

# High Temp Air Flow Measurement System Testing In Resin Oven

August 27, 2015

For the first time a company has developed a way to measure air flow at high temperatures from 0 to 400 degrees F. Wind Probe LLC's **Model 100 eight channel High Temp Air Flow Monitor** recently had the opportunity to run in a customer's curing oven with honeycomb blocks dipped in resin being cured. Prior to this, testing in ovens with dry blocks was performed. This was the first time the system was tested with wet blocks being cured and the instrument performed well. The eight probes were positioned behind the honeycomb block as shown in Figure 1 with air blowing through the block from the opposite side as shown. Figure 2 shows the side view of the block and probes. The probes were set 3 inches back from the block. The probes are the only part of the system residing in the oven while the control electronics and acquisition system are located outside the oven.

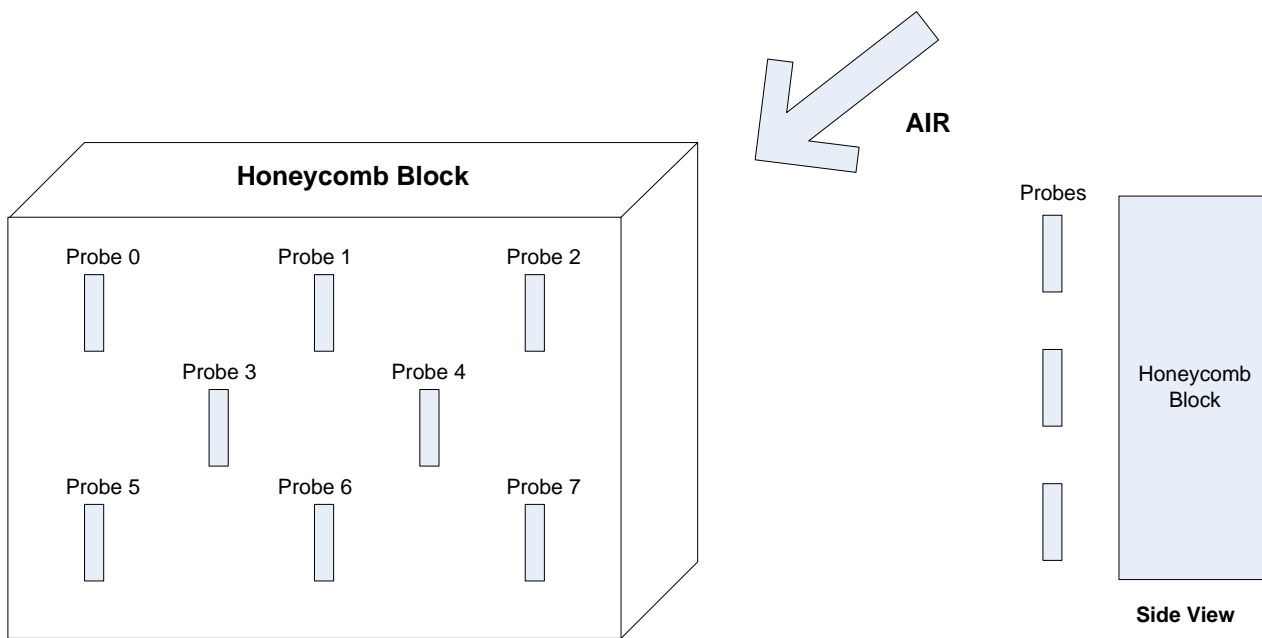


Figure 1 – Block and Probe Positions

Figure 2 – Side View

Sample data from the testing is shown below. This data is for a honeycomb block of length 100", width 35.25", height 50". Figure 3 shows the temperature profile in the oven as recorded by the Model 100 for the eight probes. Figure 4 shows the speed data recorded by the eight probes of the Model 100. The speed profiles vary significantly based on their position in the oven. As predicted the speed decreases as the temperature increases. Due to the gradients that exist when the temperature changes rapidly, significant changes in air flow can be seen. At the end of the curing cycle, approximately 6300 seconds, the temperature is at its maximum value and the air speeds are at their lowest values. This is consistent with what is expected. The erratic speed data (and temperature data) at the beginning of the cycle is due to alcohol and other solvents, used to carry the resin material, getting baked off by blowing hot air through the honeycomb block. The evaporation of the alcohol and solvents cools the air and causes strange air flow patterns.

