

A photograph of a red tiled roof on a building, showing the texture and color of the tiles. A chimney is visible on the left side of the roof.

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Onduvilla Sub-Tile Ventilation Study

The Design of the Experiment

THE QUESTION : Do the open corrugations in the Onduvilla Roofing System allow for additional ventilation, reducing roof and attic temperatures?

RESEARCH : This idea had been discussed within the company for some time, and there are countless testimonies world wide claiming Onduvilla lowered attic temperatures and there for made cooling the homes during the warm months much easier.

HYPOTHESIS : It has been our belief that the open corrugations in the Onduvilla roofing system would allow for a second method of venting a roof. Heat build up would naturally move upward, using the corrugation like a chimney to escape through the ridge vent. This second level of venting between the actual roof and the plywood substrate should make for a cooler roof surface, a cooler plywood surface inside the attic area and a cooler ambient temperature overall in the attic.

- To test this a scaled down version of a house was constructed, a 4'x8' structure with a 12:12 pitch apex roof. The attic was closed in with a sheet of 1/2" drywall for a ceiling and divided in half in a cross section using 2" insulated foam board.



- The eaves were closed in with vented soffit just as they would be in residential construction, and as a control 30# felt was added to the roof and the temperatures in both sides of the attic were monitored every 10 minutes for an hour in direct sunlight.

Control Temperature Measurements		
30 # Felt in Direct Sunlight		
Time (pm)	Side A Temperature	Side B Temperature
1:00	90°	90°
1:10	91°	91°
1:20	92°	92°
1:30	93°	93°
1:40	96°	96°
1:50	96°	96°
2:00	98°	98°

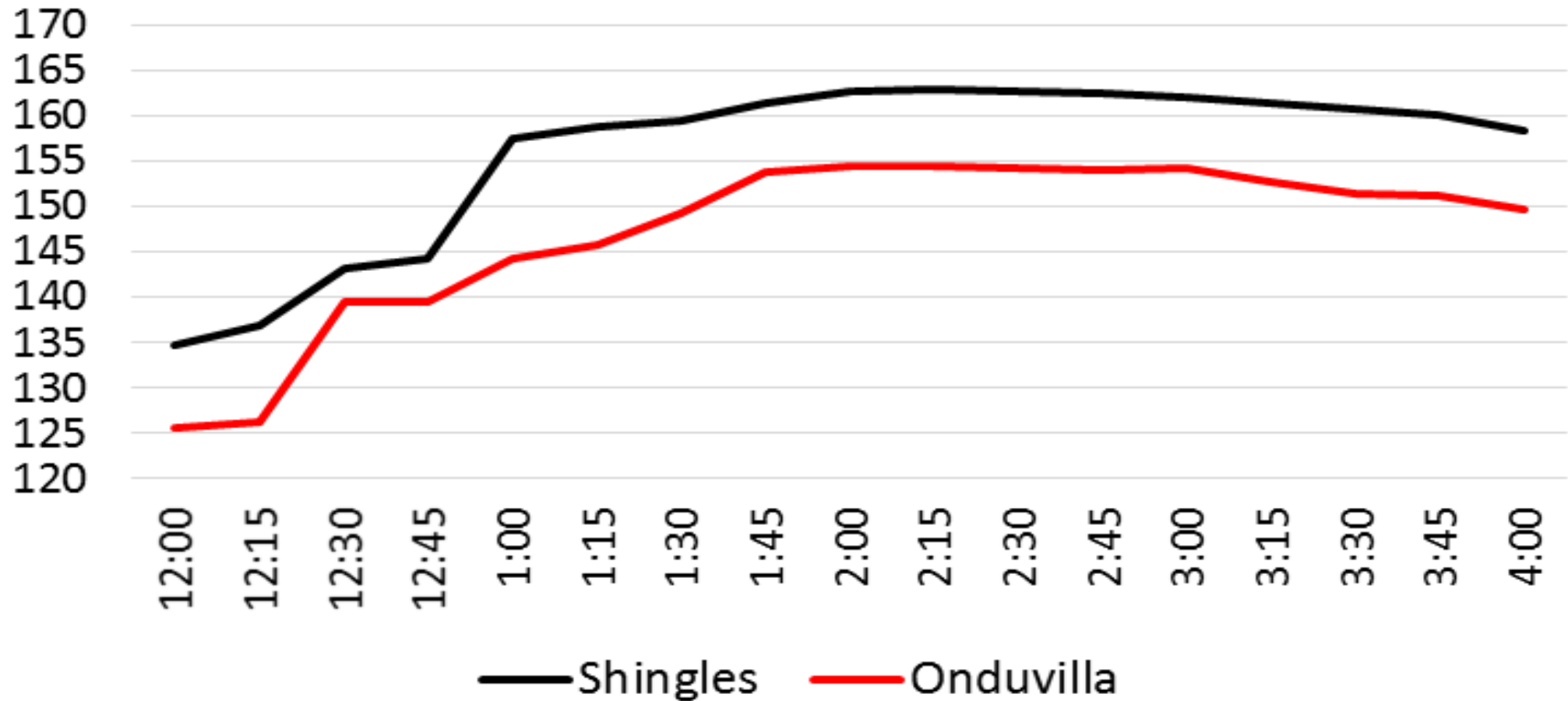
* Temperature measured in degrees Fahrenheit

