Dehumidification Kiln
May/June 2017

Using a WiFi Sensor
by Willie Sandry

The Temp Stick™ Wifi Temperature and Humidity Sensor from Ideal Sciences remotely monitors kiln temperature and humidity. The sensor is wireless, and can be affixed to the wall with Velcro®, or simply placed on a stack of lumber. As long as the sensor is within range of a Wifi signal, it sends updates which can be accessed from any Internet-capable device.
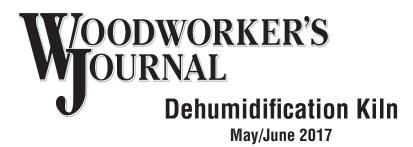
In my testing, the setup was simple. The sensor communicates information reliably, despite there being 80 feet and two exterior walls between the sensor and the wireless router. I anticipated the need for a router signal extender; however, the Temp Stick works just fine without one. The Temp Stick gives readings comparable to another thermometer / hygrometer I use in the kiln. Temperature readings were always within 1-2 degrees, and relative humidity was within 3-4% compared to my other meter.

By logging on to the idealsciences.com website, you can remotely monitor the kiln and get customized email or text alerts based on your preferences. I chose to get alerts if the kiln temperature exceeds 120˚F, which is nice peace of mind. The Temp Stick also logs temperature and humidity data automatically, which is displayed in graph format.

Although the sensor will take readings up to 150° F, Ideal Sciences recommends a temperature range of -40° to 125° F for extended use. For this reason, the sensor, along with any other electronics, should be removed from the kiln during the sterilization phase. Lithium batteries are recommended for use in extreme temperatures. The sensor uses two "AA" batteries, which are widely available in the lithium variety.

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Equipment and Sources for Dehumidification Kiln

Fans (4): Master Flow® Power Attic Ventilators-Gable Mount; EGV6; 1,600 CFM
http://www.gaf.com/Roofing/Residential/Products/Roof_Vents/MasterFlow_Power_Gable_Vent

Lazy Susans (4): 9" Round Lazy Susan Bearing with 180° Stop
https://woodworker.com/9-round-lazy-susan-with-180-degree-stop-mssu-164-678.asp?search=lazy%20susan%20180&searchmode=2

Dehumidifier: 45-pint household dehumidifier with high and low setting, and programmable RH setting.

Steam Generator: Rockler Steam Bending Kit, item #42826.
http://www.rockler.com/steam-bending-kit-w-free-bentwood-carryall-plan-download

Heater: Utilitech 5, 118-BTU Utility Fan Cabinet Electric Space Heater with Thermostat (1,500-watt; high/low settings; tip-over shutoff feature)
https://www.lowes.com/pd/Utilitech-5-118-BTU-Utility-Fan-Cabinet-Electric-Space-Heater-with-Thermo-stat/50056227

Hygrometer / Thermometer: ThermoPro TP50 Hygrometer Thermometer Indoor Humidity Monitor with Temperature Gauge Humidity Meter (-58°F to 158°F temperature range; battery-operated; magnetic back)
https://www.amazon.com/ThermoPro-Hygrometer-Thermometer-Humidity-Temperature/dp/B01H1R0K68/ref=sr_1_fkmr1_1?ie=UTF8&qid=1492008659&sr=8-1-fkmr1&keywords=therm+pro+tp-50

Temp Stick™ Wifi Temperature & Humidity Sensor
http://idealsciences.com

Anemometer: Extech AN100 CFM/CMM Mini Thermo-Anemometer
http://www.extech.com/display/?id=14332

Moisture Meter and Remote Probes: Mini-Ligno MD/C Moisture Meter (Package M11, with remote probes and cables)
http://www.lignomatusa.com/product_accessories/package-m-11/

Baffles:
Rigid Foam Insulation Sheets (4): 1" x 4' x 8'
https://www.lowes.com/pd/Expanded-Polystyrene-Foam-Board-Insulation-Common-1-in-x-4-ft-x-8-ft-Ac-tual-0-937-in-x-3-875-ft-x-7-875-ft/3365576

Plywood Strips for Baffle Frame: 1½" x 3/4"

Kreg® 1½"L #8 Coarse-Thread Washer Head Blue-Kote Pocket Hole Screws, 100-pack, item 34594
http://www.rockler.com/kreg-blue-kote8482-weather-resistant-screws-optional-sizes

Foil Tape, 2"W x 50 Yard, item 28998
http://www.rockler.com/2-x-50-yard-spiral-foil-tape