RAYGEN

Integrated storage unlocks CSP's full potential

April 2024

Established in 2010, we are the global leading technology pioneer for PV-plus-thermal storage

Strategic Investors

slb
equinor
Chevron
agl
Photon Energy Group
ARENA

Technology Deployment Partner

slb

Research Partners

UNSW SYDNEY
QUT Queensland University of Technology
University of South Australia
NREL NATIONAL RENEWABLE ENERGY LABORATORY
CSIRO
Sandia National Laboratories
MONASH University

>80

Employees

6

Patent Families

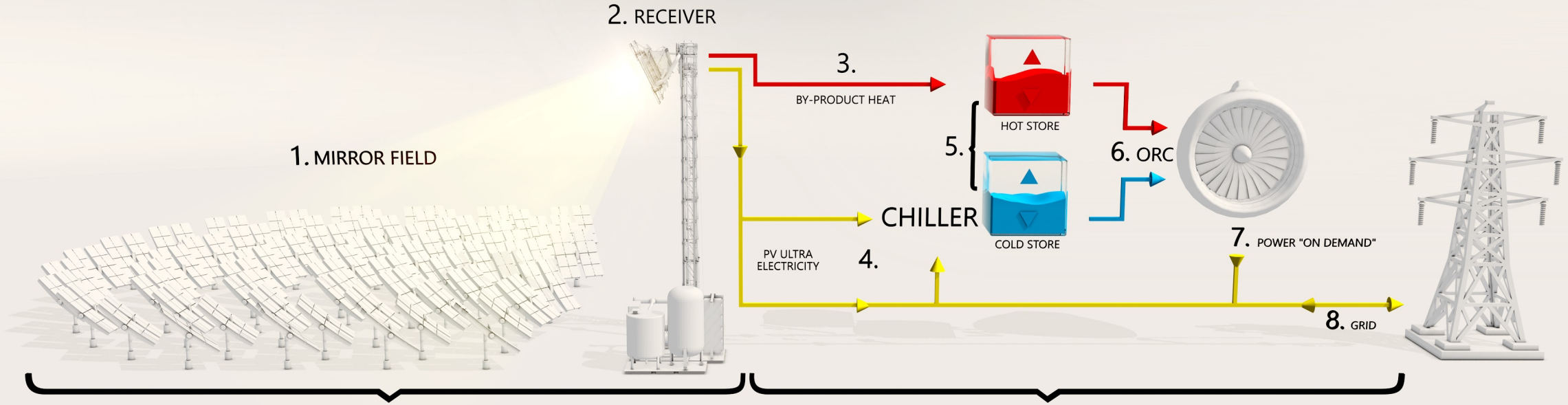
>$50m

Investor Funding


Broken Hill
Menindee
NEW SOUTH WALES
Dubbo
Newcastle
Wollemi National Park
Orange
Bathurst
Sydney
Whyalla
Port Pirie
Clare
Wallaroo
Renmark
Raygen PV Ultra Thermal Hydro
Griffith
Leeton
Wollongong
Goulburn
Nowra
Port Lincoln
Adelaide
Mount Barker
Wagga Wagga
Canberra
Kangaroo Island
Ngarkat
Echuca
Albury
Shepparton
Kosciuszko National Park
VICTORIA
Robe
Mount Gambier
Melbourne
Geelong
Traralgon
Warrnambool


High Lift Branch Channel
S W Angle Rd
S W Angle Rd
Raygen PV Ultra
Thermal Hydro
S W Angle Rd
High Lift Branch Channel

Storage duration can be flexibly and independently configured by increasing/ decreasing pit size; **typical durations range from 8-24 hours**



