

IMPROVING EVAPORATOR EFFICIENCY

by Jim Fruth

I have two forced air, wood fired evaporators and both have usually failed to boil in the front pan or within four inches of either side. I solved that spending under \$50. Now the front pans boil and boiling occurs all the way to the sides, even above the side rail. What I did was relatively simple and nearly anyone should be able to accomplish it.

From the local hardware store, I purchased a roll of 14" aluminum flashing and some stainless steel fasteners. I also bought several feet of ceramic blanket from a maple equipment dealer, plus I used a little fiberglass insulation. My idea was to insulate the front and sides of the evaporator pans.

The equipment I used to fabricate it was two saw horses with 2 x 4 rails, two four-foot lengths of 1" x 1" angle iron, two 6" 'C' clamps, a kitchen shears to cut the flashing, a rubber head hammer, a ball-peen hammer and an electric drill.

I cut the flashing to required lengths so as to make panels that would fit between float boxes, fittings, etc. Then I measured and marked each length for three bends. The bottom bend would be 2" so 1" of each panel could be installed under the edge of the pan and the other inch accommodates the ceramic blanket. Along the top edge, two bends; one was bent 1" in (parallel to the bottom

bend) and 1" bent up so it would fit flat against the side of the pan.

I could have taken the bending part of the project to a sheet-metal shop but, since I'm handy, I did it myself: One length of angle iron was placed along the length of the saw horse with its angle down and the other atop that with its angle up. The cut piece of flashing was sandwiched between with its marked line up and the 'C' clamps held it all to the 2x4 rail of one saw horse (The second saw horse was used as a prop to help hold the flashing in place).

To bend metal by hammering, it must be bent only a little at a time or it will buckle and not lay flat. I used the rubber head hammer first, tap, tap, tapping back and forth, back and forth, until the material was almost bent at a 90° angle. Then I used the ball-peen hammer to finish each bend to a sharp angle.

I made panels for around the float boxes too. These were a bit trickier because three sets of bends were required to make them in one piece. This bending required the bends to be made at the ends of the angle irons and only one 'C' clamp was used to hold it all together.

The bent panels allowed for ten inches of insulation by the length of each panel. I used 6" widths of ceramic blanket along the bottom of each panel (where the boiling occurs) and fiberglass for the top 4". The ceramic blanket and fiberglass are held in place with silicone caulking.

As mentioned above, 1" of the 2" bend is to be slid under the bottom edge of the pan to hold the panel in place. I held the top of the panels to the pan by drilling a 1/4" hole through

the top lip of the panel through the sides of the evaporator pans, holding the panels in place with 1/4" stainless steel bolts, nuts and flatwasher. The holes drilled into the sides of the pans are well above where any sap/syrup ever gets so there is no danger of leaks. When drilling stainless steel, care must be taken to drill slowly because running the drill too fast will quickly dull the drill bit.

There may be other ways to insulate the sides of the pans. I did it this way because it was cheap, I could accomplish it myself and I have panels that are relatively durable that I can expect to last for many years. My reward? My evaporators now make maple syrup 30% faster than they did before.

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