

A wide-angle photograph of a massive greenhouse structure. The interior is filled with rows of young plants growing in black pots. The ceiling is a complex network of steel beams and glass panels, allowing natural light to filter through.

SAY *hello*_ TO CLEARVUE
SOLAR GLASS GREENHOUSES



POWERING THE FUTURE

ClearVue has been working for years perfecting a technology that utilises an age old building material, one that protects us from and connects us to our environment, clear glass!





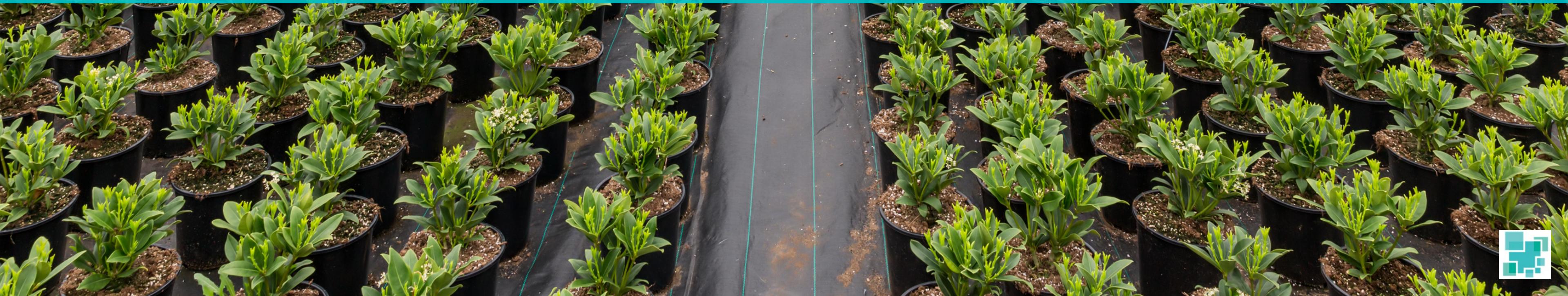
Secured assets for your farm's future.





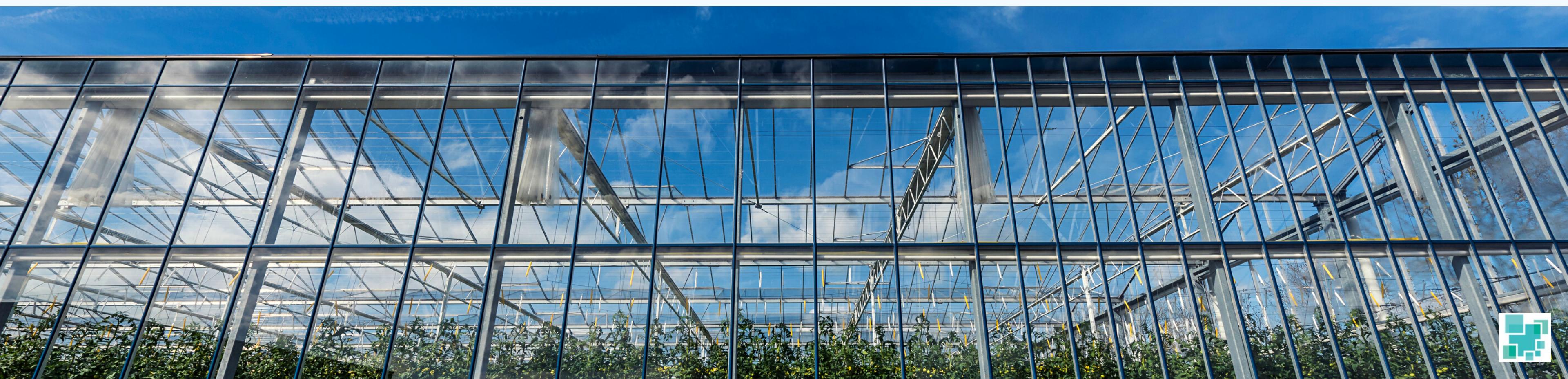
Protected cropping improves production by a factor of 300-800% per m² compared to field cultivation.

