

A greenhouse you can explore, ask and understand

A digital twin is a computer model of a physical place. HydroTwin brings greenhouse geometry, model estimates and AI comparisons into one browser experience.

- Explore the virtual greenhouse.
- Ask the guide about the demonstration.
- Compare a trained AI model with a saved physics calculation.



Conceptual illustration · no live measurements

Make the systems visible

Start with the guided tour, then explore the model at your own pace.

- See growing channels, plants, pipes, fans, shade and misting illustrations.
- Switch between the greenhouse view and coloured simulation maps.
- Use the on-screen explanation to understand what each layer represents.



Conceptual illustration · no live measurements

Animated water, roots, shade and mist illustrate the system. They are not measured crop growth, droplets or real equipment commands.

A guide beside the model

Visitors can ask about the greenhouse instead of learning every control first.

- Type a question in “Ask the greenhouse guide”.
- Voice input is optional and needs microphone permission and browser support.
- Use the guided tour for a structured introduction, with on-screen text when sound is unavailable.

“What am I looking at?”

Explore the geometry.
Understand the layers.
Check the assumptions.

Type a question or use optional voice input.

Explanation, not equipment control.

The guide explains a demonstration. Treat its answers as assistance, not certified engineering advice or permission to operate equipment.

Physics provides the reference. AI learns a shortcut.

A surrogate model is a trained AI approximation of a slower calculation. Its usefulness depends on checking where it works and where it fails.

- A physics calculation supplies reference fields: values across the model.
- A trained AI model predicts fields for the demonstrated input case.
- Comparison views reveal differences rather than hiding them behind one accuracy percentage.

01 Physics reference



02 Trained AI approximation



03 Compare both fields



04 Inspect errors & limits

This describes the demonstrated comparison workflow. It is not a claim of reliable predictions for every greenhouse or operating condition.

Show the average error and the difficult points

In the recorded short-step hot-weather check, the trained greenhouse model is compared with a saved numerical reference on its native calculation grid.

- Mean temperature difference: 0.277334 °C.
- Worst-point temperature difference: 6.583515 °C.
- Read the result together with its test conditions and limits.

MEAN DIFFERENCE

0.277334 °C

WORST-POINT DIFFERENCE

6.583515 °C

One recorded hot-weather replay.
Both numbers matter.

A numerical replay is not a physical greenhouse or crop validation. It does not prove arbitrary fan or shade response, long heat-wave forecasts or plant-growth accuracy.

Know what is a model, an illustration or a future goal

A clear demonstration separates visible features from proven real-world outcomes.

- Available demonstration: virtual tour, explanatory guide and saved model comparisons.
- Illustrative layer: plants, roots, mist and virtual crop indicators.
- Future validation: measured crop response, site-specific predictions and safe operating decisions.

AVAILABLE

Read-only demonstration

ILLUSTRATIVE

Virtual plants & crop indicators

RESEARCH

Measured plant-response validation

Displayed values are model estimates, not verified live sensor readings. The public tour does not operate physical fans, pumps or shade systems.

Start with a question that can be measured

A useful pilot begins with a defined engineering question and an agreed way to judge the answer.

- Agree the greenhouse geometry, operating range and available measurements.
- Choose the outcome to test and the acceptable prediction error.
- Check the model against independent measurements before relying on it for operating decisions.

01 Define the question

02 Collect the evidence

03 Agree the pass criteria

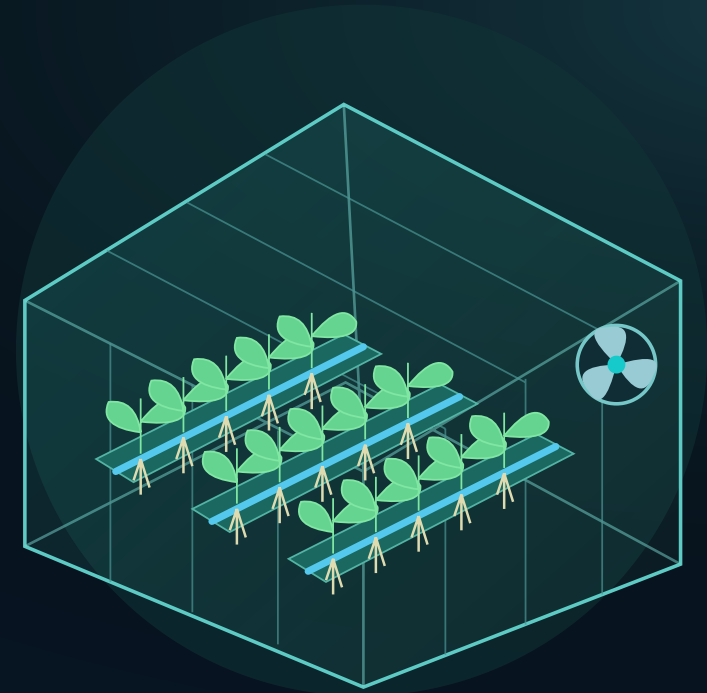
04 Test before reliance

Project scope, data access, validation work and pricing are agreed separately. No customer savings, yield improvement or production readiness is claimed here.

Connect the environment to the living plant

Our direction is to link greenhouse air, water and plant response in a more complete model, then test it against real measurements.

- Connect environmental predictions with root-zone and plant-growth research.
- Keep numerical checks and measured evidence visible as the model develops.
- Explore the public tour, then discuss a clearly scoped pilot with KYAMOS.



Conceptual illustration · no live measurements

Plant-growth prediction is a research direction, not a validated capability of this public demonstration. No partner endorsement is implied.