

The Wet Window

Who wants to look through a concrete window?

Trombe walls make passive heating compete against passive lighting for the same precious south facing square footage. Trombe wall "fenestration" visually "read" as windows, but only Superman can see through them.

Instead of using concrete to store and re-radiate the sun's energy, why not use water? Water has superior thermal capacity, transmits light, and potentially no embodied energy. Concrete = 96,100 Btu/ft³ (2700°F blast furnace)
Water = 0 (it could be hand pumped from a local source)

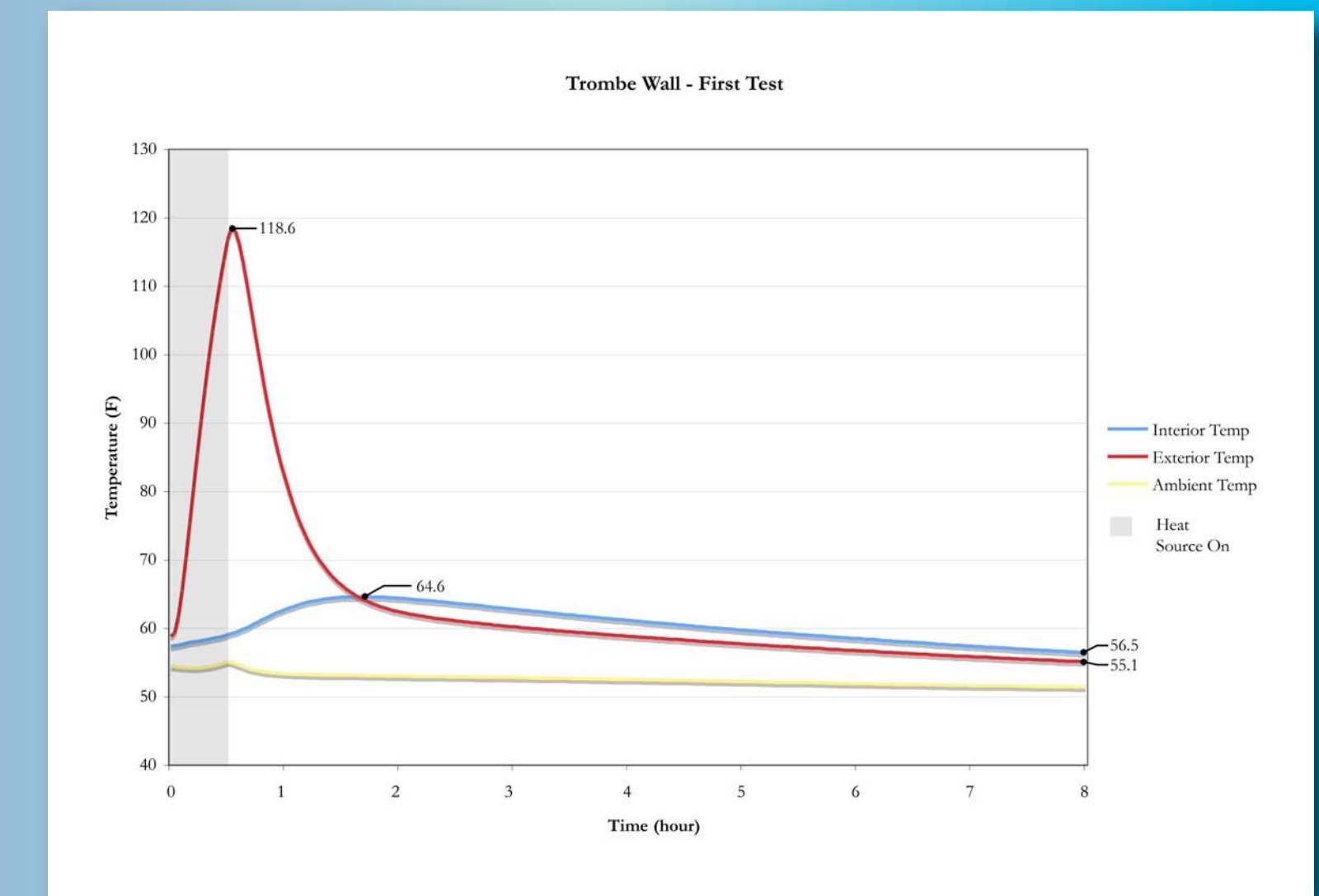
Tests indicate that it is possible to create a "water window" or "trombe window" which has the benefits of a simple trombe wall, but without the drawbacks. Passive heating and passive lighting in one strategy.