The use of ClearVue's product can lead to 20-30% in plant growth rate improvements, compared to standard greenhouses.



OUR GREENHOUSES:

- Are sealed, permanent buildings, instead of temporary structures.
- Produce their own power through custom, state of the art, clear, solar glass panels.
- Guarantee regular indoor temperature all year round.
- Provide measurable and adjustable water flow and rate.
- Can be completely customizable for individual greenhouse needs



TEMPERATURE CONTROL: ADVANTAGES OF CLEARVUE

Regular Greenhouses

- Typically have a temperature range of approximately +/-6°C from the optimum temperature.

ClearVue Greenhouses

- Provide superior thermal insulation properties and on-site energy production, making temperature range of +/-2°C from the optimum achievable.
- Increased growth rate of up to 20-30%



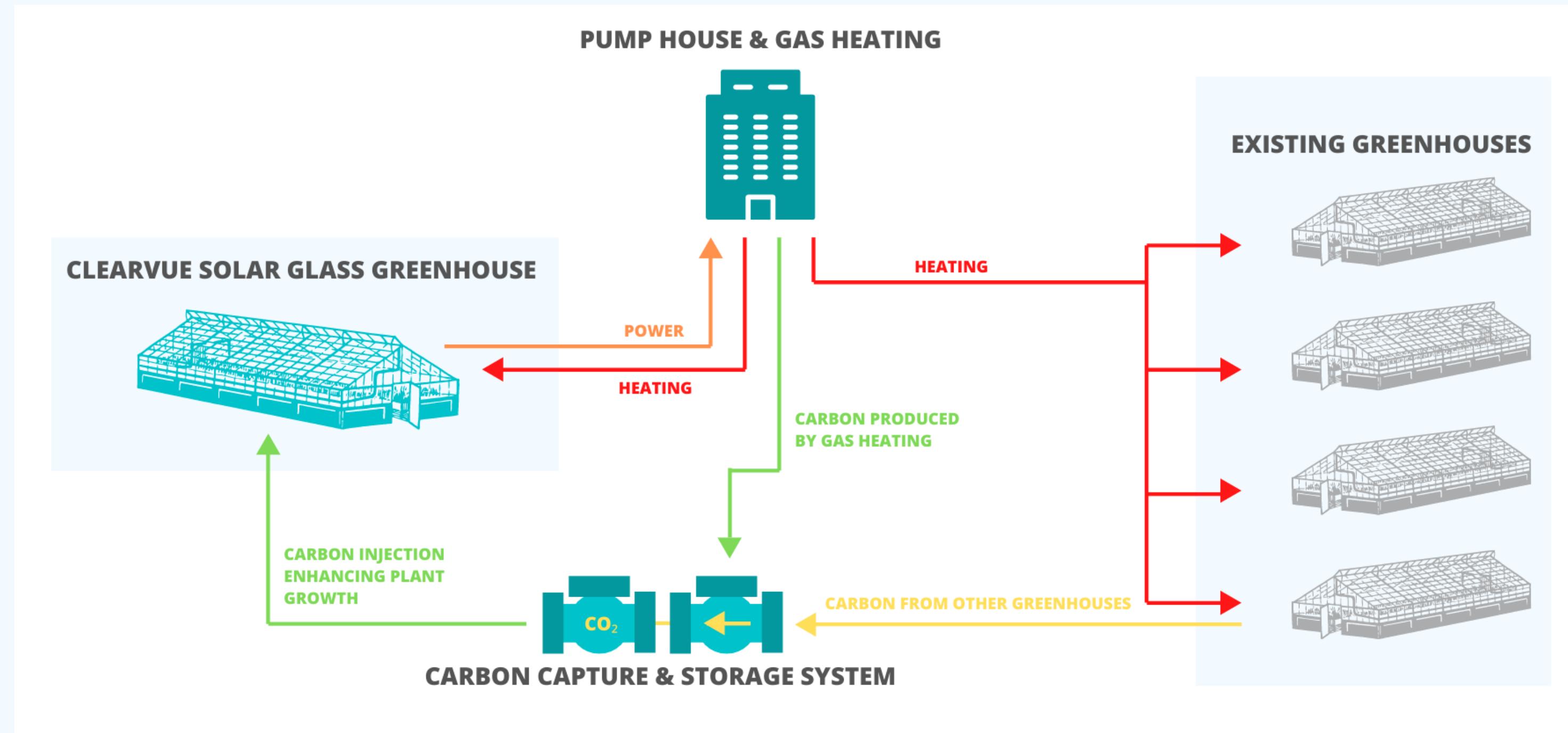
BENEFITS OF CLEARVUE SOLAR GREENHOUSES

-  Low operating costs - low energy and water use
-  Durable structure
-  Weather and climate-proof crops
-  Guaranteed high-quality yield each year = guaranteed income
-  Long-term asset for continued high yields for 25 years plus
-  Low to no pesticide costs - works as a safeguard against pests
