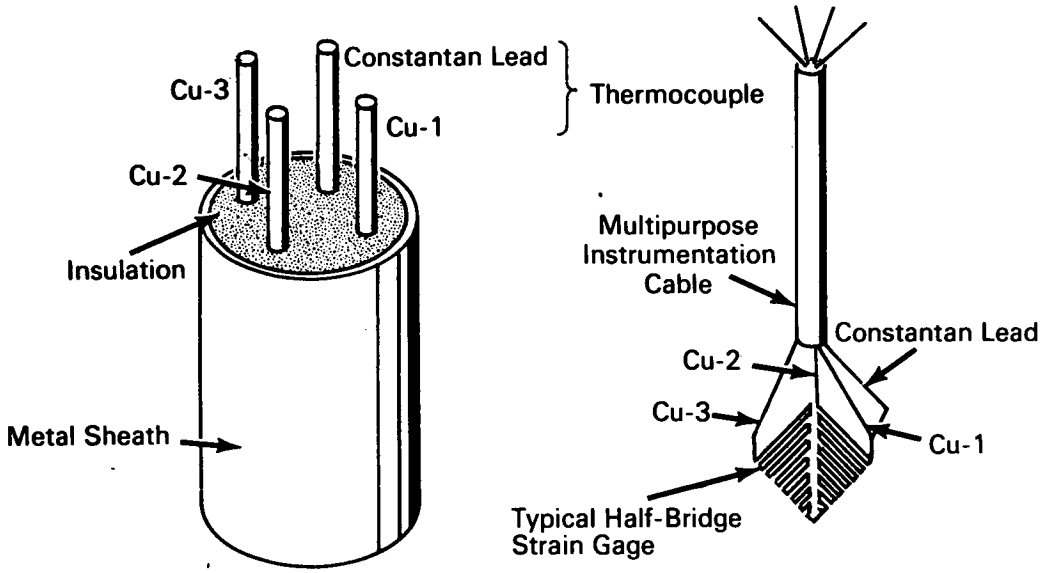
AEC-NASA TECH BRIEF

Multipurpose Instrumentation Cable Provides Integral Thermocouple Circuit



The problem:

Using transducers to measure strain, vibration, pressure, etc., throughout a wide temperature range requires close monitoring of transducer operating temperatures. Standard methods use two transducer lead wires and a separate thermocouple for each transducer, resulting in bulky and complex circuitry.

The solution:

A multipurpose cable with an integral thermocouple circuit that shares one of the transducer conductors.

How it's done:

In a typical strain gage configuration, the sheathed cable contains three copper conductors Cu-1, Cu-2, and Cu-3 for gage excitation and output plus a constantan conductor. The constantan conductor forms the negative leg of a copper/constantan thermocouple and uses one of the copper leads as the other leg. This permits measurement of the strain gage (transducer) temperature without increasing the overall size of the device by inclusion of a separate two-wire thermocouple.

Note:

Inquiries concerning this innovation may be directed to:

Technology Utilization Officer
AEC–NASA Space Nuclear Propulsion Office
U.S. Atomic Energy Commission
Washington, D.C. 20545
Reference: B67-10046

(continued overleaf)

Patent status:

No patent action is contemplated by AEC or NASA.

Source: G. Zellner
of Westinghouse Astronuclear Laboratory
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