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ASX:14D

QUARTERLY SHAREHOLDER UPDATE

- Aurora revenue upside potential grows
- Global decarbonisation policies driving SiBox industrial heat opportunities
- Cash of \$4.6m
- R&D rebate of \$1.9m in process

1414 Degrees' (ASX : 14D) overall company strategy was updated in the first quarter of 2021 to ensure the Company's technological and commercial efforts are focussed on the quickest path to revenue. The team is concentrating on using 14D's competitive advantages to accelerate development of its core silicon-based thermal energy storage technology, including:

- Working with client businesses seeking to decarbonise their high temperature industrial heat processes
- Collaborative business development for clients with variable and waste flared gas streams
- Applying for a series of recently announced government grant programs, both domestically and internationally, with direct relevance to 14D SiBox™ technology
- Actively engaging Federal and State Government decision makers to access an increasing wave of grant funding specifically aimed at longer duration storage and decarbonisation of industrial heat processes

14D's unique technology opens an extensive source of funding to leverage its shareholder capital. This is driven by the increasing recognition by government, energy companies, industrial and commercial enterprises and investors of the value of energy storage, in particular thermal storage, in converting variable renewable energy into baseload heat and electricity. The momentum in global energy markets should not be underestimated, and this view is supported by recent market events in Australia:

- Energy industry leaders and analysts have been warning of a fallout on coal power plants from prolonged low wholesale power prices as a direct result of renewable penetration, fuelling expectations of extended temporary and permanent shutdowns. This is precisely why the problem of variable renewables must be solved and can only happen through game changing storage solutions such as 14D's silicon-based technology
- Several large-scale thermal generators have flagged the potential mothballing of some of their coal units well before their advertised closure dates. These announcements follow the publicly announced news of EnergyAustralia bringing forward the closure of Yallourn coal fired power station in Victoria to 2028 from 2032; the decision by Origin Energy to introduce greater flexibility into the operation of the Eraring coal fired power station in NSW; and Sunset Power flagging they remain open to shifting the closure date of the Vales Point coal fired power station, dependent on the prevailing wholesale price conditions in the National Electricity Market. These announced changes are a direct result of the penetration pace of renewable generation impacting on lower spot and forward electricity prices

These market dynamics are highly supportive of both 14D's thermal energy storage technology development and the potential for higher forecast earnings from the Aurora Energy Project (AEP).

Internationally, decarbonisation continues to impact domestic government, investor and corporation policies affecting carbon intensive industries. According to the International Energy Agency (IEA), heat is the largest energy end-use, accounting for half of global final energy consumption, significantly more than electricity (20%) and transport (30%). In this global context, where renewable energy met only 11% of global heat demand in 2019, fossil fuels continue to dominate heat supplies. Awareness of these imbalances is front of mind in global government policy responses, as demonstrated by the following:

- The European Union has warned that Australian steel and aluminium exporters won't escape the EU's planned carbon border levy. From July 2021 the levy will ensure the bloc's \$65/tonne carbon tax is not undercut by imports from countries with lower emissions standards, like Australia. This policy is a direct driver for 14D's value proposition of turning variable renewables into high temperature baseload heat to decarbonise high emitting industries
- Corporations continue to purchase record amounts of clean energy, approximately 23.7GW in 2020. The rising numbers of companies making clean energy commitments is reflected in the number of companies executing clean energy Power Purchase Agreements (PPAs), demonstrating support of sustainability and clean energy, including storage. Companies in all sectors, including hard-to-abate oil & gas production and mining, are responding to the pressure, not only by purchasing renewable energy, but also to use renewable heat to decarbonise their operations. This is still a very immature market with vast potential for 1414 Degrees silicon-based thermal energy storage technology
- A coalition of the world's biggest investors is pushing companies to align capital spending with emissions reduction pledges

Technology update

SiBox™

Testing of our silicon-based thermal energy storage technology, SiBox™, continues in multiple furnaces conducting daily cycling consistent with anticipated real-life operational conditions. A number of variants of the silicon-based storage medium are undergoing tests and modelling to compare robustness, cost, energy density, and energy conductivity. The result will lead to selection of the most robust and low cost products to scale up to approximately 1.5MWh in a demonstration module. The aim is to follow-up with an approximately 75MWh device delivering 2MW for 8 hours to the National Electricity Market (NEM) on our Aurora Project, resulting in a commercial SiBox product.

