



31 July 2023

ASX:14D

June 2023 Quarterly Activity Report

Highlights:

- SiBox® demonstration module successfully completes commissioning trials
- SiBrick™ named and being readied for mass production trials
- Study shows competitive opportunities for SiBox to replace gas in industrial processing
- Business strategy focuses on revenue from licencing fees

Chairman's Letter

The quarter has been pivotal in the development of 1414 Degrees Ltd ("1414 Degrees" or "Company") key technologies for commercialisation. Four years of intensive development of our SiBox latent heat battery is producing very encouraging results. This progress coincides with growing interest from high-temperature industrial heat users. It's worth mentioning that there are currently few competitive technologies in the industrial heat market, and those that exist are still in their early stages. While hydrogen burning is considered a potential competitor for producing clean industrial heat, its high cost compared to SiBox makes it a less viable substitute for fossil fuels.

Interestingly, SiBox has the potential to contribute to reducing the cost and emissions of hydrogen production, therefore contributing to the many complementary technologies needed to reach net zero targets.

Our commercialisation strategy and timeline has been coming into focus during the quarter. Our SiBrick technology is being developed for mass production in existing refractory brick plants. This approach eliminates the need to build new production facilities, thereby removing a significant scale-up barrier to manufacturing large storage capacity. The SiBrick installed in the SiBox Demonstration Module (SDM) comprises a single 1 MWh storage block that can be replicated laterally or extended to increase the capacity and power output.

In the coming months our engineers will use the performance results from the SDM to design a commercial scale SiBox of up to 100 MWh, as specified in our SiBox development agreement with Woodside Energy Technologies Pty Ltd (Woodside), a subsidiary of Woodside Energy Ltd. As announced in 2021, upon the successful verification of the SDM, Woodside has the option to fund this commercial pilot and earn up to 49% of the SiBox intellectual property.

Our high-level economic analysis announced early in the quarter showed that SiBox technology is already competitive in countries exposed to increasing gas and fossil fuel prices¹. It is even more competitive in countries with emissions penalties, particularly if Carbon Border Adjustment Mechanisms apply. Additionally, our analysts predict that the build cost of SiBox will decrease with increasing capacity. A one GWh SiBox could supply up to 125 MW of highly efficient electrically generated heat to an industrial process.

Our business strategy entails licencing third-party engineering supply companies to build and deploy SiBox while 1414 Degrees continues to focus on the research and development of improved models for evolving

¹ Refer 1414 Degrees Limited ASX announcement 27 April 2023

technologies as the energy transition progresses. Initial limiting factors are likely to be the willingness of industries to retrofit the devices into existing processes, and the availability of low-cost electricity. Replacing large amounts of fossil fuels in industry will require a great expansion of renewable or other forms of electricity generation.

We had an enthusiastic response to our appeal for shareholders to name our silicon latent heat brick, with some very intriguing suggestions. My personal favourite was the amusing Silibrick, with ‘SiBrick’ being chosen and trademarked as the final name². To provide interested shareholders with a better understanding of SiBox we will be running tours of our workshop in the coming weeks.

The generator performance study for the Aurora Energy Project (Aurora) grid scale battery is complete, with the report expected by the end of July, but will not be submitted for regulatory approval until access to the transmission line has been secured. This will further delay the project and the benefits it brings to the national electricity network.

The quarter also saw the Company provide some outlook on generating revenue from commercialisation. The Aurora BESS is still the most immediate prospect for generating net revenue.

The proposed commercial SiBox pilot could earn net revenues by displacing gas in an existing plant, so our technical analysts have been modelling potential revenue generation from growing SiBox deployment over decades as heat energy transitions to electricity. The results will be refined in the coming months with input from experienced economic analysts.

I look forward to reporting on a productive next quarter for shareholders.

Dr Kevin Moriarty
Executive Chairman



Figure 1 SiBox Demonstration Model on site at 1414 Degrees Ltd’s Head Office

² Refer 1414 Degrees Limited ASX announcement 31 May 2023

SiBox® Development Report

The commissioning trials of the SiBox Demonstration Module (SDM) have been successfully concluded, preparing for long term operational testing.

The SDM comprises a modular arrangement of SiBricks optimised for energy storage capacity and effective heat transfer from the heating system through to hot clean air to recover the heat on demand. The SiBricks are contained within an insulated heat store and integrated with an energy recovery system that simulates a commercial application process such as a gas burner replacement in an alumina calciner.

The commissioning process included extensive trials to demonstrate SiBox operational capabilities, optimise control setpoints, generate initial results for analysis, and identify key parameters to inform future tests. The SiBox performed to expectations and analysis and comparison of the results with the theoretical models is ongoing.

