

ANT

YARRA VALLEY ESTATE RENEWABLE ENERGY SYSTEM

*Leading the
Hydrogen
Economy*

www.antsolutions.com.au

Yarra Valley Estate [YVE] is working in collaboration with ANT Energy Solutions to build a dispatchable 24/7 renewable energy system based on hydrogen.

The objectives of establishing the YVE system are to:

- ▶ meet 100% of YVE's electricity needs from renewable sources using an ANT-designed, environmentally sustainable system. ANT's system utilises hydrogen to enable economical storage of energy for dispatchable electricity on demand
- ▶ demonstrate the commercial viability of ANT's hydrogen-based renewable energy system for deployment at similar sites
- ▶ provide a site for the public to learn about dispatchable renewable energy during their stay at YVE.

Yarra Valley Estate



Background

YVE is a dedicated conference, wedding and function venue located on a 120 acre natural setting in the Yarra Valley. Sustainability- environmental, social and economic - has and will continue to be at the core of YVE's business, with staff and guests encouraged to engage in best sustainability practices. Amongst its awards YVE has received the prestigious Silver Certification from EarthCheck, the Victorian Premier's sustainability Award (twice), The United Nations World Environment Day Award and 2 categories of the Victorian Tourism Awards for 'Excellence in Sustainability' and 'Business Events'.

As part of its sustainability mission YVE is harvesting and storing sufficient rainwater to make the venue self-sufficient as well as increasing the capacity for its own food production. YVE encourages guests to be aware of their energy use, be responsible for it and how that use affects the environment. YVE's next step is to generate enough power from renewable sources to meet its own electricity needs in full.

"At Yarra Valley Estate, not only do we provide personal customer service and unique experiences, we are also proud

to be leaders in sustainability. Every day we showcase our sustainability vision, values and initiatives to our guests, inviting them to help us achieve our goals. We take the time to educate our guests, encouraging them to adopt our approach while staying on our property; inspiring them to make the same positive eco-friendly changes in their daily lives.

Reviewing each component of our business has allowed us to make significant reductions in our energy and water consumption and decrease landfill through waste separation. Being aware of food transport miles, we planted our own fruits and vegetables which are grown 'spray free' and incorporated into daily meals for our guests. Organic waste goes to our worm farm, chickens and our trench compost.

Together with our 'green team', the owners, staff and our guests, understand and respect our passion to protect and maintain the beautiful natural environment. Economic, environmental and social sustainability have always been at the heart of operations, driving decision making and supporting charitable causes."

ANT specialises in the design, development and integration of renewable energy systems utilising hydrogen for storage and dispatchable on demand power to overcome intermittency.

ANT plans to manufacture and supply clean, sustainable 24/7 electricity generation systems for remote, mobile off-grid and grid support applications that require rapid delivery of a reliable energy supply. ANT's focus is on completely renewable off-grid energy systems that utilize hybrid solar and wind energy combined with hydrogen production and storage to meet the base load requirements of YVE even when there is no sun and or wind.

"ANT Energy Solutions believes in creating a sustainable environment and future by leading the hydrogen economy. Our mission is to actively create sustainable energy products focused on reliability. These products work in harmony with

the Earth's natural resources—sunlight, wind and water, we achieve this by producing hydrogen from water and then recombining hydrogen and air to produce clean water and dispatchable electricity on demand. The benefits are numerous including zero greenhouse gas emissions, low running costs and power self-reliance.

The YVE site is an important milestone in creating a living solution to educate and demonstrate the merits of this technology. Its rollout will form the foundation towards a sustainable and renewable solution for the benefit of future generations.

YVE, ANT and our consortium partners share a common vision for a sustainable and reliable energy future with minimal environmental impact- working harmoniously with nature. Together we can make the difference."

Renewable Energy System

The YVE system will comprise:

- ▶ Solar and wind electricity generation –for a total of 270 kW renewable energy generating capacity from solar panels (175 kW) and a Wind Turbine (95 kW) which are combined with hydrogen fuel cells and high output flywheels or batteries to supply electricity
- ▶ Hydrogen production – Rated at 15Nm³ of hydrogen per hour from 75kW of renewable energy and water using an electrolyser
- ▶ Hydrogen storage – 3 x 20 ft containers containing hydrogen tanks. Each container can hold 2.2 MW hours of electricity equivalent, giving a total of 6.6 MW hours
- ▶ Dispatchable electricity – 90 kW fuel cell capacity to generate electricity from the stored hydrogen
- ▶ A control system architecture that integrates the system's hardware and software for maximum efficiency and effectiveness.



20 ft containers for holding 2.2 MW hrs of electricity equivalent

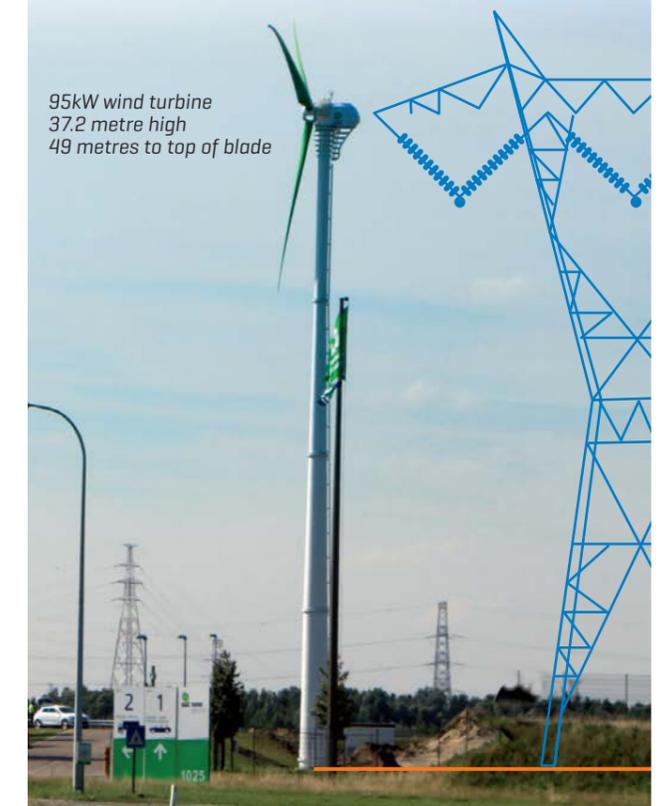


Planned 95kW wind and 250kW solar farm

The system will provide electricity directly to YVE and will comprise a smart system platform that determines when and how much energy to divert for hydrogen generation and storage.

