilot-scale TES demonstration. This would pave the way for low-cost, renewable heat solutions that enable industries to transition away from fossil fuels while maintaining operational efficiency.

For more information about the project visit: <https://hiltcrc.com.au/projects/advancing-the-viability-of-high-temperature-thermal-energy-storage-for-industrial-applications-phase-2/>

## PROJECT UPDATES

### SiBox® technology

Our SiBox thermal energy storage system continues to gain momentum. Following the successful completion of the Demonstration Module (SDM), which reached Technology Readiness Level (TRL) 7, the focus is now on scaling for larger commercial installations.

Testing has demonstrated that SiBox can deliver stable high-temperature heat from intermittent renewable energy sources. Additionally, its ability to provide Frequency Control Ancillary Services (FCAS) in the National Electricity Market strengthens its commercial proposition.

We are undertaking pre-feasibility assessments for larger-scale SiBox systems, including process integration studies for industrial steam raising applications.



### SiPHyR™ hydrogen technology

Our SiPHyR (SiBrick-Integrated Pyrolytic Hydrogen Reactor) project remains on track, with significant progress achieved in collaboration with Woodside Energy, RMIT, and the University of Adelaide.

We are due to commission a high-pressure pyrolysis reactor during the March 2025 quarter, following successful hydrogen and carbon separation from methane in a smaller scale atmospheric reactor.

The SiPHyR technology aims to produce low-emission hydrogen using methane pyrolysis, which requires significantly less electricity compared to traditional electrolysis methods. Our team is advancing the reactor design towards a prototype phase that will showcase the integration of SiBrick thermal energy storage.

There is also potential for commercial applications of the solid carbon co-product, pictured in Figure 1 , including uses in concrete, tyres, and composites, which could provide additional revenue streams.

*Figure 2 Farzad Poursadegh and Sam Ovens-York with the high-pressure pyrolysis reactor*

### SiBrick®

Our SiBrick thermal storage media plays a critical role in both the SiBox thermal energy storage system and the SiPHyR hydrogen production technology. Our team is preparing SiBrick for mass manufacturability, with the goal of achieving cost-effective, scalable production.

During the quarter, we accelerated production tests at our Tonsley Innovation District facility by commissioning a 300-tonne brick press to make prototypes for mass manufacturing. SiBrick is undergoing durability testing to ensure it meets industrial operating standards, with further testing planned under real-world conditions.

The cost reduction pathway for SiBrick remains a key priority, aimed at achieving economies of scale to make our technologies more competitive in decarbonising industrial heat processes.

### Aurora Energy Precinct

Progress continues at the Aurora Energy Precinct with several key milestones achieved during and after the quarter:

**Crown Sponsorship:** Crown Sponsorship for the project was reaffirmed, supporting the development's strategic importance.

**Geotechnical Work:** Further site geotechnical assessments were completed on 19 January 2025.

**Infrastructure Design:** Design of access roads and site infrastructure advanced to 70% completion.

**Rail Crossing Licence:** A Licence for Works with ARTC for the rail crossing was executed, marking a critical milestone.

In addition, progress has been made toward securing transmission access to the 275kV line through a term sheet agreement with BHP, with discussions continuing.

The 140MW/280MWh battery remains a central focus. The Generator Performance Standards (GPS) have been accepted for due diligence (DD), and once the DD is complete the project will require a Full Impact Assessment (FIA) before submitting the application to connect.

## **CORPORATE AND FINANCIAL UPDATE**

In November 2024, the Company welcomed John O'Donnell as General Manager – Operations. John brings over 35 years of leadership experience across the energy, oil and gas, infrastructure, and defence sectors, managing multidisciplinary teams and complex projects. His appointment is enhancing 1414 Degrees' operational efficiency and ensuring timely delivery of key projects.

During the December 2024 quarter, the first \$1.3 million instalment of a \$4.7 million institutional investment from Lind Partners was received, following our announcement of that deal in September 2024, with further funding available through monthly instalments over the next 12 months.

These funds will support the commercialisation of SiBox and SiPHyR technologies, as well as the continued development of the Aurora Energy Precinct.

At quarter end the Company held \$2.64 million in cash, a decrease of \$0.8m from the previous quarter. As required by ASX Listing Rule 4.7C3, the Company notes that \$81,000 was paid to related parties during the quarter. These payments were Directors Fees.

## **AUTHORISED BY:**

Dr Kevin Moriarty, Executive Chairman on behalf of the Board of Directors

For investor enquiries or further information, please contact:

[info@1414degrees.com.au](mailto:info@1414degrees.com.au) or +61 8 8357 8273

## **ABOUT 1414 DEGREES LIMITED**

1414 Degrees is a leader in industrial decarbonisation with its cutting-edge silicon-based solutions, enabling the alignment of energy supply with demand, fostering the widespread adoption of renewable energy. Our key technologies include:

**SiBrick®:** thermal energy storage technology safely and efficiently stores renewable electricity as latent heat, available for use on demand.

**SiBox®:** facilitates the transition to sustainable industrial processes, SiBox delivers consistent, high-temperature heat. It can be seamlessly retrofitted into heavy industry processes, offering a viable alternative to conventional energy sources.

