

28 March 2024

ASX:14D

## **SUCCESSFUL COMPLETION OF SIBOX DEMONSTRATION PHASE FOR COMMERCIAL READINESS**

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### **HIGHLIGHTS**

- SiBox Demonstration Module has successfully completed 12 months testing phase
- Dr. Jason Chaffey has been appointed to lead the commercial scaling of the SiBox technology
- The Company will develop low-cost SiBrick at its new facility in the Tonsley Innovation District
- The Company will build a world-first dual column pyrolysis reactor to produce hydrogen in their new facility

**1414 Degrees Ltd** (ASX: 14D) ("1414 Degrees", "14D", or the "Company") is pleased to report the Company's relocation to the Tonsley Innovation District following the successful completion of the demonstration phase of its SiBox® thermal energy storage project ready for commercialisation.

The SiBox Demonstration Module achieved significant milestones including:

- Delivered continuous clean heat from stored thermal energy, at temperatures from 650°C to 900°C
- Maintained 24/7 stable heat output while optimising its charging cycle to take advantage of available renewable energy and low-cost grid electricity
- Provided flexible heat output rates with consistent temperature, meeting a variety of industrial requirements
- Validated its ability to bolster electricity grids with network support services
- Demonstrated its durability and operational efficiency by cycling<sup>1</sup> more than 230 times, consistently delivering heat at critical temperatures up to 900°C

SiBox's consistent performance showcases the technology's capability to:

- firm variable renewable energy supply,
- follow prices in the National Electricity Market by charging when prices are low while continuously discharging heat,
- deliver reliable, safe and adaptable energy storage solutions,
- provide demand response and frequency control ancillary services to reduce energy costs.

These capabilities and the performance during testing establish SiBox as a competitive solution for the long-duration energy storage market, particularly for industrial heat applications and grid stability. This fulfils key objectives of our SiBox Development Agreement with Woodside Energy Technologies and the Federal Government Modern Manufacturing Initiative, particularly taking the Technology Readiness Level (TRL) from 4 to 7 in preparation for commercial operations.

1414 Degrees has appointed Dr. Jason Chaffey to lead the commercial phase of this \$6 million project. With his extensive background in the commercialisation of technologies, Dr. Chaffey is well-positioned to lead this venture, supported by the Company's skilled analytical and engineering staff.

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<sup>1</sup> A cycle is defined as charging to full capacity holding it for a defined period and discharging completely whilst maintaining a constant setpoint output temperature e.g. 700°C for 15 hours



1414 Degrees' Chief Technology Officer, Dr. Mahesh Venkataraman, highlights the potential of the SiBox technology, "SiBox is a gamechanger, using silicon's high energy density to offer significant storage and output capacity within a minimal footprint. This is crucial for industries where space is at a premium. Our 1MWh SiBox Demonstration Module has not only proven the technology's durability and reliability but also its scalability to commercial dimensions. Efficient SiBox units, with modules up to 100MWh, will benefit from our team's experience in constructing and operating the patented 6 MWh TESS-IND and GAS-TESS systems. This expertise will be instrumental in building safe and robust solutions to help decarbonise industry."

Dr. Kevin Moriarty, Executive Chairman of 1414 Degrees stated, "This marks a significant milestone for 1414 Degrees and its stakeholders representing a pivotal shift from theoretical testing to practical application in the real world, underscoring the Company's commitment to building commercial solutions for renewable energy." He also shared his enthusiasm for the Company's return to the Tonsley Innovation District, where its first prototype was commissioned in 2016. "At our new facility we will be testing low-cost versions of our SiBrick for mass production and joining the hydrogen revolution by building a world-first dual column pyrolysis reactor utilising molten metal heated to over 850°C by our SiBox technology."

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**Technology Readiness Levels** are different points on a scale used to measure the progress or maturity level of a technology. The scale ranges from 1 to 9, where TRL 1 is the lowest and TRL 9 is the highest<sup>2</sup>

TRL	Level Description
1	Basic principles observed
2	Technology Concept formulated
3	Experimental proof of concept
4	Technology validated in lab
5	Technology validated in relevant environment
6	Technology demonstrated in relevant environment
7	System prototype demonstration in operational environment
8	System complete and qualified
9	Actual system proven in operational environment

<sup>2</sup> [ESA - Technology Readiness Levels \(TRL\)](#)



## ABOUT 1414 DEGREES LIMITED

1414 Degrees is an innovative clean energy company specialising in thermal energy storage solutions to decarbonise high temperature industry and power generation. 1414 Degrees' SiBrick® is a mass manufacturable silicon thermal storage which harnesses silicon's extremely high energy density. The SiBox® latent heat battery, one of several applications for SiBrick, provides consistent, carbon-free heat at high temperatures from renewable sources.

The Company is also developing its SiBrick Integrated Pyrolytic Hydrogen Reactor (SiPhyR) to produce lower-emissions hydrogen gas and solid carbon using its SiBrick and SiBox technologies in combination with methane pyrolysis. The development is supported by the Australian Government via a \$2.5m Cooperative Research Centres Projects grant, awarded in February 2024.

In 2019 the Company made the strategic purchase of the Aurora Energy Precinct (AEP) located near Port Augusta, South Australia. AEP is a long-term renewable energy initiative to deliver reliable electricity to the region and National Electricity Market. The precinct 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.

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