

Heat guns: A hot issue in the Fleet

By Dan Preissman

Maintaining the wiring systems of a modern aircraft is no easy job under the best of conditions. Factor in the urgency and commotion of life on the flight lines makes this work even more demanding.

One critical way to make this job more manageable is to provide the technicians with the proper and most convenient tools available. This support task falls to the aircraft wiring support equipment (AWSE) commodity at Navy Lakehurst.

Presently, routine wire repair tasks involving solder sleeves and shrink tubing require using a heat gun with an inordinately long set-up time, inviting the use of unauthorized and at times unsafe alternative heating methods. When the cry came out for something better, the AWSE commodity talked to manufacturers who eagerly responded with lightweight, multi-speed, variable temperature devices.

These devices, however, still left the maintenance crews with a length of cord in need of a source of power from the aircraft or a mobile generator cart. Clearly, it was time to "cut the cord" on the heat gun and provide a truly self-contained portable tool powered by a battery.

The manufacturers didn't see it that way. They didn't see the feasibility of powering an energy-hungry heating element with a battery, nor could they envision its marketing practicality even if it could be done.

One company (Malcom Corporation of Andover, Mass.) eventually stepped forward with a commitment to give this idea a try. With input from the wiring commodity, the Fleet and Malcom Corporation's ingenuity, things started to take shape. Malcom, which represents the Leister heat tool company, took a Leister-made DC motor housed in a high impact ABS plastic case, matched it with batteries currently fielded in government equipment, and packaged them in a rugged carrying case with a shoulder strap.

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The tool meets the Fleet's request for a lightweight unit (13 oz.) without fancy indicators and controls. It will deliver air at about 1000 degrees Fahrenheit for 25 - 30 minutes on a full charge.

The battery pack, weighing less than 10 pounds, consists of two 24 volt "smart" nickel metal hydride batteries of the type tested at the Crane, Indianapolis labs, and in use by the U.S. Army in field communications equipment.

They are made with patented electronics to control charge and discharge rates including shutdown protection if short-circuited. A continuous LED array indicates remaining charge capacity, and they can be fully recharged in only two hours, using a universal charger.

The universal charger is used with an adapter to accommodate two batteries at one time. It gives continuous status of the charge cycle including full charge, trickle charge, and battery fault condition. It will work on most AC power sources found worldwide including 400 Hz, as well as 24 VDC.

The tool meets the radiated emissions requirements stated in MIL-STD-461C. The batteries can be used for about 500 charge/discharge cycles, the ruggedized ceramic-encapsulated heating element can be changed within a few minutes, and the DC motor has a MTBF of several hundred hours, all contributing to a tool with a long expected service life.

The AWSE team is currently working with test labs to complete the operational tests for a jet fuel environment. These should be completed next month. The logistical and provisioning work is also being addressed.

This heat gun package will become one of the many self contained portable hand tools provided to the wiring technician in addition to providing the convenience and reliability for the dedicated crews who have the job of keeping the Navy's aircraft always ready for flight.



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