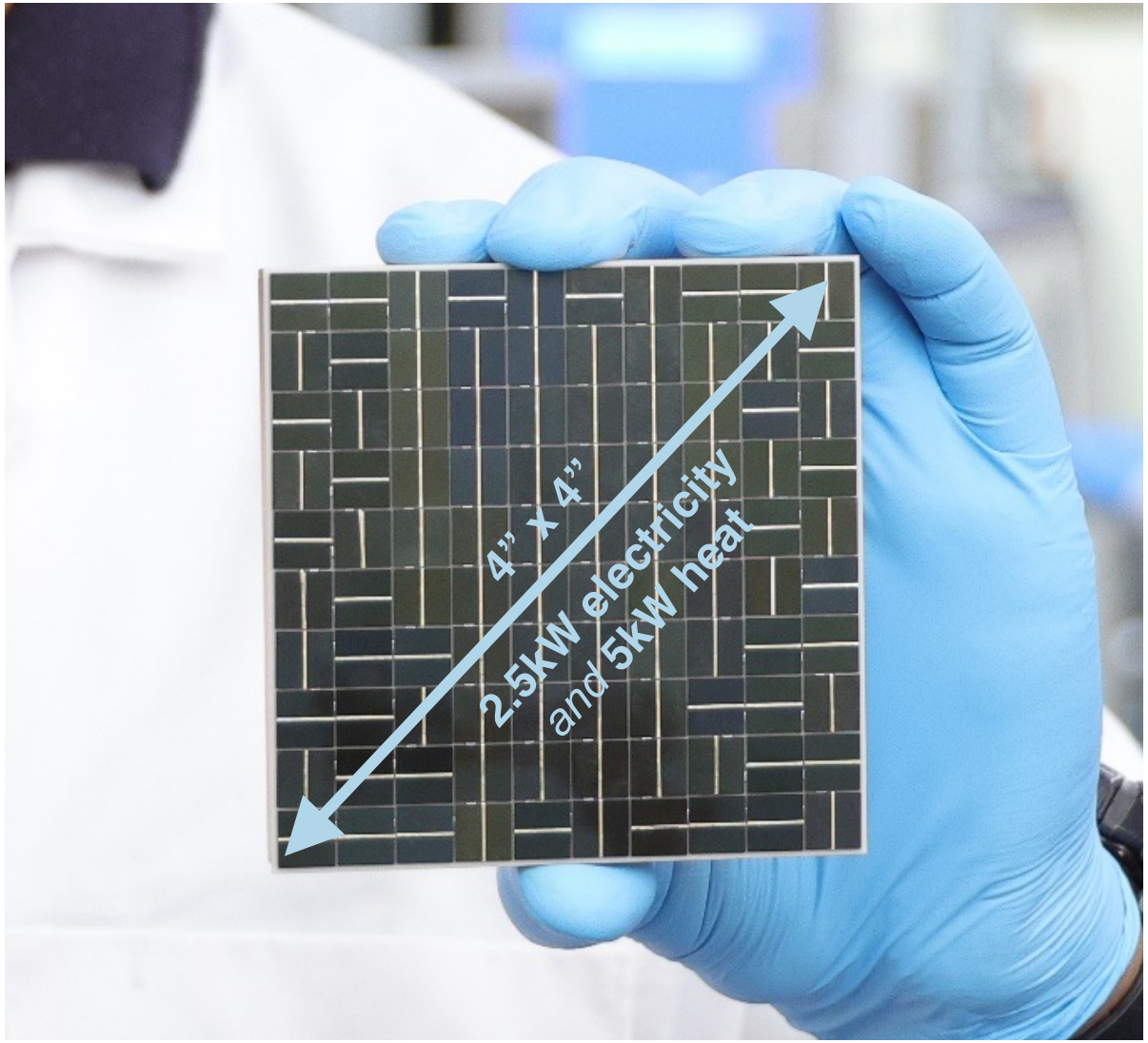
Solar

Not ‘CSP’ – Mirrors focus sunlight onto RayGen’s photovoltaic modules, which convert light directly to electricity (water-cooling captures additional heat).

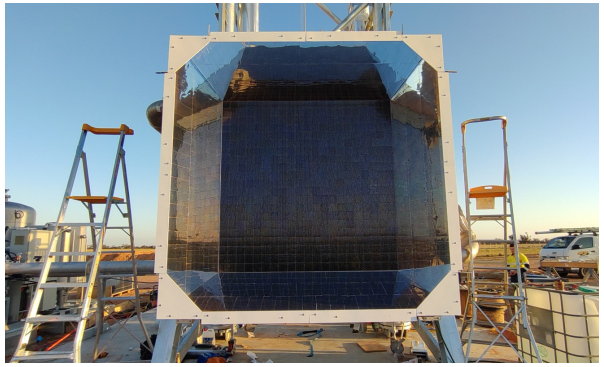
Storage

By-product heat from RayGen’s solar boosts efficiency of RayGen’s storage. Storage can be charged by on-site solar, or by the grid. Solar can export to the grid, or charge storage.

Exceptional, high performance RayGen solar modules



RayGen-made solar modules fabricated in Melbourne, AU
No polysilicon used



Over 400 modules in receiver for 1 MW of electricity, 2 MW of heat

RayGen converts 1/3rd sunlight to electricity and 2/3rd heat

Low cost, low complexity, self-powered mirrors

Self-powered, wireless mirror tracking

Pile-driven posts
No field wiring
No concrete foundations

Co-located with grazing agriculture since 2014

Structurally lowest cost storage medium (hot & cold water)

PTES, an established technology, has capability for *seasonal storage,* with **<10% energy loss over 6 months**

Simple, low risk pit construction;
Max depth of 15-20 m

Simple, high efficiency, low-cost rubber insulation

Lowest cost storage medium (water);
Filtered and treated from any water source (river, well, sea)

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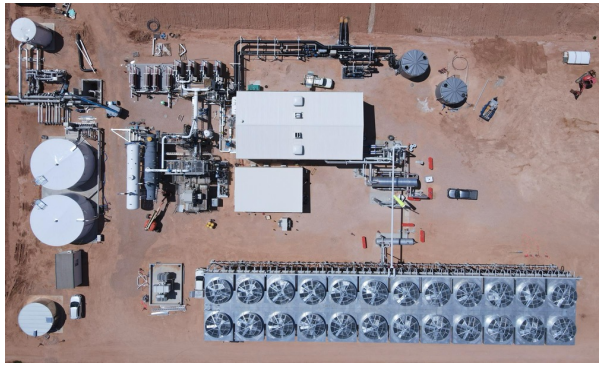
Standard industrial chillers, heat pumps, turbines and generators

