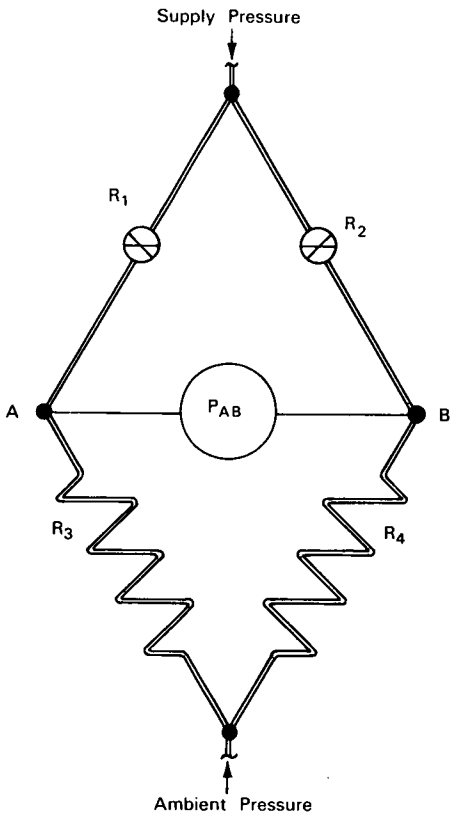
December 1968

Brief 68-10537

NASA TECH BRIEF

Fluidic Transducer Gives Pressure Output as Function of Temperature



This fluidic transducer gives a pressure output signal that is a direct function of the differential temperature sensed by the device. The transducer is arranged as a bridge with micrometer valves, R_1 and R_2, in one pair of legs and capillary tubes, R_3 and R_4, in the other pair.

When the capillaries, R_3 and R_4, are exposed to different temperatures, an output pressure signal P_{AB} is developed across junctions A and B. The magnitude of this signal is a function of the relative change in the fluid inpedances of the capillaries. Since the impedances increase as a function of temperature in a known manner, the transducer can be used as a differential temperature indicator; it can be used as a direct temperature indicator when one of the capillary legs is maintained at a known constant temperature. The

(continued overleaf)

output signal (P_{AB}) is quite sensitive to small thermal changes and has sufficient power to drive a fluidic amplifier such as described in Tech Brief 68-10538.

Notes:

1. This transducer should be useful as a temperature-dependent pressure regulator in various process-control systems.
2. Documentation is available from:
   Clearinghouse for Federal Scientific and Technical Information
   Springfield, Virginia 22151
   Price $3.00
   Reference: B68-10537

Patent status:

Inquiries about obtaining rights for the commercial use of this invention may be made to NASA, Code GP, Washington, D.C. 20546.

Source: D. B. Wall
of Martin-Marietta Corporation
under contract to
Electronics Research Center
(ERC-10093)