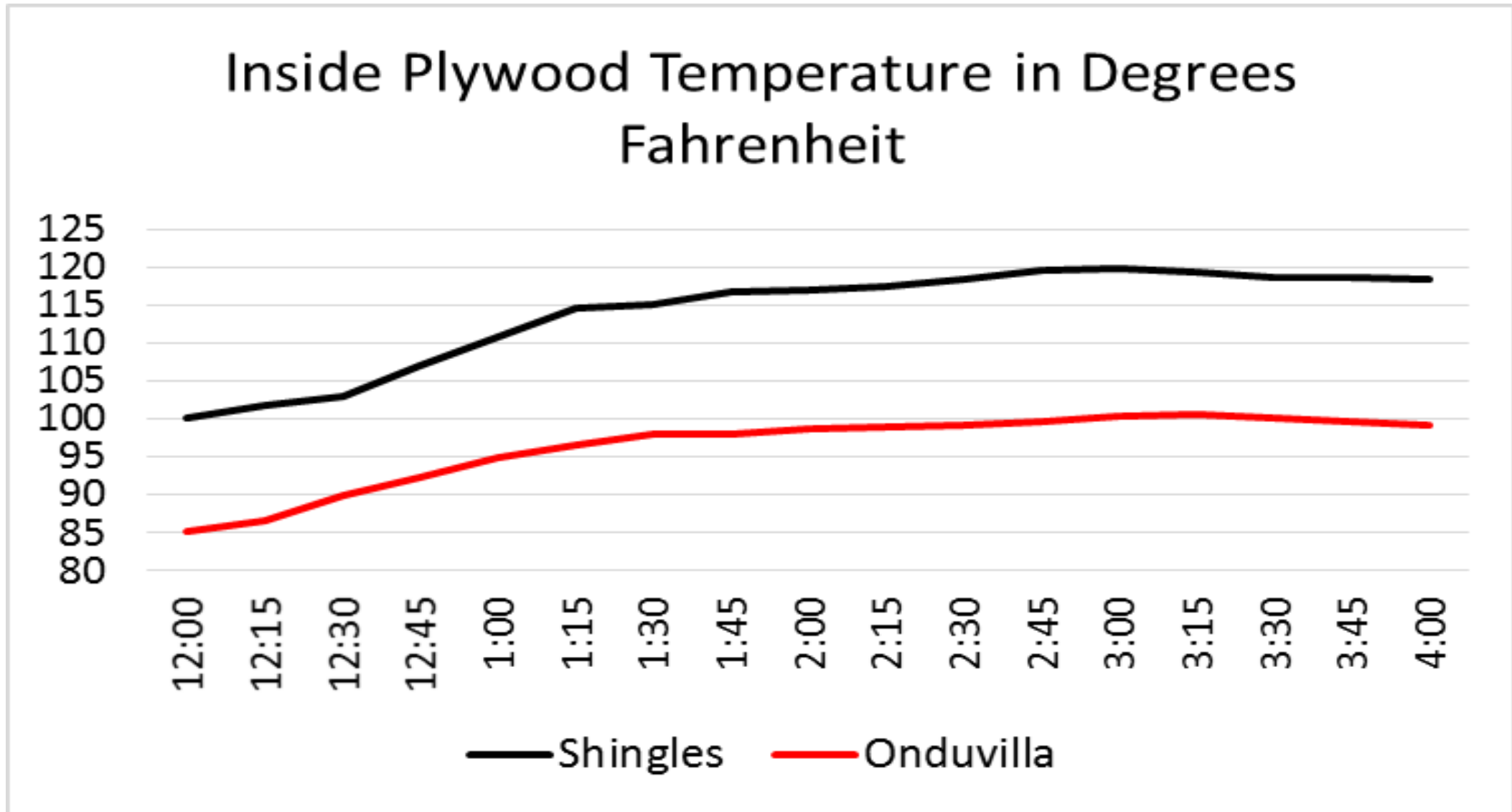


- Once the Control was finished each side of the roof was covered. One side with standard shingles and ridge vent and the other side with the Onduvilla Roofing System. Three temperatures were monitored on each side. 1) Shingle Surface Temperature, 2) Inside Plywood Surface Temperature, 3) Ambient Temperature of Attic Space. These temperatures were measured and recorded using an Etekcity Lasergrip 800, an infrared non-contact thermometer.