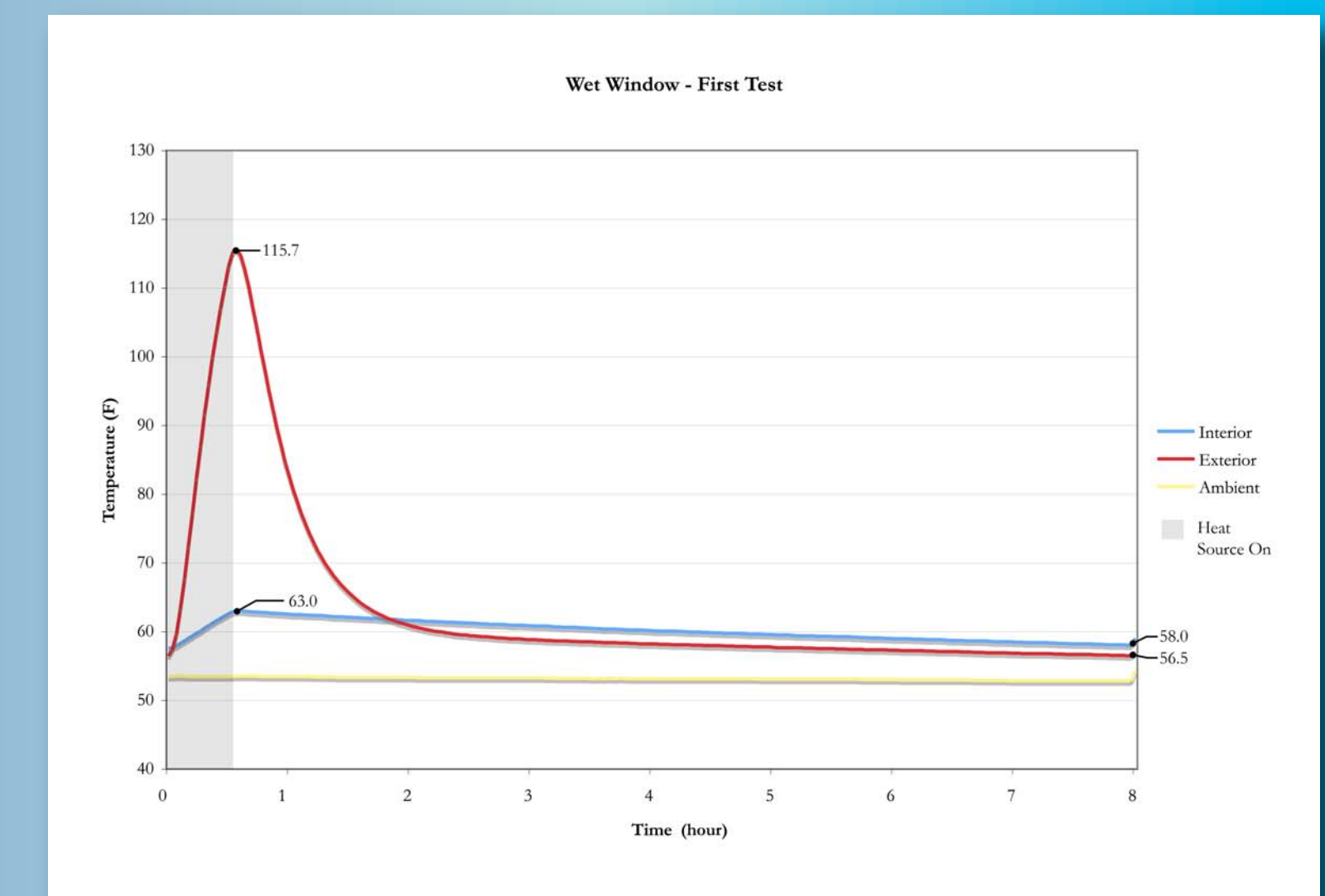
Hypothesis:
The wet window will store and re-radiate more heat than a simplified concrete trombe wall.

