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MANSFIELD, O., Dec. 7. . .Thermostats that do everything from controlling the cooking temperature of a roast to keeping a guided missile on target are being tested by a computer here under the conditions they will encounter once in use.

The advanced electronic testing system was put into operation at the Controls Division of Essex Wire Corp. soon after installation this year of a major new computer, an IBM 1800 data acquisition and control system.

Operations Manager Chandler Stevens said the new computer, linked to automated testing devices, puts each of the Stemco thermostats made at Mansfield through its paces, testing it at temperatures ranging from minus 30 degrees to 500 degrees Fahrenheit.

"As a result," Mr. Stevens said, "we know the performance record of a thermostat before it is shipped to the Army and we are assured through testing that it will not cause a missile to stray off course."

Explaining the role of a thermostat in a guided missile, Mr. Stevens said, "A thermostat simply is an on-and-off switch which responds to temperature changes instead of being physically activated. It controls the temperature level within the missile where electronic circuits and other sensitive devices are housed.

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"As a missile climbs into the atmosphere," he continued, "the cooler outside air must be offset with more heat inside the missile to keep all guidance circuits operating properly. On reentry, the reverse is true."

The company's new IBM 1800 computer monitors tests and provides instructions for eight thermostat testing stations, each of which can check a batch of 35 thermostats at a time.

In six of the stations, thermostats are bombarded with heated air to test their reaction to changes in temperature. It takes 20 minutes to test each batch at prescribed increments up to 500 degrees Farenheit.

At two of the testing stations, thermostats are immersed in water heated at increments of one degree at a time, up to 210 degrees Farenheit. This test requires about 30 minutes as it also checks to insure the thermostat is hermetically sealed.

"The method for testing a thermostat, water versus air, is based on its intended end use or on performance specifications outlined by the user," Mr. Stevens explained.

If a thermostat does not perform properly, the computer will identify it and indicate the phase of the test it failed. The unit is then removed and either adjusted or scrapped, depending on the nature of the failure.

The local Essex plant also uses the 1800 for inventory control, for the preparation of payroll and for other accounting jobs. These are processed by the computer as it monitors and controls thermostat testing.

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