

QGL JV Gains TES Battery Cell OEM Rights

QGL Becomes Full Participant in Grid Connected Energy Storage Market

Highlights

- Change of name of joint venture (Quantum Sunlands Partnership) to Sunlands Power
- Sunlands Power acquires full OEM rights to manufacture Sunlands Co.'s LDES TES Graphite Cells
- OEM rights extend to TES Graphite Cells made from non-QGL supplied flake graphite
- Agreement effective 1 July 2023

The Company is pleased to announce that its joint venture with Sunlands Co., Quantum Sunlands Partnership, has acquired the original equipment manufacture rights (OEM) for Sunlands Co.'s TES Graphite Cells. The name of the joint venture company will be changed to Sunlands Power, recognising its critical role in the delivery of the LDES technology to the market.

The OEM rights are in addition to those previously granted to Sunlands Power to manufacture the Uley 2 flake graphite-based energy storage media. With the acquisition of the OEM rights, Sunlands Power is now positioned as a strategic full participant in the global LDES market.

Sunlands Power will be directly responsible for the manufacture and delivery to Sunlands Co. of the complete TES Graphite Cell facility. Included within this facility will be all the associated plant and equipment required for the connection to conventional thermal power plants (i.e., steam turbine generator packages). Importantly the OEM rights are not limited to or dependent on the flake graphite being sourced from the Company.

The Company's financial returns from Sunlands Power will be a significant addition to the returns delivered from its Uley 2 Project. Based upon the current market prices for graphite energy storage media and LDES facilities, the combined manufacture and sale of the flake storage media and the TES Graphite Cell facilities will generate revenues far in excess of those derived from the sale of Uley 2 flake to Sunlands Power. The Company will provide further information on the expected financial returns from its Sunlands Power interest upon the completion of the TES Graphite Cell pilot plant.



ABOUT LDES

A scalable energy storage system that can store energy predominantly from renewable sources for more than 12 hours and up to days at a time delivering dispatchable, inertia restoring energy to grid networks as required especially when renewables generation is not available. LDES is the critical solution underpinning the decarbonisation of grid networks.

ABOUT THERMAL ENERGY STORAGE

Thermal energy storage (TES) is a type of energy storage that stores heat typically from the conversion of renewables electricity generation.

The capital to establish Sunlands Power's operations will be included within the sustainably linked bond financing currently being progressed by the parties. The Company and Sunlands Co. expect that Sunlands Power will deliver a return to them within the first year of achieving its minimum production capacity of 0.5GW of TES Graphite Cells per annum. This level of LDES requires a minimum 50,000 tonnes of Uley flake graphite based media.

Quantum Graphite director, Michael Wyer, commented that, "our initial arrangement with Sunlands Co. established the exclusive working relationship between the parties. The critical supply of the flake graphite-based energy storage media was the key step in building an end to end supply chain. The grant of OEM rights to Sunlands Power now underpins the Company's participation in the biggest market associated with the grid connected energy markets".

Key Target Market - Retrofitting of Coal Fired Power Stations

The Sunlands Power TES Graphite Cells are ideally suited to the retrofitting of coal fire power stations. Storing energy from renewables in the form of heat, TES Graphite Cells can retain this heat for weeks at a time and deliver this heat to pre-existing coal boilers to generate steam.

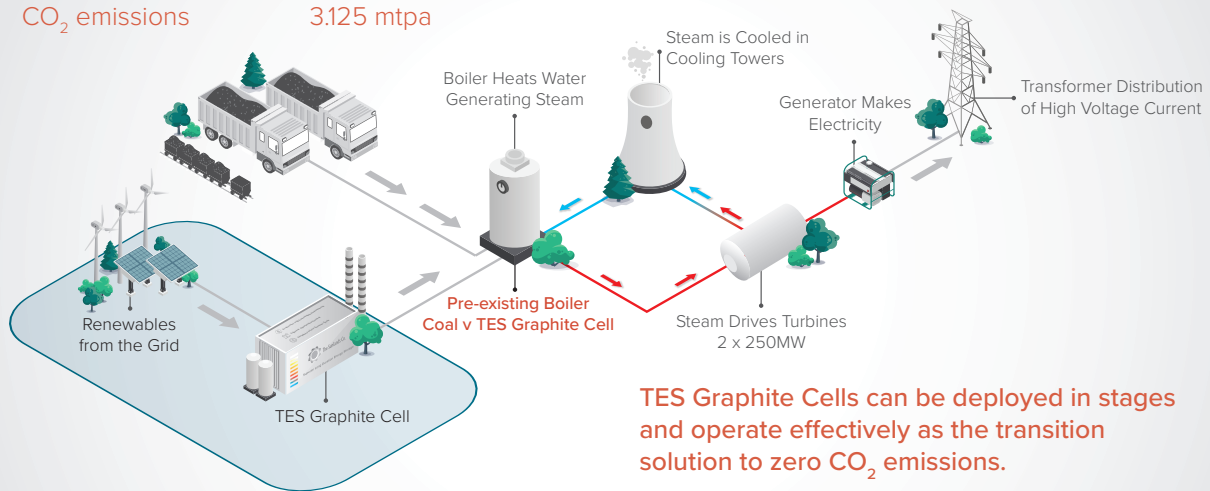
Essential to the generation of electricity from these power stations' conventional turbine generators is the production of efficient high temperature steam. TES Graphite Cells' high operating temperatures ensure the reliable, consistent production of high temperature steam to drive the type of utility scale turbines found at large grid scale coal fired power stations.

