



CleanTech start-up RayGen selects Alfa Laval for radical new approach to renewable energy storage at half the cost of batteries

[Lund, Sweden / Sydney, Australia, 23 June 2022] Cleantech start-up company, RayGen has selected Alfa Laval to provide heat exchangers for its world-first PV Ultra and -Thermal Energy Storage power plant in Victoria, Australia.

RayGen is an Australian technology company with world-leading breakthroughs in solar power technology and renewable energy storage. The company uses a combination of PV Ultra (solar and heat co-generation) and Thermal Hydro (energy storage) technology.

A field of smart, self-aligning mirrors concentrate sunlight onto a tower-mounted receiver containing an array of PV Ultra modules. RayGen's PV Ultra modules convert sunlight to power with nearly 90% efficiency (one-third to electricity and two-thirds to heat) using high efficiency, actively cooled photovoltaics.

Heat extracted from PV Ultra modules via Plate Heat Exchangers is stored as hot water in a thermally insulated reservoir, while electricity from PV Ultra or the grid is used to run a chiller to produce near freezing water in a second reservoir.

Stored hot and cold water drive an Organic Rankine Cycle (ORC) engine (used for heat to power in the geothermal industry) to produce stable electricity on demand.

The first deployment will be at the Carwarp project in Victoria. The 4MW solar plant will save 10,000 tonnes of CO2 emissions per year and provide renewable power day and night to approx. 1,000 Victorian homes.

Power generation when the sun doesn't shine

Long duration energy storage can cost-effectively store electricity from wind, solar and other renewable sources and then make it available when needed.

Using Alfa Laval's innovative plate heat exchangers to optimise energy efficiency and system design, RayGen is able to reduce the cost of energy storage. With energy stored as hot and cold water, RayGen's patented technology allows to generate electricity during the night at half the cost of lithium-ion batteries using the ORC turbine.

Richard Payne, CEO, RayGen said Alfa Laval is a reliable partner to deliver superior technology combined with profound application and thermal performance optimization expertise. "Alfa Laval shares our commitment to the global transition to renewable energy and has delivered superior heat transfer technology and expertise at our Carwarp power plant."

[>> Read more about the innovative technologies behind the RayGen project](#)

Global quest to bring down cost for long duration energy storage



To achieve decarbonization, significant efforts must be made to reduce emissions across all sectors. The power sector, which accounts for roughly one-third of global emissions, is central to global decarbonization and will need to achieve net-zero emissions by 2040 to limit temperature increases to 1.5°C as set by the Paris Agreement.

Alfa Laval recently joined the Long Duration Energy Storage (LDES) Council. Formed by technology companies, users and investors to achieve grid net-zero by 2040, the council will support governments, grid operators and major electricity users in adopting the most cost-effective energy storage solutions, enabling renewable energy to replace the use of fossil fuels [[read news](#)].

Selwyn Oliveira, Energy Division Manager, Oceania at Alfa Laval said that Alfa Laval's global presence, expertise in thermal performance optimization, and superior technology, makes the company the perfect technology partner for Cleantech companies. "The critical part of this process is to recover all the heat rejected by the PV Ultra modules using our super-efficient Plate Heat Exchangers and store this in insulated reservoirs for later use in the ORC turbine," he said.

This is Alfa Laval

Alfa Laval is a world leader in heat transfer, centrifugal separation and fluid handling, and is active in the areas of Energy, Marine, and Food & Water, offering its expertise, products, and service to a wide range of industries in some 100 countries. The company is committed to optimizing processes, creating responsible growth, and driving progress to support customers in achieving their business goals and sustainability targets.

Alfa Laval's innovative technologies are dedicated to purifying, refining, and reusing materials, promoting more responsible use of natural resources. They contribute to improved energy efficiency and heat recovery, better water treatment, and reduced emissions. Thereby, Alfa Laval is not only accelerating success for its customers, but also for people and the planet. Making the world better, every day.

Alfa Laval has 17,900 employees. Annual sales in 2021 were SEK 40.9 billion (approx. EUR 4 billion). The company is listed on Nasdaq Stockholm.

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