As announced during the quarter, the commissioning trials successfully demonstrated the ability to deliver sustained clean heat for 6-12 hours at temperatures of 700°C to 850°C³.

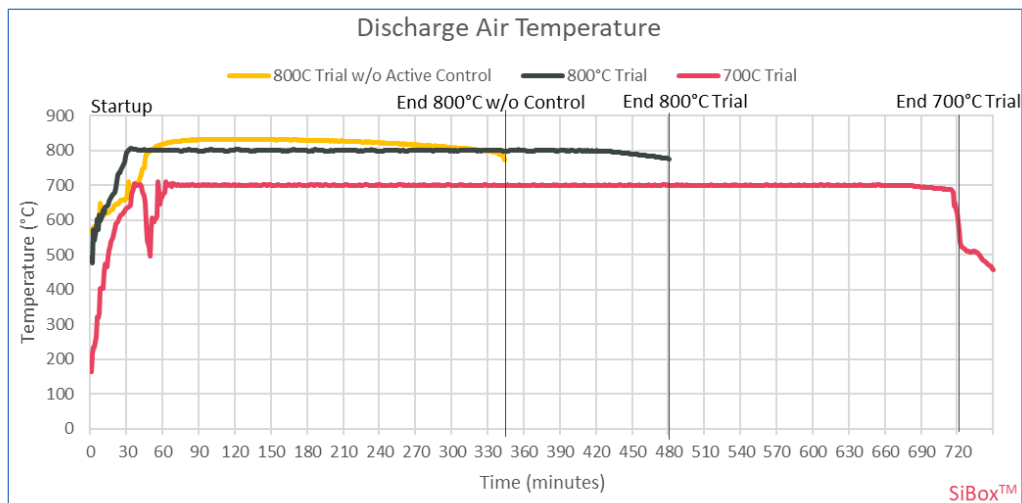


Figure 2. Discharge temperature versus time for SiBox runs with and without control system intervention. Note longer and precise temperature in controlled runs.

Data from these trials closely align with the expectations from the engineering design tools and models developed, providing confidence for scale up designs of SiBox technology.

The 1 MWh of internal SiBricks performed robustly and were found in excellent condition on visual inspection. Several SiBricks were removed for analytical testing at different stages.

The 12-month test runs of the SDM will simulate a variety of process conditions to validate both the SiBrick material and SiBox system performance. The key assessments include temperature distribution, heat transfer mechanics and fluid dynamics for outlet temperature control.

³ Refer 1414 Degrees Limited ASX announcement 9 May 2023

Commercialisation Report

SiBox®

SiBox® thermal energy storage aims to facilitate a cost-efficient energy transition pathway for even the hardest-to-decarbonise industrial sectors, replacing significant amounts of fossil fuels. Decarbonising high temperature processes that rely on natural gas presents a significant challenge and our SiBox is specifically designed for this very high temperature market. Recent analysis by 1414 Degrees revealed a significant finding: retrofitting a renewable powered SiBox can provide a much higher value proposition than incumbent fossil fuels as it can provide grid stability services in addition to the decarbonisation benefits. The analysis also found that gas supply constraints that are likely to continue in the foreseeable future will enable the SiBox technology to achieve cost-competitiveness earlier than anticipated.

SiBrick™

1414 Degrees' proprietary thermal storage media, named SiBrick from 260 names suggested by shareholders, is at the core of the SiBox technology. It represents a significant breakthrough in harnessing the powerful latent heat capabilities of silicon for enabling a zero-carbon future. For over three years 1414 Degrees has been working under a technology partnership agreement with a global refractory manufacturer, Refratechnik-Steel GmbH, to develop a mass-producible SiBrick⁴. Refratechnik and 1414 Degrees are preparing for a production trial of 600 bricks in the next quarter. Future SiBox models could utilise up to 100,000 SiBricks per unit and underpin the commercialisation strategy with lower unit production costs.

Marketing

Green heat is a relatively new, but very large, market targeted by SiBox. The Demonstration Module showcases the technical and engineering capabilities of our technology for ultra-high temperature industries. Replacing even a portion of fossil fuel consumption in this multi-trillion-dollar market is incentivised by various forms of carbon taxes or penalties. 1414 Degrees' technology can help major industries to reduce their compliance costs while producing greener products — cement, aluminium and steel. Our team are using data provided by industries to prepare the financial case to adopt our technology to reduce production cost and emissions. The results are being analysed by specialists and a report is expected in the current quarter.

Corporate

Graham Davies has taken over from Tom Thwaites as General Manager - Aurora for 1414 Degrees. On secondment from Arup, Graham is a chartered engineer with over 25 years experience and a particular interest in heat transfer and renewable energy. We thank Tom for his service to the company at a critical juncture. Graham's focus is on obtaining transmission line connection for the Aurora Energy Project initiatives in renewable generation, grid stability and transition technology.