Deployment of TES Graphite Cells within existing coal fired power stations and their charging from renewables results in the direct reduction of CO₂ emissions. In a typical 500MW (bitumus) coal fired thermal power plant, TES Graphite Cells can eliminate more than 3,000,000 tonnes of CO₂ emissions per annum.

TES Graphite Cell Installed within 500MW Coal-Fired Thermal Power Plant

BEFORE Installation of TES Graphite Cell (100% Coal)

Coal Consumption 1.250 mtpa
CO₂ emissions 3.125 mtpa



AFTER Installation of 250 MW TES Graphite Cell (50% Coal)

Coal Consumption 0.625 mtpa
CO₂ emissions 1.562 mtpa

AFTER Installation of 500 MW TES Graphite Cell (Zero Coal)

Coal Consumption 0 mtpa
CO₂ emissions 0 mtpa

ABOUT LDES

A scalable energy storage system that can store energy predominantly from renewable sources for more than 12 hours and up to days at a time delivering dispatchable, inertia restoring energy to grid networks as required especially when renewables generation is not available. LDES is the critical solution underpinning the decarbonisation of grid networks.

ABOUT THERMAL ENERGY STORAGE

Thermal energy storage (TES) is a type of energy storage that stores heat typically from the conversion of renewables electricity generation.

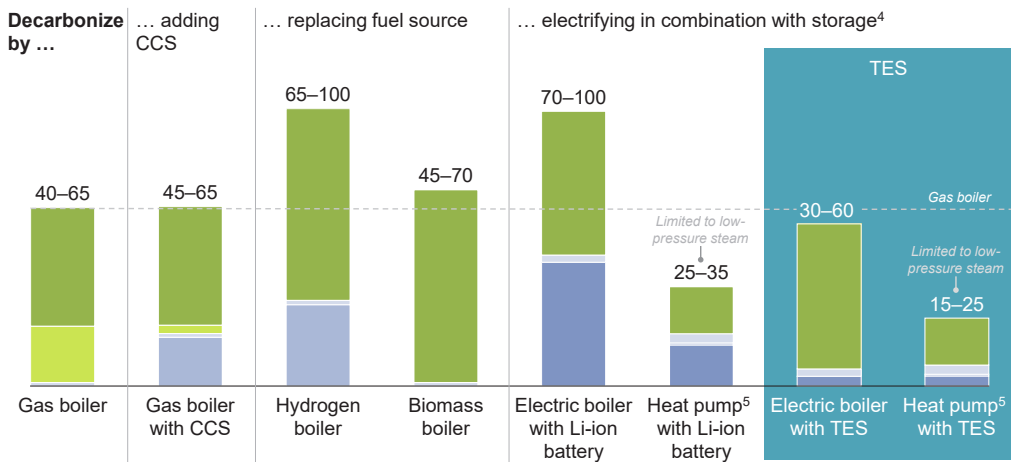
For personal use only

Cost Competitive Advantages of TES as Preferred Decarbonisation Solution

The Long Duration Energy Storage Council¹ has stated that TES is a cost competitive decarbonisation solution today. It acknowledges that TES based LDES solutions are a more cost efficient (steam based) decarbonisation and electrification solution than carbon capture and storage (at existing coal fired power stations) or replacing gas with hydrogen or biomass.