-  Preemptive investment to protect from future regulation changes



FUTURE DEVELOPMENT CONCEPT

CARBON-SINK GREENHOUSES



Further savings due to improved yields and payback period improvements may be possible with further technological developments.



ENERGY PRODUCTION & CARBON OFFSET

- The Solar Greenhouse of area 3000m² will deliver approximately 0.25MWh of solar energy daily back to the grid (or to battery array for off grid installations).
- Equivalent to installing a solar farm rated at 60kWp, integrated into a transparent building structure.
- Enough energy to power 12 average residences.

250kWh production per day will offset over 1.3 tonnes of CO₂ emissions each day.





ENERGY CONSUMPTION

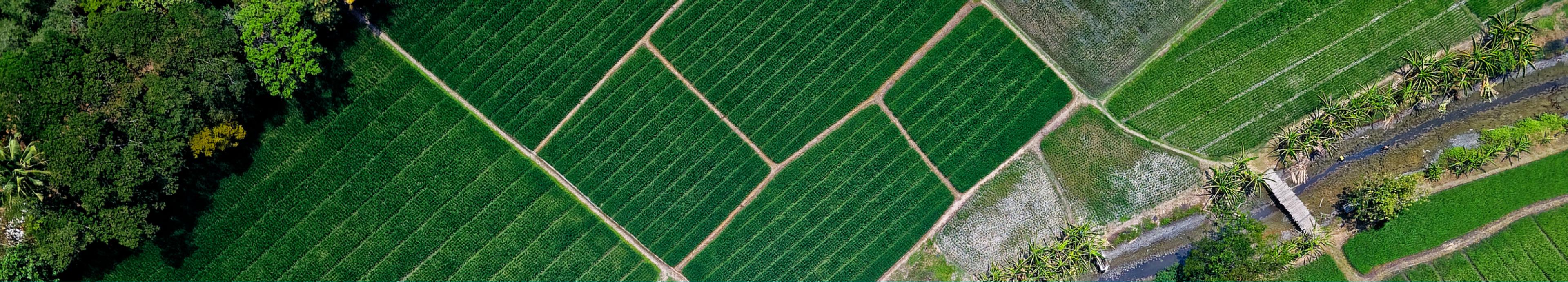
The ClearVue glass installation will produce sufficient energy to substantially offset the use of energy from both the electric grid and fuels such as heating gas.

In a range of climatic zones, there will be sufficient energy production to **operate the pumps and all other equipment off-grid**, with the addition of battery storage. This can eliminate the need for future installations to be grid connected, thereby **substantially reducing connection costs**.

