110-Volt AC Panel

Rick Lucas: *Ping*

Most of the AC components on the boat were original although some additions to the system had been done over the years. As the original AC systems was comprised of tube-type fuses and a series of copper buss strips that were unprotected from everything stored in the port lazarette (including body parts), I believed it was a high priority to replace this with something safer and more up-to-date. One of the main problems with the existing system was that when the water heater was switched on, the wiring would get warm, and the automotive-type fuse in the circuit would get hot enough to melt the glue that held the metal ends to the glass tube. Clearly this was bad.

Another Pearson 323 owner had upgraded his AC using a similar Blue Sea panel I had already purchased from SailNet at a very good price. The account of the project had been published in a sailing magazine some time back and he kindly forwarded the document to me so I could see what he'd done. He installed his breaker panel below the existing DC panel in a piece of plywood that made up the front of the remote alcohol stove holding tank. I'm guessing that the tank on his boat had been removed as it has on Ping. I didn't like that location as it was below the waterline.

Investigating other options, I determined that the width of the openings for the AC outlet and hot water heater switch were virtually the same as what was required for the breaker panel. All I had to do was combine the two openings and extend the upward to have enough room for the panel. This required the relocation of the AC outlet which was something I wanted to do anyway. I didn't need to move the water heater switch as the breaker on the new panel would provide that function.

Now that I knew where to put everything, I drew out a plan for the installation of the panel, outlet and wiring. One fortunate aspect of the new location was that it was just above the original AC junction. This meant that I didn't have to re-route the wiring from the shore power outlet and that the new wire runs would be very similar to the paths of the original wiring. Time now to get to work.

The first thing I did was ***disconnect the shore power*** before removing the AC outlet and switch and disconnecting the wires so that I could expand the opening in the bulkhead with my jigsaw. I next removed the original AC junction bits and discarded them. They were pretty corroded and wouldn't be of much use anyway. Taking out the hot, neutral and ground wires that ran to the water heater and battery charger was no small task as they were bundled together with the DC system wires that traveled the same route through the boat. That job got a bit easier as I pulled on the wires and broke the zip-ties holding the wires in place. Most of them were as old as the boat and very fragile. I decided to separate the AC wires from the DC bundle to minimize the possibility of AC interference in the DC wiring, so I re-bundled the DC wires with new zip-ties and secured them back to their original anchor points with screws through the loops on the heads of each tie. The AC wire harness would later follow the same path, separated from the DC wiring by a couple of inches. I'm not sure the separation matters as I'm a marketing guy, not an EE, but it couldn't hurt.

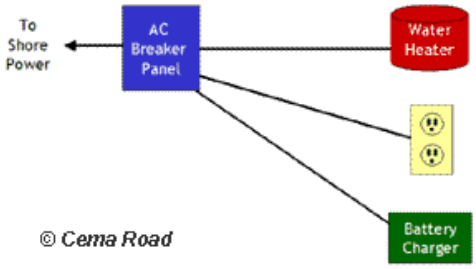
Next, I cut the old wiring off on the device side of the butt connectors at the battery charger and water heater. I looked to see if I could run the new wiring directly into each unit, but neither device was meant to be connected that way. Instead, I connected new 12-gauge marine-grade wiring to each devices' three wires using marine butt connectors and adhesive shrink tubing. Shrink tubing is recommended for use at butt connections for protection from moisture, thus preserving the integrity of the connection for a longer life. These new six wires were routed back to the breaker location.

As there was only one AC outlet for the galley, nav station and saloon, I wanted the new location to be someplace where power cords connected to it wouldn't be in the way. One of the problems I had with the original location was that anything you plugged in would drag the cord through the galley and by the sink. Aside from being messy, I didn't think it was very safe. The new location wasn't very far removed from the original, only about a foot nearer the centerline of the boat just below the companionway and above the kitchen utensil storage bin. This would allow power cords to be run to the nav station and the saloon without having them on the cabin sole (or in the sink), so out came my drill and jigsaw to cut the new hole for the outlet. The three new wires from the outlet joined the route for the other six back to the new breaker panel. Once the wires were cut to length and the outlet screwed in place all the wires were secured to the boat with new zip-ties and screws. This left me

with twelve wires poking through the opening for the breaker panel, ready to be connected.

The wiring instructions provided by Blue Sea were complete and dead-simple. This is good because simplicity gives me confidence. I crimped on marine-grade ring terminals and heated more adhesive shrink-tubing at the connection points. I used ring terminals as opposed to spade connecters to make sure that the wires remained on the breaker terminals if, for some reason, the holding screws came loose. With the terminals screwed onto their appropriate points on the breaker panel, I mounted the panel on the bulkhead.

Now it was time for the big test. With all the breakers open (off), I reconnected the shore power cable and closed the circuit breaker on the dock. Back on board, I noticed that the voltage meter read 120 volts and that the reverse polarity LED was not lit. So far, so good. One at time, I switched on the breakers to each circuit... water heater, battery charger and outlets. Much to my surprise, nothing went ***zzzzzzttttt!*** All the breakers stayed on, with their little green LEDs smiling back at me. Once I determined that there was power to the outlets and devices, I switched off and disconnected the shore power again.



The last step in this process was to put a cover on the back of the circuit panel. This would protect it from any water, fingers and other stuff that might come near to the terminals. The Blue Sea cover was designed for the panel, so it was a perfect fit. I cut an opening in the bottom through which I could route the wires and then used four screws to secure it to the bulkhead in the lazarette. I was done.

I like the fact that the panel can be seen at a glance from almost anywhere in the cabin, eliminating the need to go upside down in the lazarette in the dark with a flashlight to see if the fuses are still intact. It also like being able to disconnect the cabin AC outlets when I leave the boat, on the off chance I've left something plugged in and running. This is just me being cautious again. Finally, I like being able to shut off the battery charger when I'm at the dock to run the stereo or TV and just use the batteries for a while. Most importantly, I don't have to worry about something in the lazarette shifting because of a boat wake, making contact with the old exposed terminal and burning my boat to the waterline. I sleep better now.

NOTE: The engine on Ping is diesel which gives me the benefit of not having to worry about igniting gasoline fumes in the engine room with errant electrical sparks. Some 323s came with Atomic 4 gasoline engines. For those boats I would not recommend this installation. The Blue Sea panel is not spark protected which is a problem with gasoline-powered boats.

Things I'd do differently: Nothing.

Cost: US$185.00 (Panel and wire)
Time: About 6 hours