Wind Probe LLC looks forward to additional scheduled live testing to further validate the performance of the Model 100 system.

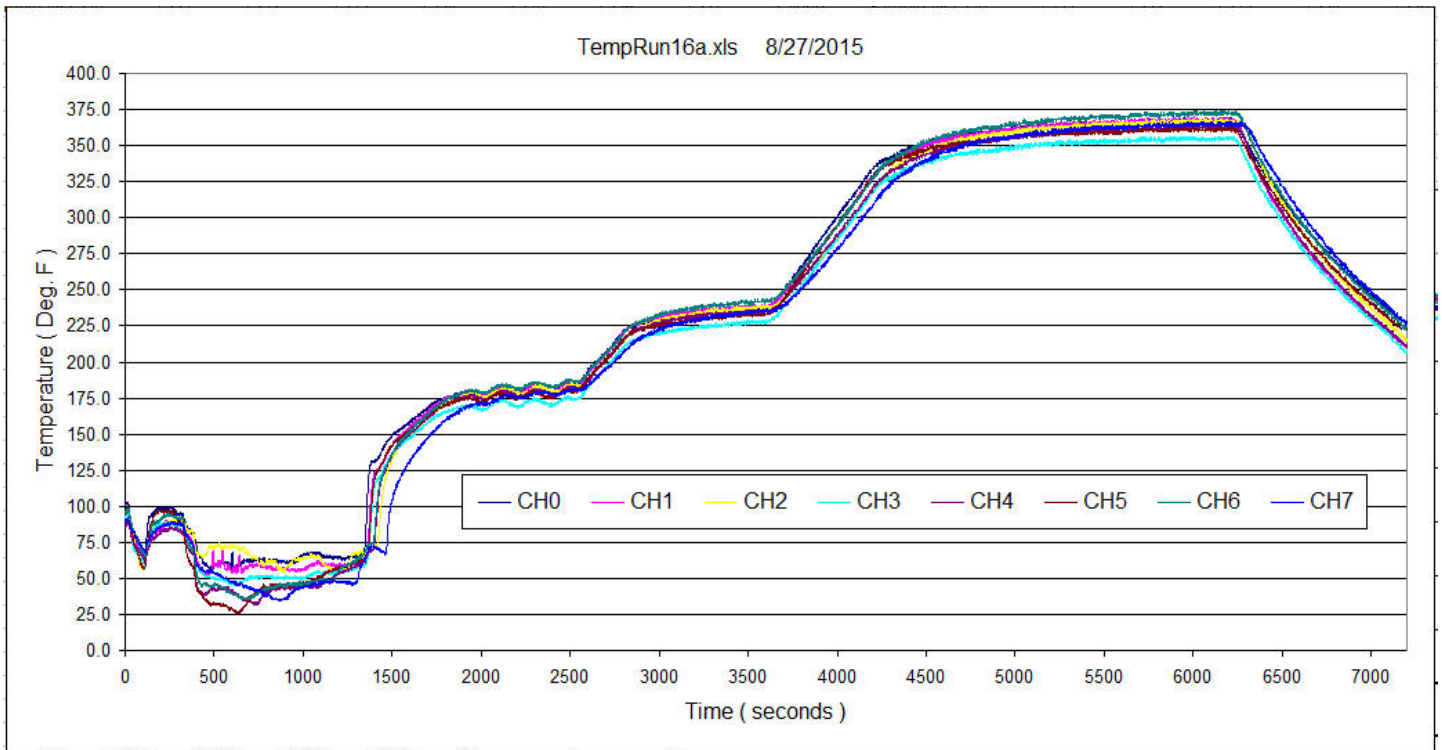