⁴ Refer 1414 Degrees Limited ASX announcement 6 July 2023



Finance

Your Company ended the quarter with \$1.95 million in cash, a decrease of \$755,000 from the previous quarter.

As required by ASX Listing Rule 4.7C3, the Company notes that \$50,000 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:

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ABOUT 1414 DEGREES LIMITED

1414 Degrees is an innovative clean energy company focused on the development and commercialisation of thermal energy storage solutions. Its proprietary silicon thermal storage, SiBrick™, is the key component in its SiBox® thermal energy storage solution. SiBox delivers high temperature carbon free industrial heat by harnessing silicon's extremely high latent heat capacity. This enables intermittent renewables to provide flexible, ultra-high temperature heat 24/7 for large industrial applications.

The Company commissioned a module of the SiBox technology in 2023 to accelerate the commercialisation of its silicon storage media as a competitive clean energy solution.

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.

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.

For more information, please visit www.1414degrees.com.au

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")

30 June 2023

Consolidated statement of cash flows	Current quarter \$A'000	Year to date (12 months) \$A'000
1. Cash flows from operating activities		
1.1 Receipts from customers	-	86
1.2 Payments for		
(a) research and development	(392)	(2,648)
(b) product manufacturing and operating costs	-	(5)
(c) advertising and marketing	(4)	(173)
(d) leased assets	(1)	(4)
(e) staff costs	(132)	(790)
(f) administration and corporate costs	(181)	(1,513)
1.3 Dividends received (see note 3)	-	-
1.4 Interest received	9	30
1.5 Interest and other costs of finance paid	-	(7)
1.6 Income taxes paid	-	-
1.7 Government grants and tax incentives	-	2,119
1.8 Other (provide details if material)	61	50
- Partner project contributions	-	600
1.9 Net cash from / (used in) operating activities	(640)	(2,255)

2. Cash flows from investing activities		
2.1 Payments to acquire or for:		
(a) entities	-	-
(b) businesses	-	-
(c) property, plant and equipment	-	-
(d) investments	-	-

Consolidated statement of cash flows	Current quarter \$A'000	Year to date (12 months) \$A'000
(e) intellectual property	-	-
(f) other non-current assets	-	-
2.2 Proceeds from disposal of:		
(a) entities	-	900
(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	(103)	(532)
2.4 Dividends received (see note 3)	-	-
2.5 Other (provide details if material)	-	-
2.6 Net cash from / (used in) investing activities	(103)	368

3. Cash flows from financing activities		
3.1 Proceeds from issues of equity securities (excluding convertible debt securities)	-	300
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	-	-
3.5 Proceeds from borrowings	-	-
3.6 Repayment of borrowings	-	-
3.7 Transaction costs related to loans and borrowings	-	-
3.8 Dividends paid	-	-
3.9 Other (provide details if material)	(12)	(13)
3.10 Net cash from / (used in) financing activities	(12)	287

4. Net increase / (decrease) in cash and cash equivalents for the period		
4.1 Cash and cash equivalents at beginning of period	2,704	3,549
4.2 Net cash from / (used in) operating activities (item 1.9 above)	(640)	(2,255)

Consolidated statement of cash flows		Current quarter \$A'000	Year to date (12 months) \$A'000
4.3	Net cash from / (used in) investing activities (item 2.6 above)	(103)	368
4.4	Net cash from / (used in) financing activities (item 3.10 above)	(12)	287
4.5	Effect of movement in exchange rates on cash held	-	-
4.6	Cash and cash equivalents at end of period	1,949	1,949

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	1,949	2,704
5.2	Call deposits	-	-
5.3	Bank overdrafts	-	-
5.4	Other (provide details)		
5.5	Cash and cash equivalents at end of quarter (should equal item 4.6 above)	1,949	2,704

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	50
6.2	Aggregate amount of payments to related parties and their associates included in item 2	-
<i>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.</i>		

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

7. Financing facilities	Total facility amount at quarter end \$A'000	Amount drawn at quarter end \$A'000
<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 (please specify)	-	-
7.4 Total financing facilities	-	-
7.5 Unused financing facilities available at quarter end		-
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.		

8. Estimated cash available for future operating activities	\$A'000
8.1 Net cash from / (used in) operating activities (item 1.9)	(641)
8.2 Cash and cash equivalents at quarter end (item 4.6)	1,949
8.3 Unused finance facilities available at quarter end (item 7.5)	-
8.4 Total available funding (item 8.2 + item 8.3)	1,949
8.5 Estimated quarters of funding available (item 8.4 divided by item 8.1)	3
<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: N/A	
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: N/A	
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: N/A	
<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 July 2023

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.