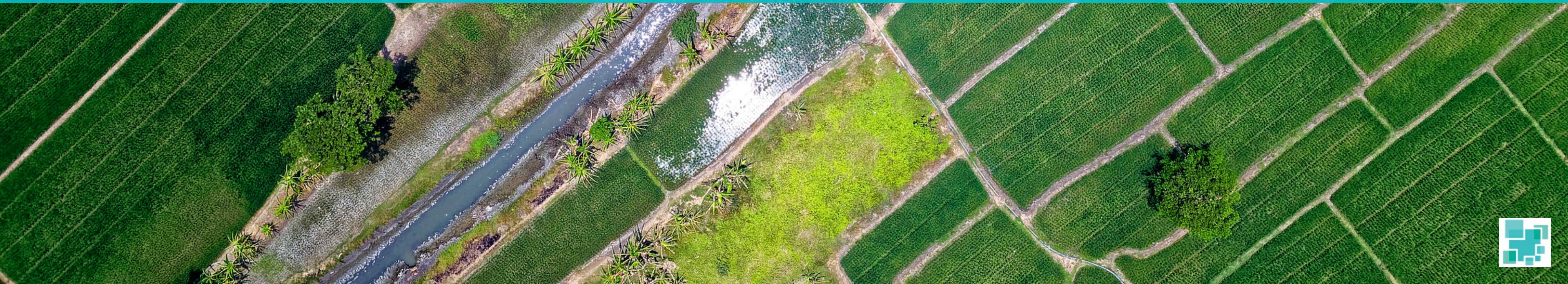
We can collect data in terms of energy use, factoring the impact of the **significantly higher thermal insulation properties** of the ClearVue product, when compared to alternative construction materials eg. polycarbonate. We will be in a position to **calculate the energy reductions** and if Net Zero is achievable.

The thermal insulation performance of the ClearVue product is significantly better than that of all typical greenhouse materials, leading to **high confidence in the ability to achieve, or approach, a Net Zero building operation in future projects**.





Typically, the farmer must pay for electrical wiring from the front gate of his property. Given the expanse of Australian farms, this cost would be significant, yet not required with a ClearVue Greenhouse.