Figure 3 - Temperature Profile Data

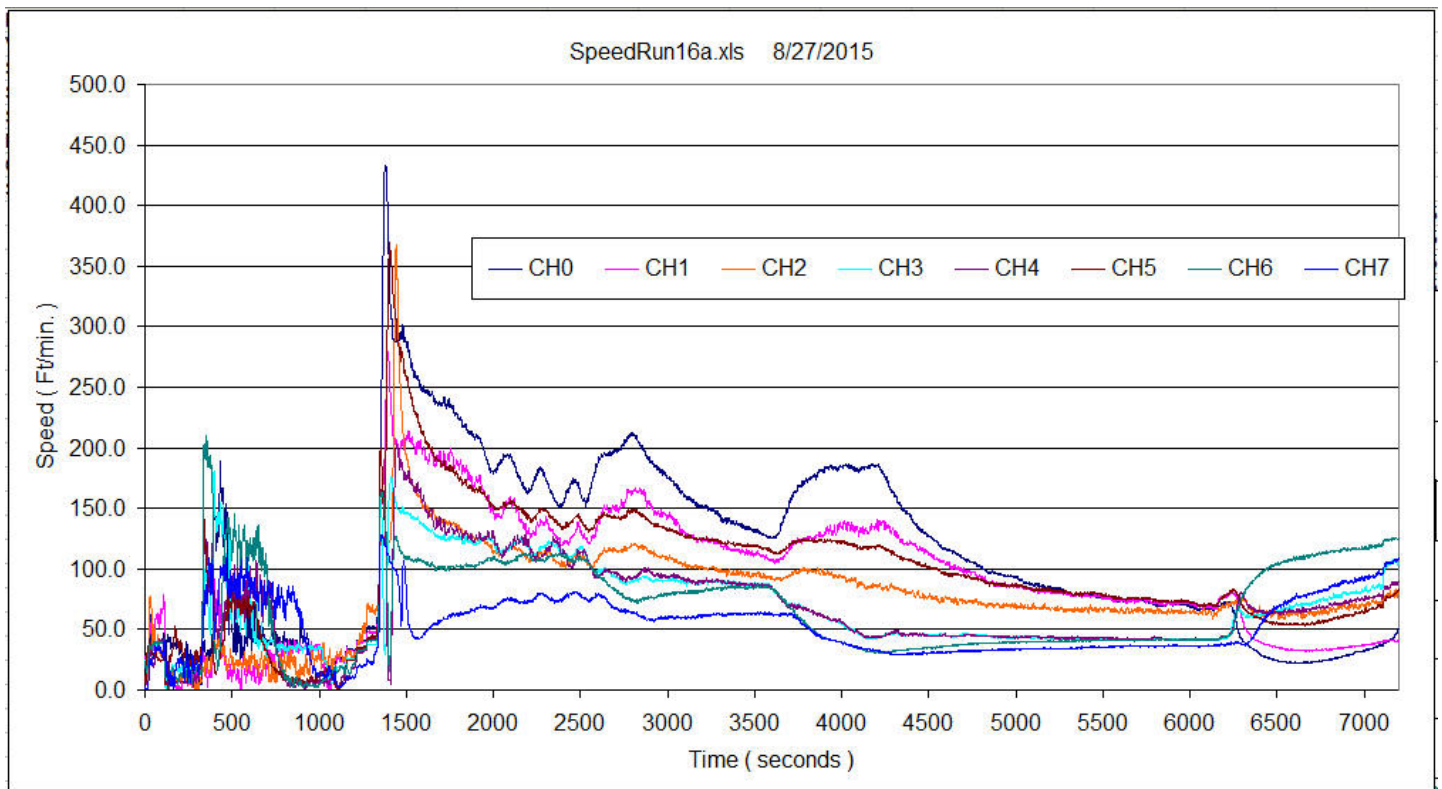


Figure 4 - Speed Data

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