Hot PTES charged with ‘free’ by-product heat from solar

Cold PTES charged with high efficiency industrial chiller



Uses conventional geothermal turbine

For every 1 MWh into the chiller, RayGen can recover 0.7-0.8 MWh out of the ORC, for **net round-trip efficiency of 70-80%**

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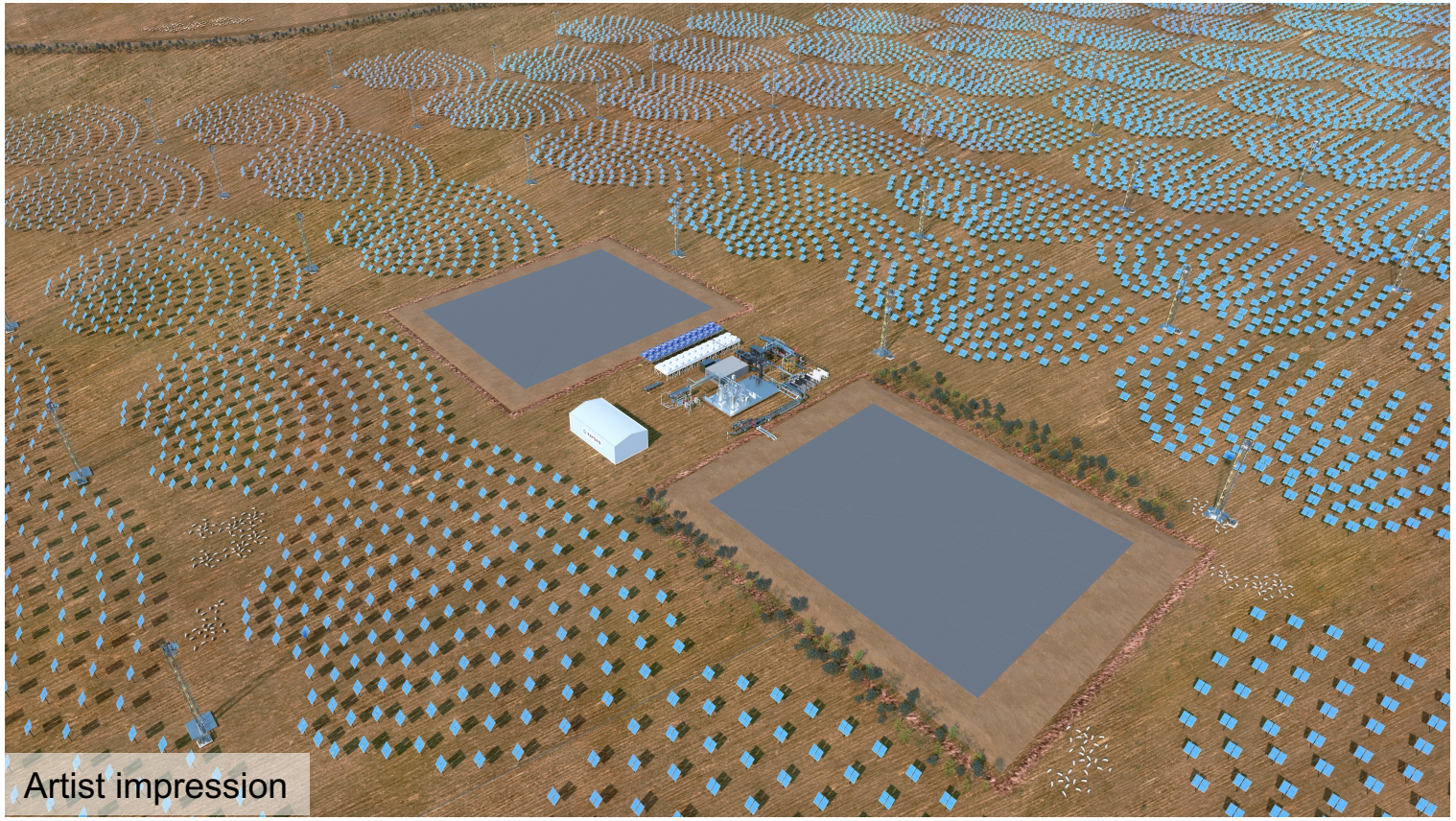
Subsequent projects will scale-*out* RayGen's modular technology

50 MWh Solar Power Plant One, Carwarp

4 MW Solar – 4x 1MW PV Ultra towers
3 MW Storage – 1x 3MW ORC w/
50 MWh (**17 hours**) – 2x 17,000m^3 pits



1.4 GWh Solar Power Plant Two

50 MW Solar – 50x 1MW PV Ultra towers
29 MW Storage – 1x 29MW ORC w/
350 MWh (**12 hours**) – 2x 165-200,000m^3 pits

x4

Strong GW-scale near-term pipeline

Confidential

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RayGen.com