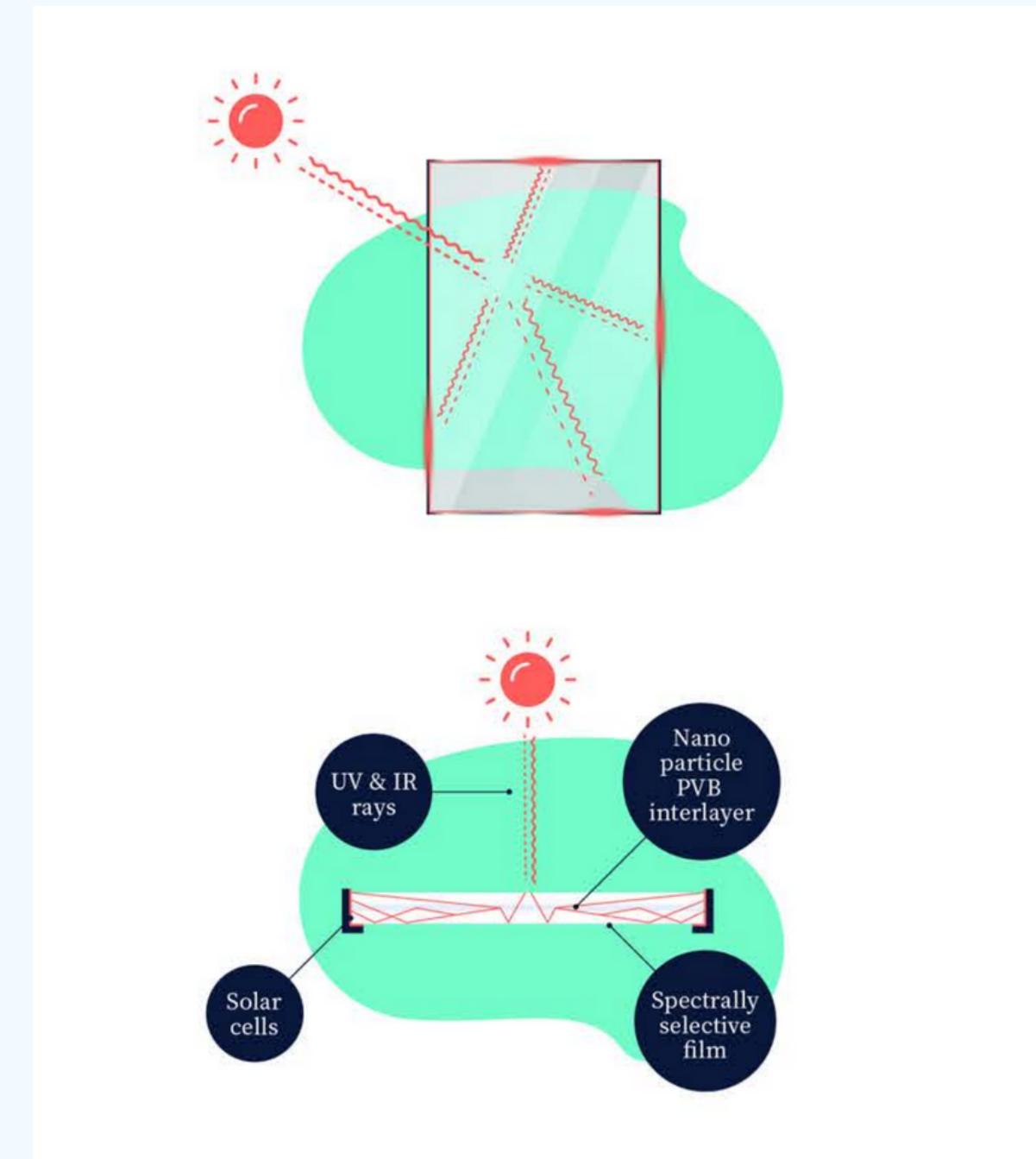
HOW CLEARVUE SOLAR GLASS WORKS

ClearVue uses nano technology to internally diffuse and reflect elements of the incoming light towards the edges of the frame, where it is collected by silicon based PV modules.

Current efficiency of the glass product is 3.3%, measured at standard test conditions (STC).

The nano technology laminate has been tested at over 5000 hours of high intensity light in varying temperature conditions and remains stable, with no evidence of degradation or reduction in transparency.

Degradation rate of the collectors is in line with that of a high quality solar panel. Leading to more than 80% of rated output after 25 years.





CERTIFICATIONS

The ClearVue product has been independently tested to achieve the following certifications & standards:

Electrical

- IEC 61215
- IEC 61730
- UL 790 (Fire Testing)
- UL 61730 (Electrical Testing)

Mechanical & Structural

- CE Mark
- AS 2047
- AS 4284
- EN 14351

Optical & Thermal

- ISO 9050
- ISO 10292
- EN 410
- EN 673



CE



BENEFITS & TECHNICAL DETAILS

- High thermal insulation. Approx. 4 times higher R-value of thermal insulation compared to single-pane clear glass walls and roof. This is due to a triple-glazed structure, solar-control low-e film, and high visible transparency of near 70%.
- The greenhouses were originally designed for use in colder climates (like Japan), and require high uptake of incoming solar light and heat, together with high thermal insulation to keep the trapped heat inside, strongly reducing the heating costs in winter. Cooling in summer, even in Australia, isn't a major issue and is addressed by ventilation and water sprinklers.
- Reduced water consumption, due to better control over the internal environment, compared to most conventional greenhouse types.
- Solar energy generation (tens of kWh/day for approx. 200 m² of floor area), offsetting electricity costs and reducing the internal wiring complexity, if self-powered blinds-integrated windows are used to actively control the solar heat gain and (to an extent), thermal insulation.
- Generation of clean energy on-site
- Power generated can be used to run water pumps, heat water, run networks of weather and environment sensors, power electronics that regulate environmental control energy savings. This optimises the running costs, offsetting potentially a very large fraction of total energy costs.
- More efficient running costs because the high LED lighting costs are reduced due to strong natural daylighting – due to high transparency.
- Suitable for vertical cropping, has potential to improve the core performance parameter which is the plant growth rates and biomass productivity.

In the near future, ClearVue products can integrate with systems that capture carbon emitted from gas-burning heater operations, purify CO₂ to food-grade, then use that to feed plants, improving growth rates. A combination of plant growth rate improvement with substantial thermal energy savings, due to high insulation, leads to significant commercial payback time reduction in greenhousing operations.





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