**SiPHyR™:** methane pyrolysis reactor with integrated storage. SiPHyR will produce low-emission hydrogen and solid carbon using renewable energy sources.

1414 Degrees has showcased its capabilities through successful pilot projects that highlight the reliability and effectiveness of its solutions. SiBox has proven its ability to deliver high-temperature air or steam on demand from stored heat. The development of SiPhyR underscores our commitment to innovation and sustainability.

In 2019 the Company made the strategic purchase of the Aurora Energy Project (AEP) located near Port Augusta, South Australia. The project is a long-term renewable energy initiative to deliver reliable electricity to the region and National Electricity Market. The AEP has approval for 14D to pilot and demonstrate a large commercial scale version of the SiBox technology.

For more information, please visit [www.1414degrees.com.au](http://www.1414degrees.com.au)

#### **Forward-looking statements**

This announcement includes forward-looking statements which may be identified by words such as 'anticipates', 'believes', 'expects', 'intends', 'may', 'will', 'could', or 'should' and other similar words that involve risks and uncertainties. These forward-looking statements are based on the 1414 Degrees' expectations and beliefs concerning future events as at the date of this announcement. Forward-looking statements are necessarily subject to risks, uncertainties and other factors, many of which are outside the control of 1414 Degrees, which could cause actual results to differ materially from such statements. 1414 Degrees makes no undertaking to update or revise the forward-looking statements made in this announcement to reflect any change in circumstances or events after the date of this announcement.

## Appendix 4C

### Quarterly cash flow report for entities subject to Listing Rule 4.7B

**Name of entity**

1414 Degrees Limited

**ABN**

57 138 803 620

**Quarter ended ("current quarter")**

31 December 2024

<b>Consolidated statement of cash flows</b>	<b>Current quarter \$A'000</b>	<b>Year to date (6months) \$A'000</b>
<b>1. Cash flows from operating activities</b>		
1.1 Receipts from customers	-	-
1.2 Payments for		
(a) research and development	(35)	(268)
(b) product manufacturing and operating costs	(8)	(20)
(c) advertising and marketing	(26)	(48)
(d) leased assets	-	(1)
(e) staff costs	(358)	(691)
(f) administration and corporate costs	(588)	(1,468)
1.3 Dividends received (see note 3)	-	-
1.4 Interest received	14	20
1.5 Interest and other costs of finance paid	(19)	(39)
1.6 Income taxes paid	-	-
1.7 Government grants and tax incentives	304	608
1.8 Other (provide details if material)		
- Partner project contributions	200	565
- Other	-	-
<b>1.9 Net cash from / (used in) operating activities</b>	<b>(516)</b>	<b>(1,342)</b>

<b>2. Cash flows from investing activities</b>		
2.1 Payments to acquire or for:		
(a) entities	-	-
(b) businesses	-	-
(c) property, plant and equipment	(10)	(24)

Consolidated statement of cash flows	Current quarter \$A'000	Year to date (6months) \$A'000
(d) investments	-	-
(e) intellectual property	-	-
(f) other non-current assets	-	-
2.2 Proceeds from disposal of:		
(a) entities	-	-
(b) businesses	-	-
(c) property, plant and equipment	-	-
(d) investments	-	-
(e) intellectual property	-	-
(f) other non-current assets	-	-
2.3 Cash flows from loans to other entities	(200)	(380)
2.4 Dividends received (see note 3)	-	-
2.5 Other (return of rental bond)	-	63
<b>2.6 Net cash from / (used in) investing activities</b>	<b>(210)</b>	<b>(341)</b>

<b>3. Cash flows from financing activities</b>		
3.1 Proceeds from issues of equity securities (excluding convertible debt securities)	100	2,503
3.2 Proceeds from issue of convertible debt securities	-	-
3.3 Proceeds from exercise of options	-	-
3.4 Transaction costs related to issues of equity securities or convertible debt securities	(47)	(120)
3.5 Proceeds from borrowings	-	264
3.6 Repayment of borrowings	(107)	(107)
3.7 Transaction costs related to loans and borrowings	-	-
3.8 Dividends paid	-	-
3.9 Other (provide details if material)	(18)	(40)
<b>3.10 Net cash from / (used in) financing activities</b>	<b>(72)</b>	<b>2,500</b>



Consolidated statement of cash flows		Current quarter \$A'000	Year to date (6months) \$A'000
<b>4.</b>	<b>Net increase / (decrease) in cash and cash equivalents for the period</b>		
4.1	Cash and cash equivalents at beginning of period	3,434	1,819
4.2	Net cash from / (used in) operating activities (item 1.9 above)	(516)	(1,342)
4.3	Net cash from / (used in) investing activities (item 2.6 above)	(210)	(341)
4.4	Net cash from / (used in) financing activities (item 3.10 above)	(72)	2,500
4.5	Effect of movement in exchange rates on cash held	-	-
<b>4.6</b>	<b>Cash and cash equivalents at end of period</b>	<b>2,636</b>	<b>2,636</b>