GAS-TESS

Our engineers are reviewing the results from the gas fired thermal energy storage system, GAS-TESS installation at SA Water's Glenelg Wastewater Treatment plant, to identify the most appropriate path to commercialisation of this unique technology. The variability of biogas production in the plant suggested a combination of engines sized for the minimum gas production with a GAS-TESS to absorb the variable component. They compared the business cases for engines alone versus a hybrid with an upgraded GAS-TESS. The results were close, with the hybrid case marginally less favourable, and the report noted that the comparison applies to this one site and is based on a number of key high-level assumptions, particularly around engine efficiencies. A sensitivity/gap analysis indicated that improving revenue margins will increase the competitiveness of the GAS-TESS technology. This can be achieved by increasing the electrical energy conversion efficiency while decreasing costs as part of ongoing technical development of the GAS-TESS technology.

The conclusion is that further investigation could promote the commercialisation prospects of the GAS-TESS. A key influence will be market research to identify and characterise broader potential applications for the GAS-TESS, and engagement with industry partners to further inform the GAS-TESS business case and collaborate on future opportunities.

Technology Collaborations

Our R&D collaboration project, funded through the Innovation Connect program, with the University of Adelaide on further improvements to 14D's silicon-based thermal energy storage technology is well underway. We have also collaborated with Deakin University on optimising heat transfer design within the SiBox™. The outcome of the HILT CRC bid, for which 1414 Degrees is an Affiliate Partner, is still outstanding.

Aurora Project update

Stage 1 of the Aurora Energy Project (AEP) will be a Battery Energy Storage System (BESS). Doubling of the previously announced 70MWh battery is under investigation, dependent on transmission and connection options. EPC and vendor finance proposals from four tier one providers are under consideration and we expect final decisions to be made in the near term.

As previously announced, the Aurora Energy Project can provide a significant revenue stream to fund the development of the SiBox™ technology and achieve commercialisation.

The wholesale electricity market dynamics described above continue to support the Project's business case with greater revenue potential. Key positive drivers for significant revenue upside include record national uptake in 2020 of approximately 3GW of distributed PV, with homes and businesses around Australia installing 317MW of systems in March – an all-time high for national monthly installs. In South Australia it is now delivering a significant proportion of the state's electricity needs, causing periods of negative market demand with resulting low to negative NEM prices. This is expected to become increasingly common, providing upside to the projected arbitrage revenue for Aurora. Additionally, the PV take-up rate will continue to exacerbate grid instability and drive-up Frequency Control Ancillary services (FCAS) price volatility, providing revenue upside for Aurora.

As mentioned previously, the announced early generator shutdowns and unit cycling should lead to increasing wholesale price spreads, benefitting revenues from Aurora Energy Project storage.

Finance

At quarter end, the Company held \$4.6m in cash and continues to manage cashflow to ensure the timely delivery of its projects. The Company's R&D tax rebate has seen an uplift to approximately \$1.9m receivable and was lodged with the ATO in April this year. Payroll was further supported by the second extension of the JobKeeper 2.0 program, which ended at the end of March this year.

Corporate

With a strengthening post-Covid economy, the Company decided to consolidate its team in a single location. The Southlink facility will be decommissioned in the coming months, and all operations moved to Melrose Park. This will facilitate team collaboration and commercial advancement of our products, including the GAS-TESS and SiBox solutions.

AUTHORISED BY:

Jamie Summons, Managing Director

+61 8 8357 8273

ABOUT 1414 DEGREES LIMITED

1414 Degrees is developing and commercialising its silicon-based thermal energy storage technology, SiBox™ to enable a clean energy future. The Company's vision is to harness the extremely high latent heat capacity of silicon and firm intermittent renewables to provide high temperature heat 24/7 for large industrial applications and energy storage to deliver reliable electricity.

The Company has implemented demonstration pilots which have led to the refinement and evolution of its technology. SiBox™ is the next generation based on the learnings and complementary R&D.

In 2019 the Company made the strategic purchase of the Aurora Energy Project (AEP) located near Port Augusta, South Australia. The immediate focus of the project is to develop a hybrid power plant to generate revenues for 1414 Degrees to further develop its core SiBox™ technology. Once ready for commercialisation, the AEP site will allow 14D to pilot and demonstrate a grid-scale version of the SiBox™ technology.

1414 DEGREES LTD
ABN 57 138 803 620

ASX
14D

ADDRESS
136 Daws Road,
Melrose Park SA 5039

EMAIL
info@1414degrees.com.au

PHONE
+61 8 8357 8273



1414DEGREES.COM.AU