

9 May 2023

ASX:14D

**SiBox™ Demonstration Module – successful performance using 14D silicon brick**

- SiBox performing to expectations for supply of very high temperature industrial heat
- 14D Brick successfully harnesses latent heat of silicon for stability and energy density

1414 Degrees Limited ("1414 Degrees" the "Company") reports the results for the first full-cycle performance testing of the SiBox™ Demonstration Module (SDM).

Performance testing is designed to provide important data to demonstrate how SiBox™ will deliver value for customers – informing the Company’s commercialisation strategy to deliver clean heat to heavy industry.

The SDM’s first full cycle of commissioning tests demonstrated its ability to store energy from electricity and output a clean, consistent stream of high-temperature heat through its energy recovery system.

The latent heat of silicon was key to achieving a successful initial run which delivered a stable stream of heat above 800°C without the need for a temperature control system. Further runs, using the control system, delivered longer and more stable runs, consistently supplying clean heat at set points of 700°C and 800°C as shown in Figure 1 below. The stabilising contribution of silicon’s latent heat in the 14D Brick is seen in the flat portions of Figure 2. Sensible heat storage cannot intrinsically provide a stable hot air output.

These results align with expectations from engineering models. Ongoing trials aim to optimise the control system, improve performance, repeatability and enable long-term operational testing.

The goal for future trials is to:

- demonstrate stable heat supply up to 900°C and
- inform future SiBox™ development to supply hot air up to 1000°C powered by 14D Brick at temperatures above 1400°C.

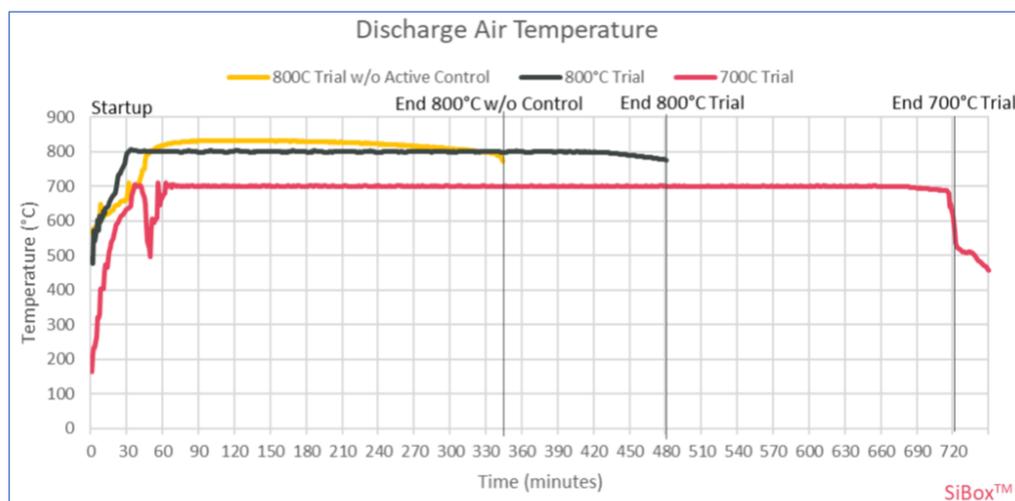


Figure 1. Discharge temperature versus time for SiBox runs with and without control system intervention. Note longer and precise temperature in controlled runs.

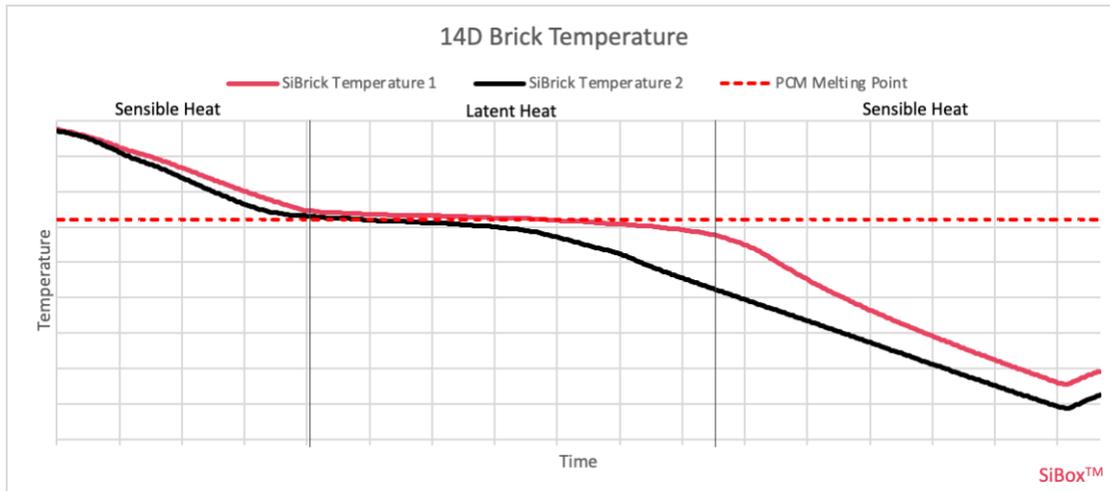


Figure 2. Two thermocouple data curves demonstrating contribution of latent heat in 1414 Degrees silicon bricks within SiBox.