Procedure:
-Place simplified concrete trombe wall into testing apparatus.
-Leave heat lamp on for thirty minutes.
-After turning off heat lamp, the box was left to sit for a total of eight hours while data was recorded from "inner" volume, "outer" volume, and ambient air every two minutes.
-The concrete window was then replaced with the wet window and the steps were repeated.

-Later, the testing was conducted at the same time so that ambient air temperature would not be a factor despite having a known difference in temperature.

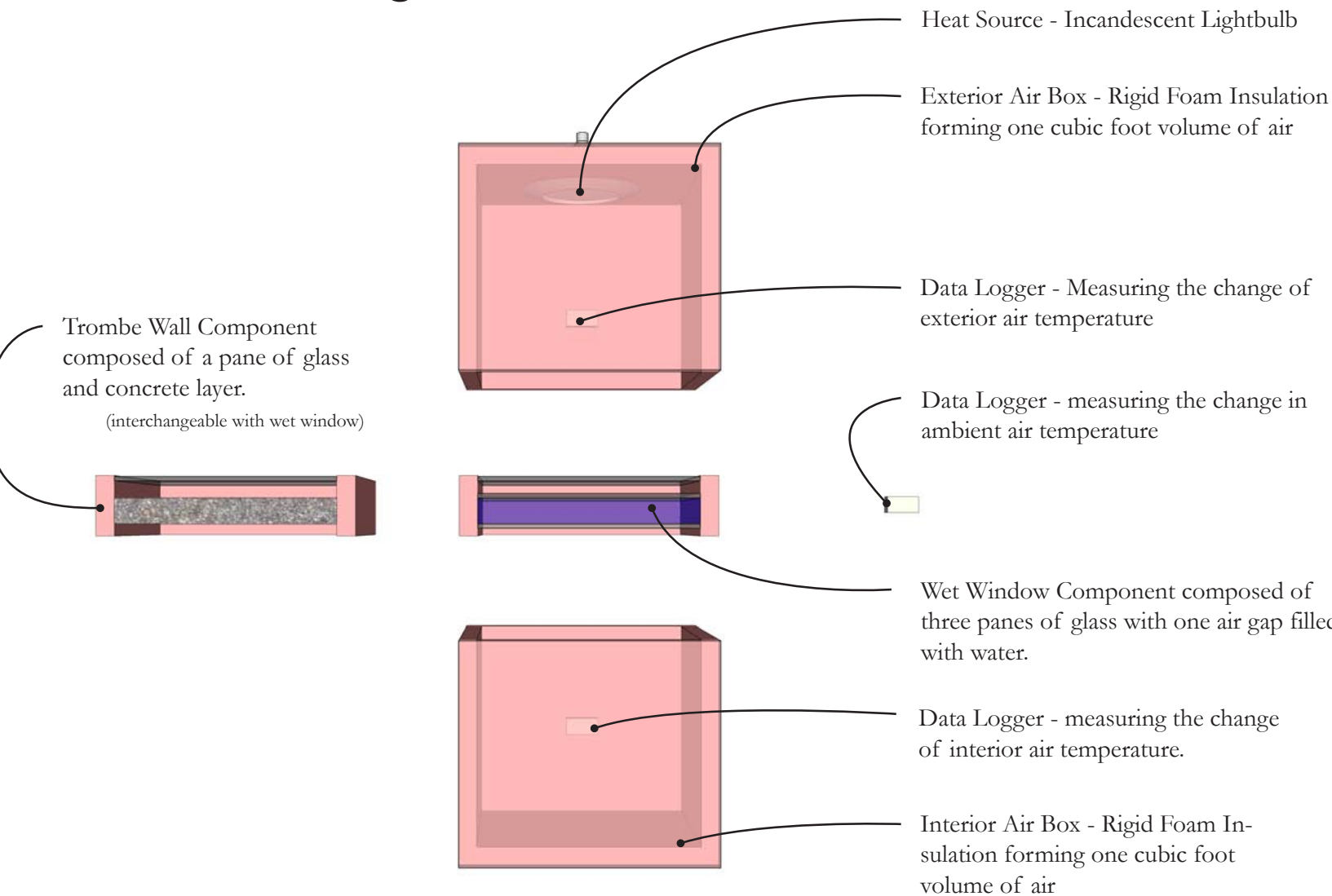


Test Result of Trombe Wall

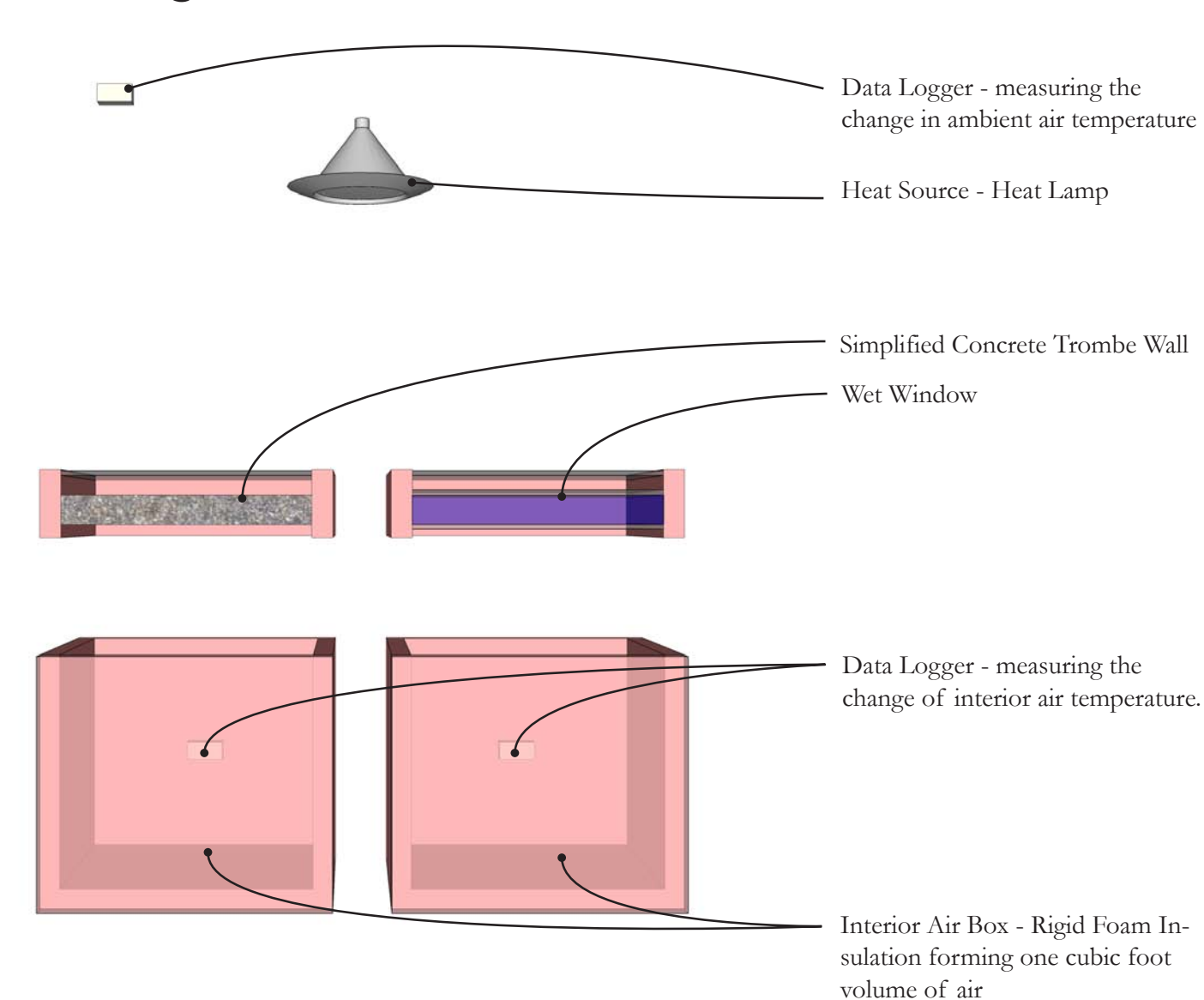


Test Result of Wet Window

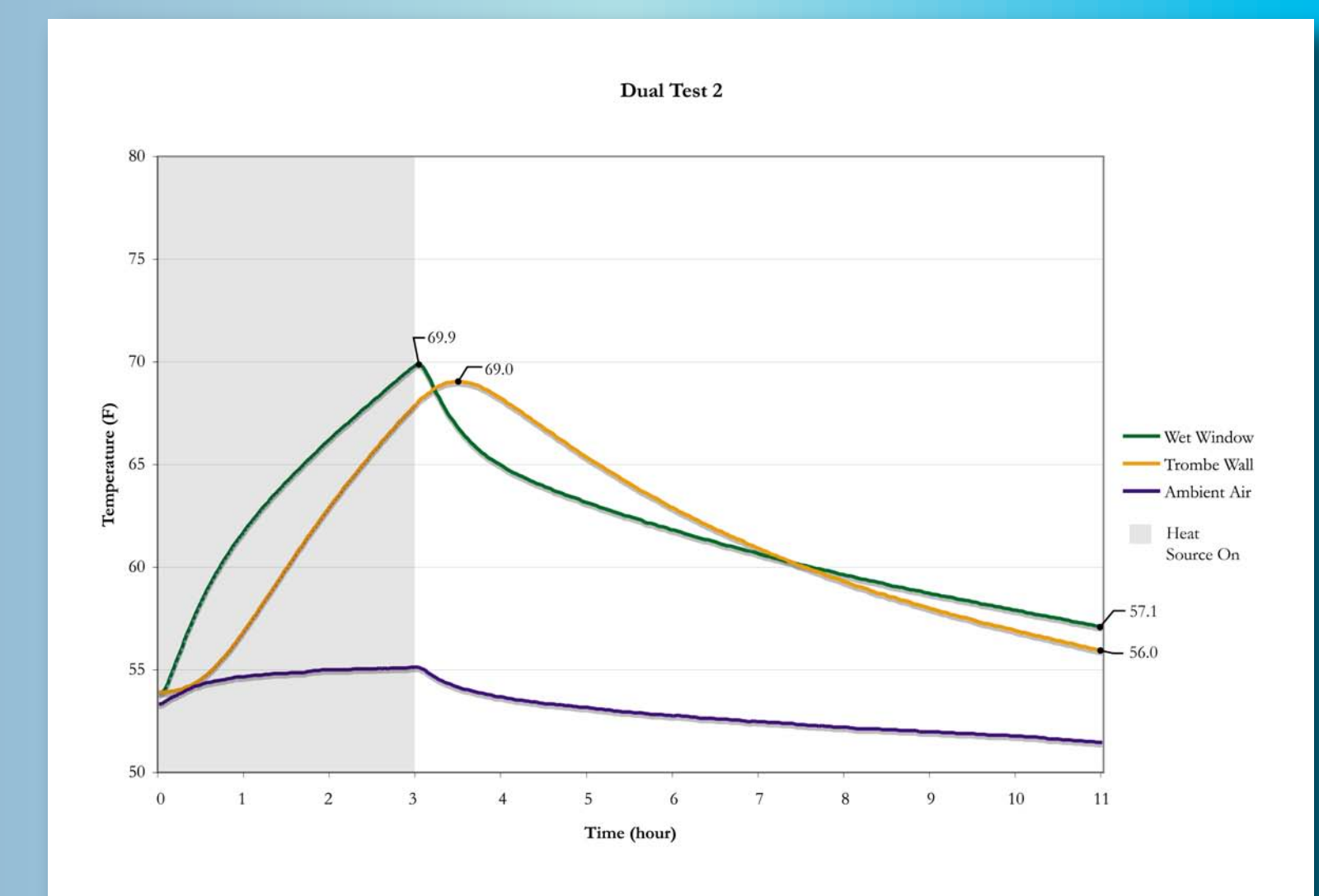
Individual Testing



Dual Testing



Composition of Experiment



Dual Result