Alphabet spin-off lands in Cambridge with plans for a salty solution for storing energy

By Andy Rosen

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For nearly a decade, Google's secretive X division has been cooking up what it calls "moonshots" — projects that take on some of the most elusive problems in technology. Now, one of the effort's big bets is touching down in Cambridge.

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Malta is developing technology to take electricity from the grid in times of plenty and store it, a plan that depends on molten salt.

X, now an independent arm of Google's parent company, Alphabet, announced last week that it was spinning out Malta, an energy-storage company that's trying to make renewable energy a more integral part of the electrical grid.

The company's team of four in Cambridge will take on a problem with huge economic and environmental implications. Wind and solar energy are clean and relatively cheap to produce, but they can't replace traditional energy sources, because they don't produce power when the skies are dark or the air is calm.

Ramya Swaminathan, chief executive of Malta, said she's confident the company's plan can make a dent in the problem.

Malta is developing technology that can take electricity from the grid in times of plenty and store it for hours, waiting for demand to increase or supply to decrease. The technology uses electricity to heat molten salt and to cool an antifreeze solution.

Later, Malta can release the stored power by allowing the heat to warm the air around the cold liquid. As the thermal energy moves through the system, it turns a turbine that generates electricity.

“The physics are well known, the chemistry is well known, but to put them together in a system at the cost and efficiency that would be transformational in the marketplace is not a small challenge,” Swaminathan said.

Molten salt has been used in other energy applications because of its ability to hold temperatures around 500 degrees. Some solar plants use focused sunlight to heat molten salt, then pour water over it to create steam power when the sun is not shining.

Malta is trying to commercialize an application that could work in many different locations. And it says its equipment is durable and affordable enough to give it an advantage over storage alternatives such as chemical batteries.

The company is trying to build a plant as a pilot project in coming years. The facility would be capable of storing as much as 10 megawatts of power.

Malta was officially launched as an independent company Dec. 19, when it said it had taken $26 million in venture capital money from investors including Breakthrough Energy Ventures, a $1 billion fund led by Bill Gates.

The company said it could not discuss its financial relationship with X, but Malta is one of a handful of firms to break off from the Alphabet subsidiary. It follows Dandelion, which is working on geothermal energy for homes and became its own company last year.

Among the other ideas that the X effort has spawned are the augmented reality accessoryGoogle Glass; the self-driving car project Waymo; and Project Loon, which uses balloons to beam Internet connections to underserved areas.

While previous work on the project that would become Malta happened in California, the company said it chose Cambridge for its headquarters in part because the region makes it easy to travel around North America and Europe.

There are other promising companies in the Boston area working in energy storage, with many of them — such as Ionic Materials and 24M Technologies — looking for ways to improve batteries.

Another startup, Form Energy, formed out of the Engine, MIT's venture program for startups pursuing difficult technology problems, is working on batteries intended to cheaply store renewable energy for periods that can last months.

Marc D. Montalvo, president of the Worcester energy consulting firm Daymark, said he expects to see many energy-storage products go from development to market in coming years.

"A lot of the fundamental research and technological development has happened, and really we're starting to approach the tipping point," he said.

But though the potential for new businesses in the area is high, Montalvo said new companies have an uphill climb. Their products will have to compete on price with fossil fuels, while making an effective sales pitch to a highly regulated industry that is cautious about new technology.

"It's not just about having a cool thing that works," he said. Startups will have to prove the reliability of their products in a field that is "designed to develop and deploy a service to people that essentially always works."

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