**Additional information:**

1414 Degrees’ SiBox™ has completed multiple trials at different operating temperature setpoints to demonstrate its versatility in delivering clean heat that can be tailored to meet the diverse requirements of various industries. These trials were carried out at different output temperature setpoints, including 700°C with active control, 800°C with and without active control, as well as shorter trials at 600°C and 650°C, which aimed to test and refine the control system functionality. The figures provide visual representation of some of the results obtained from these trials. The internal brick storage media was electrically heated before each test, and no further charge was added during the trial to ensure that only stored heat was used. Air passing through the SiBox™ is heated by contact with walls of 14D Bricks then circulated through a heat exchanger to simulate a process heat load before being recirculated through the SDM. The silicon phase change material in the storage media cools and solidifies, releasing stored latent heat at a constant temperature as shown in Figure 2. This process ensures heat transfer inside the SiBox™ is self-regulating, providing the passive control of the outlet temperature demonstrated in the results. The outlet temperature of the SDM can also be actively controlled to meet specific application requirements.

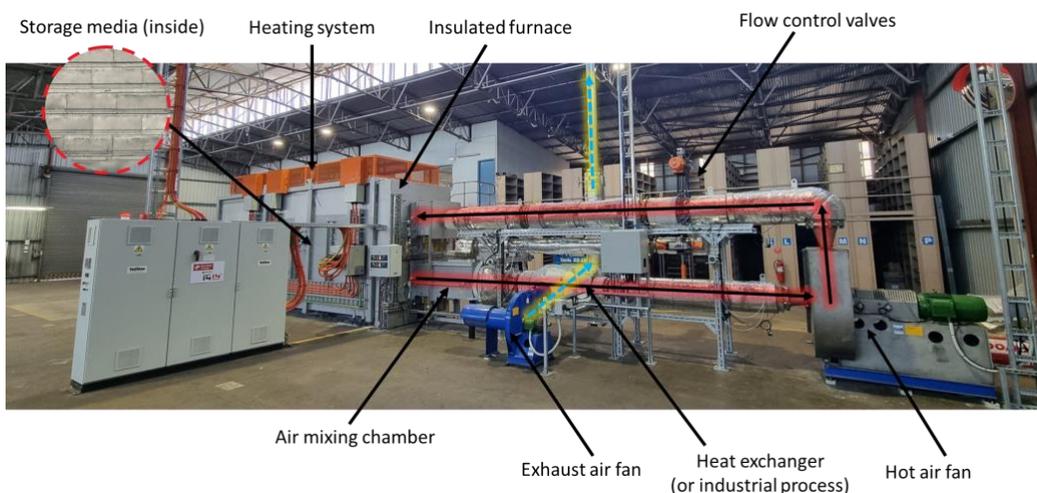


Figure 3. Components of 1414 Degrees SiBox Demonstration Module. The SDM’s modular thermal storage unit (left rear) is designed to be replicated for scale up in very large future systems.



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**ABOUT 1414 DEGREES LIMITED**

1414 Degrees is developing and commercialising its proprietary silicon-based thermal energy storage brick which is the key component in its thermal energy storage technology, SiBox™. SiBox™ delivers high temperature carbon free industrial heat by harnessing the extremely high latent heat capacity of silicon. This enables intermittent renewables to provide flexible, ultra-high temperature heat 24/7 for large industrial applications and to deliver reliable heat and power supply when required.

The Company commissioned a demonstration module of the SiBox™ technology in 2023 to accelerate the commercialisation of its silicon storage media as a competitive clean energy solution. The Company has previously implemented pilots which have led to the refinement and evolution of its technology.

It is envisaged that the flexibility of the SiBox™ modular concept will also provide energy customers with the ability to optimise their energy systems in a way that maximises their utilisation of cheaper renewable power and simplifies their purchasing from wholesale energy suppliers.

In 2019 the Company made the strategic purchase of the Aurora Energy Project (AEP) located near Port Augusta, South Australia. The focus of the project is to develop a long-term renewable energy project delivering reliable electricity to the region and National Electricity Market. Once ready for commercialisation, the AEP site will also allow 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)