5. Reconciliation of cash and cash equivalents at the end of the quarter (as shown in the consolidated statement of cash flows) to the related items in the accounts		Current quarter \$A'000	Previous quarter \$A'000
5.1	Bank balances	2,636	3,434
5.2	Call deposits	-	-
5.3	Bank overdrafts	-	-
5.4	Other (provide details)		
<b>5.5</b>	<b>Cash and cash equivalents at end of quarter (should equal item 4.6 above)</b>	<b>2,636</b>	<b>3,434</b>

6. Payments to related parties of the entity and their associates		Current quarter \$A'000
6.1	Aggregate amount of payments to related parties and their associates included in item 1	81
6.2	Aggregate amount of payments to related parties and their associates included in item 2	-

*Note: if any amounts are shown in items 6.1 or 6.2, your quarterly activity report must include a description of, and an explanation for, such payments.*

<b>7. Financing facilities</b>	<b>Total facility amount at quarter end \$A'000</b>	<b>Amount drawn at quarter end \$A'000</b>
<i>Note: the term "facility" includes all forms of financing arrangements available to the entity. Add notes as necessary for an understanding of the sources of finance available to the entity.</i>		
7.1 Loan facilities	-	-
7.2 Credit standby arrangements	-	-
7.3 Other (Insurance Premium Funding)	158	158
7.4 <b>Total financing facilities</b>	-	-
7.5 <b>Unused financing facilities available at quarter end</b>		-
7.6 Include in the box below a description of each facility above, including the lender, interest rate, maturity date and whether it is secured or unsecured. If any additional financing facilities have been entered into or are proposed to be entered into after quarter end, include a note providing details of those facilities as well.		
14D has funded its insurance premiums through Hunter Premium Funding. The loan is unsecured, with a 10-month maturity. Interest charged on the loan balance comprises of a flat rate of 3.32% and an annual percentage rate of 8.8%.		
No other financing facilities have been entered into.		

<b>8. Estimated cash available for future operating activities</b>	<b>\$A'000</b>
8.1 Net cash from / (used in) operating activities (item 1.9)	(516)
8.2 Cash and cash equivalents at quarter end (item 4.6)	2,636
8.3 Unused finance facilities available at quarter end (item 7.5)	-
8.4 Total available funding (item 8.2 + item 8.3)	2,636
8.5 <b>Estimated quarters of funding available (item 8.4 divided by item 8.1)</b>	5
<i>Note: if the entity has reported positive net operating cash flows in item 1.9, answer item 8.5 as "N/A". Otherwise, a figure for the estimated quarters of funding available must be included in item 8.5.</i>	
8.6 If item 8.5 is less than 2 quarters, please provide answers to the following questions:	
8.6.1 Does the entity expect that it will continue to have the current level of net operating cash flows for the time being and, if not, why not?	
Answer:	
8.6.2 Has the entity taken any steps, or does it propose to take any steps, to raise further cash to fund its operations and, if so, what are those steps and how likely does it believe that they will be successful?	
Answer:	
8.6.3 Does the entity expect to be able to continue its operations and to meet its business objectives and, if so, on what basis?	
Answer:	
<i>Note: where item 8.5 is less than 2 quarters, all of questions 8.6.1, 8.6.2 and 8.6.3 above must be answered.</i>	

## Compliance statement

- 1 This statement has been prepared in accordance with accounting standards and policies which comply with Listing Rule 19.11A.
- 2 This statement gives a true and fair view of the matters disclosed.

31 January 2025

Date: .....

The Chairman of the Board

Authorised by: .....  
(Name of body or officer authorising release – see note 4)

## Notes

1. This quarterly cash flow report and the accompanying activity report provide a basis for informing the market about the entity's activities for the past quarter, how they have been financed and the effect this has had on its cash position. An entity that wishes to disclose additional information over and above the minimum required under the Listing Rules is encouraged to do so.
2. If this quarterly cash flow report has been prepared in accordance with Australian Accounting Standards, the definitions in, and provisions of, *AASB 107: Statement of Cash Flows* apply to this report. If this quarterly cash flow report has been prepared in accordance with other accounting standards agreed by ASX pursuant to Listing Rule 19.11A, the corresponding equivalent standard applies to this report.
3. Dividends received may be classified either as cash flows from operating activities or cash flows from investing activities, depending on the accounting policy of the entity.
4. If this report has been authorised for release to the market by your board of directors, you can insert here: "By the board". If it has been authorised for release to the market by a committee of your board of directors, you can insert here: "By the [name of board committee – eg Audit and Risk Committee]". If it has been authorised for release to the market by a disclosure committee, you can insert here: "By the Disclosure Committee".
5. If this report has been authorised for release to the market by your board of directors and you wish to hold yourself out as complying with recommendation 4.2 of the ASX Corporate Governance Council's *Corporate Governance Principles and Recommendations*, the board should have received a declaration from its CEO and CFO that, in their opinion, the financial records of the entity have been properly maintained, that this report complies with the appropriate accounting standards and gives a true and fair view of the cash flows of the entity, and that their opinion has been formed on the basis of a sound system of risk management and internal control which is operating effectively.