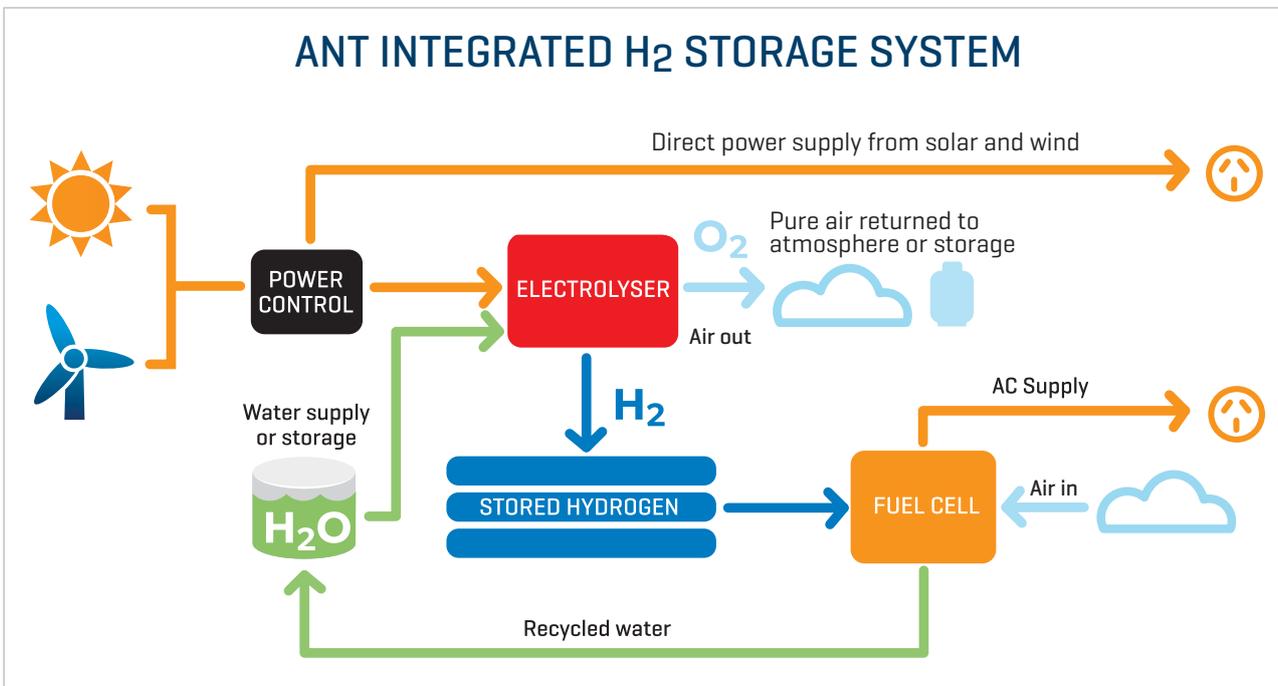
The software platform will have a modular architecture to enable scalable systems to be implemented. A uniform interface for system components will allow for easy reconfiguration of replacement components to reduce the complexity of system maintenance. The data will be packaged and presented to provide guests with choices around their energy usage with an aim towards sustainability and changes in behaviour post visit.

ANT has established a strategic partnership with Hydrogenics to supply the electrolyser and fuel cell.



95kW wind turbine
37.2 metre high
49 metres to top of blade

ANT INTEGRATED H₂ STORAGE SYSTEM



Benefits of our system

Green Hydrogen:

Our system utilises the high energy density of hydrogen to provide 24/7 electricity on demand for YVE and its guests based solely on renewables.

Eco/Renewable Energy Tourism:

Establishing the system can potentially increase the overall number of tourists to the region, specifically people interested in learning more about the potential benefits of hydrogen-based renewable energy systems.

Job Creation:

The YVE project will generate an estimated 20+ direct jobs together with indirect job growth at ANT from 10 people currently to 30 within the next 12 months.

Prototype Model:

The YVE system will demonstrate the potential of hydrogen based renewable energy systems to meet the energy needs of grid, remote, regional and end of line applications.

Feed-in/backup power:

During blackouts and brownouts the YVE system will have the capability of feeding power back into the grid to meet local requirements.

Off-Grid Power:

Our system will allow YVE to operate off-grid, significantly reducing its carbon footprint and will demonstrate the ability of renewables to deliver 24/7 energy.

Guest Education:

Providing guests and staff with informative insight on their energy usage to promote awareness and transform attitudes and behaviours.

Renewable Integration:

The YVE system will showcase the synergy available through effective integration of solar, wind, hydrogen, flywheel and battery technologies technologies to maximise the dispatchable energy through effective demand management.

Our world leading partnerships

HYDROGENICS
SHIFT POWER | ENERGIZE YOUR WORLD
Electrolysers and fuel cells

RidgeBlade
Aeolian wind turbines

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