



Breakthrough energy storage technology uses legacy mine shafts

Green Gravity develops and operates cutting edge gravitational energy storage systems, with the aim to become the world's lowest cost and most sustainable provider of energy storage technology.

AN URGENT NEED

As decarbonisation of the energy system progresses, the share of variable renewable energy will increase the variability of electricity production in the grid. Energy storage capacity of various depths will be required to provide energy when customers require it, and in turn support system stability. The Australian Energy Market Operator forecasts storage demand between 30 and 45 gigawatts to 2040 across its scenarios.

Further, the rich mining history of Australia and the world has resulted in vast numbers of legacy mining assets which remain unrehabilitated. In Australia there are around 100,000 legacy mines, with up to 1,000 likely still connected to or with close proximity to the electricity grid.

THE TECHNOLOGY SOLUTION

Green Gravity's energy storage system moves multiple heavy weights vertically in a legacy mine shaft to capture and release the potential gravitational energy of the weights. By simply using proven mechanical parts and disused mine shafts, Green Gravity's energy storage technology is low-cost, long-life and environmentally compelling. Through early adoption of advanced artificial intelligence, Green Gravity is able to accelerate the development of this technology.

Storing energy in this way uses no processed chemicals and has no performance degradation.



Moving weights vertically allows for high Round Trip Efficiency and using legacy mine shafts allows reuse of existing structures, contributing to the circular economy, reducing waste and lowering costs.

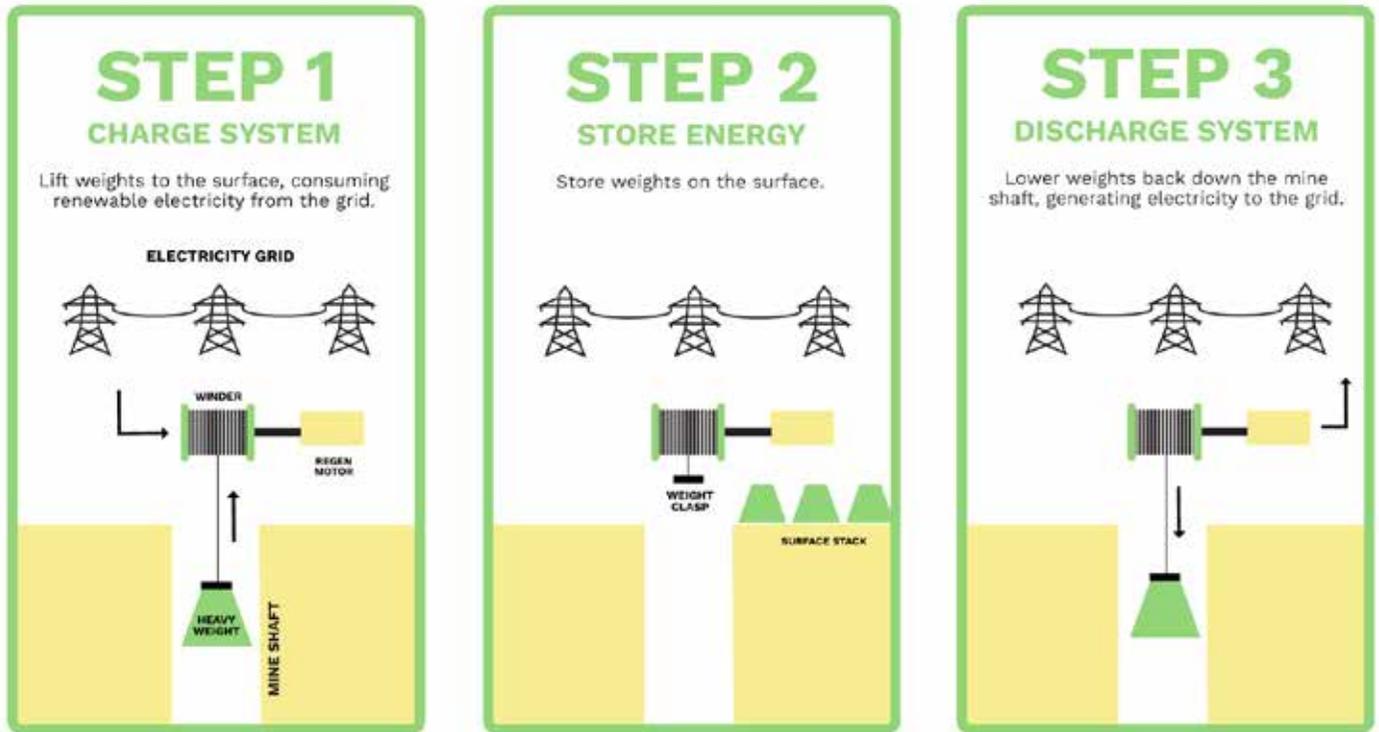
A SUSTAINABLE SOLUTION

The Green Gravity technology offers a sustainable solution relative to other energy storage technologies through factors like:

- **Minimal environmental footprint.** Offering minimal noise, small land footprint, no water resources, no recycling downside, low carbon on installation and reduces the need to develop greenfield sites.
- **Safe in use.** Gravitational storage uses inert materials and has no thermal runaway risk.
- **Low cost.** The use of pre-existing infrastructure via legacy mine shafts reduces capital cost. No fuel inputs are required due to the utilisation of gravity as the storage media.



GREEN GRAVITY



- **Sustainable supply chain.** The technology uses simple components which remove the need for complex global chemical refining chains.
- **No performance degradation.** When stored, the energy does not dissipate.
- **Simplicity.** The technology combines existing proven components in an innovative way. There are few parts, no complex processing, and relatively little development risk compared to other green energy innovations.
- **Resilient to the changing climate.** Unlike hydroelectricity, chemical storage, wind and solar, gravitational energy storage is resilient to more extreme temperatures and lower rainfall.
- **Flexible and incremental.** Investment can be incremental, lowering capital size risks.

THE POTENTIAL ECONOMICS

The economics of gravitational energy storage are linked to the amount of mass moved and to the height of movement. Green Gravity can take advantage of re-using mining infrastructure, gaining access to a great height, thereby lowering the required capital. The installed cost of capacity is forecast to compete well with lithium-ion grid solutions.

The simplicity and use of proven components

allows for very long infrastructure life, something that is well suited to the electricity grid.

THE POTENTIAL SCALABILITY

The unique approach Green Gravity has developed allows for significant mass to be moved through mine shafts. The scale of energy storage potential in commonly available deeper mine shafts is equivalent to many of the big lithium-ion batteries getting installed in the grid today.

OUR PROGRESS AND PLANS

Green Gravity launched early in 2022 following a period of intense engineering and development. Since then, the team has expanded to 13 members and the technology, along with partnerships, have continued to deepen.

In the coming months Green Gravity expects to make final investment decisions on a large-scale demonstration plant to be located at a legacy mine site. Green Gravity is engaging with mining, energy and industrial companies to strengthen relationships and to prepare for commercialisation. The company is developing the technology in Australia, with emerging global engagement including in key markets like India and the United States.