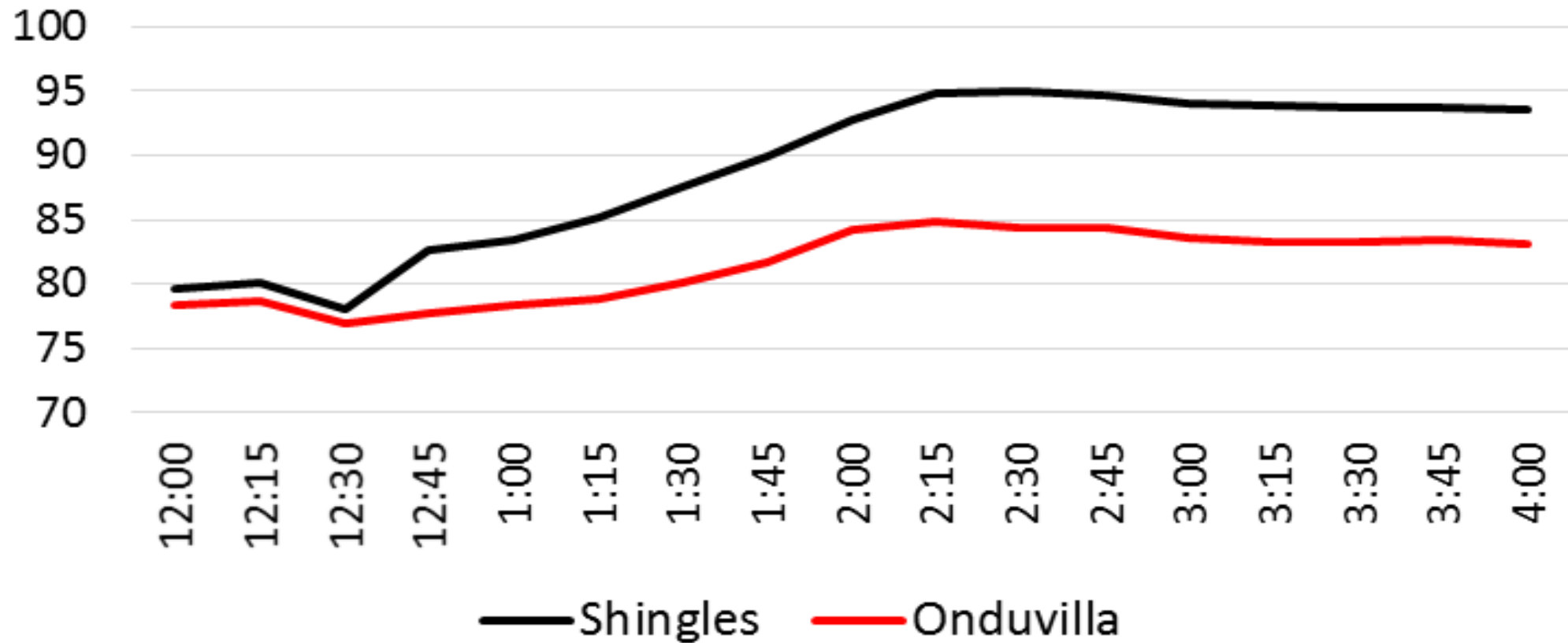


Surface Temperature in Degrees Fahrenheit





Ambient Attic Temperature in Degrees Fahrenheit



- Roof Surface Temperatures were an average of 6.0% lower on the Onduvilla side.
- Ambient Attic Temperatures were an average of 9.1% lower on the Onduvilla side.
- Inside Plywood Surface Temperatures were an average of 18.1% lower on the Onduvilla side.
- The lower temperatures especially on the inside surface of the plywood will have to translate into lower utility/cooling costs, as well as add to the longevity of the roof and the plywood decking used to support the roof. These are small scale results that we expect to quantify and grow over larger areas. Third party testing is underway to confirm these results.