Clean steam from electricity and TES can be cheaper than conventional gas boilers and other low-carbon solutions

Levelized cost of heat (steam)¹
USD/MWh, 2022



1. Ranges reflect representative fuel prices. Gas (USD 6–12/mmBTU), electricity (USD 25–50/MWh), biomass (USD 200–350/t). In the hydrogen boiler case, hydrogen production costs amount to USD 2.1–3.2/kg of hydrogen.
2. Boiler, heat pump, and charging equipment.
3. Electrolyzer, CCS.
4. Assumes on-site renewables.
5. High-temperature industrial heat pump. Maximum achievable steam temperature is ~160°C.

Exhibit 9

Meeting the Global LDES Demand for Grid Decarbonisation

The US Department of Energy² outlined the market challenge more generally stating that the grid connected energy storage installed base of 10 GW in 2019 is projected to increase 15 times to 160 GW in 2030. Bloomberg New Energy Finance expects annual expenditures in the grid connected storage segment to increase from US\$8.6 billion in 2020 to a projected US\$30.1 billion by 2030.

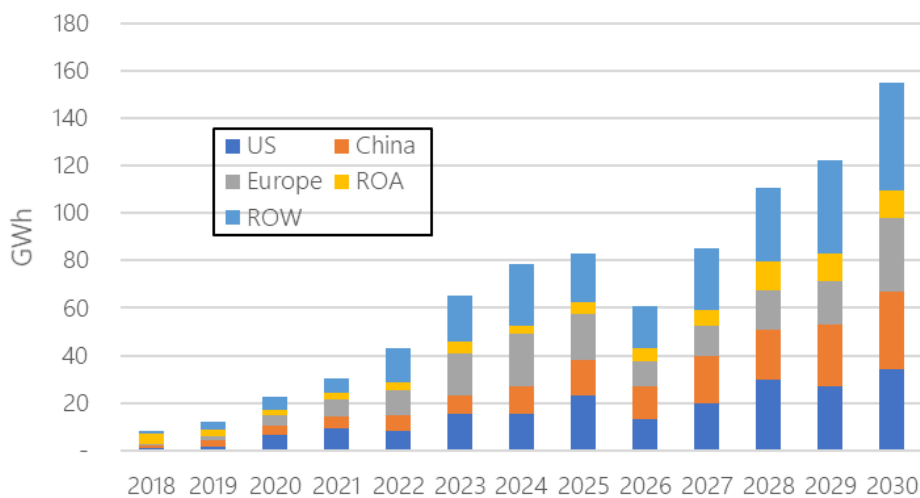


Figure 4. Global projected grid-related annual deployments by region (2015–2030)

ABOUT LDES

A scalable energy storage system that can store energy predominantly from renewable sources for more than 12 hours and up to days at a time delivering dispatchable, inertia restoring energy to grid networks as required especially when renewables generation is not available. LDES is the critical solution underpinning the decarbonisation of grid networks.

ABOUT THERMAL ENERGY STORAGE

Thermal energy storage (TES) is a type of energy storage that stores heat typically from the conversion of renewables electricity generation.

For personal use only

Sunlands Power is well positioned to take advantage of global LDES demand over the next decade. Commercialisation activities will follow the construction and test operation of the TES Graphite Cell pilot plant the design of which, was recently completed.

¹Net-zero heat: Long Duration Energy Storage to accelerate energy system decarbonization | LDES Council, McKinsey & Company 2022

²The Energy Storage Grand Challenge (ESGC) Energy Storage Market Report 2020

³Bloomberg New Energy Finance, "2019 Long-Term Energy Storage Outlook," Bloomberg NEF, New York, 2019. Available: <https://about.bnef.com/blog/energy-storage-investments-boom-battery-costs-halve-next-decade/>

FOR FURTHER INFORMATION CONTACT:

Company Secretary
Quantum Graphite Limited
E: info@qgraphite.com



ABOUT QUANTUM GRAPHITE LIMITED

QGL is the owner of the Uley flake graphite mineral deposits located south-west of Port Lincoln, South Australia. The company's Uley 2 project represents the next stage of development of the century old Uley mine, one of the largest high-grade natural flake deposits in the world. For further information, [qgraphite.com](https://www.qgraphite.com).



ABOUT SUNLANDS POWER

Sunlands Power is our joint venture with Sunlands Co. for the manufacture of coarse natural flake based thermal storage media and the manufacture of complete TES Graphite Cell facilities. The flake for the storage media will be sourced exclusively from the QGL's Uley mine. The manufactured media will be fitted within TES Graphite Cells and the completed facility delivered to Sunlands Co. for deployment as a grid connected long duration energy storage solution. <https://www.sunlandsc.com/>

For personal use only