



Heat Flow Measurement

In many industrial activities it is necessary to measure heat flow by some type of heat gauge. To assure the validity of the measurements, heat gauges must periodically be certified by instruments designed to provide a heat flux measurement standard, such as the federal government's NIST standard.

Certification can sometimes take the heat gauge away from its needed location for an unacceptably long time, causing

The Center for Space Transportation and Applied Research, located at the University of Tennessee Space Institute, Tullahoma, Tennessee, and REMTECH, Inc., Huntsville, Alabama, have responded to the need. CSTAR, one of NASA's Centers for the Commercial Development of Space, developed the Q-CHEC portable heat flux checker/calibrator pictured *below*, where co-developers Carl Kidd

heat flux — provided by Q-CHEC — to the heat gauge itself while the measurement system is recording the heat gauge output. This use verifies the recording system as well as the heat gauge.

The unit can also be used as a standalone heat flux gauge checker/calibrator in which the heat gauge is connected to the Q-CHEC directly, so that its output may be recorded separately. The gauge is irradiated

by the known heat flux provided by Q-CHEC as in the end-to-end mode, but in this case output is recorded directly by Q-CHEC. These values are either compared with an existing calibration or used with several additional test points to form a new gauge calibration.

Q-CHEC offers on-site capability to detect and eliminate measurement

errors caused by deviations of gauge scale factors, wrong recorder gains, wrong channel assignments or wrong hook-up polarities. It also offers money savings, because these fairly common errors become expensive when the measurements have to be repeated. ●



delay in measurement work or use of a duplicate gauge. There is need, therefore, for a portable heat measurement checker/calibrator, referenceable to a measurement standard, that can be carried to the heat gauge location for certification, thus reducing out of service time for the gauge and eliminating the need for a duplicate.

(striped shirt) and R. K. Matthews are calibrating the instrument's handheld radiant heat source to NIST standards. REMTECH, CSTAR's industrial partner, is marketing the unit.

Q-CHEC can be used in two primary modes. It can provide an "end-to-end" check of the complete heat gauge instrumentation measurement system by applying the known radiant

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PORTABILITY AND
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136