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NASA TECH BRIEF *Marshall Space Flight Center*

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Sensitive Gaseous Hydrogen Detection System

An extremely sensitive hydrogen detection system can measure the concentration of gaseous hydrogen in air to a sensitivity as high as several parts per million. The system uses a new type of hydrogen sensor as the detecting element, and has an overall detection sensitivity and response speed that are higher than convenhydrogen bubble chambers, mines, refineries, chemical process plants, and aerospace facilities.

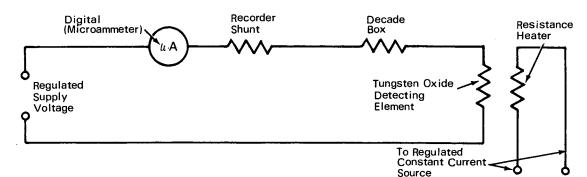
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Notes:

1. Hydrogen concentrations of from 2 parts per million to 30% have been measured with this system.



tional hot-wire or hot-thermistor types of detectors.

• The detecting element is a thin-film tungsten oxide (WO_3) resistor sensitized to hydrogen by the addition of very small amounts of platinum. When the sensitized detecting element is maintained at a temperature in the range of 523 K to 673 K (250° to 400° C), its electrical resistance (which is inversely proportional to the microammeter reading) varies by a factor as large as 10^6 to 1 in response to corresponding variations in the ambient hydrogen concentration. Because the detector is a rugged thin-film resistor requiring only simple electronic circuitry, the system can be conveniently and economically employed throughout a given installation.

The system can be adapted to serve as a leak detector and hydrogen-concentration hazard alarm wherever hydrogen is used; i.e., in industrial processes, 2. The following documentation may be obtained from:

National Technical Information Service Springfield, Virginia 22151 Single document price \$3.00 (or microfiche \$0.95)

Reference:

NASA-CR-10268 (N70-25297), Gaseous Hydrogen Detection System

Patent status:

No patent action is contemplated by NASA.

Source: J. R. Macintyre and W. C. Neppel of General Electric Co. under contract to Marshall Space Flight Center (MFS-21161) Category 04,01

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