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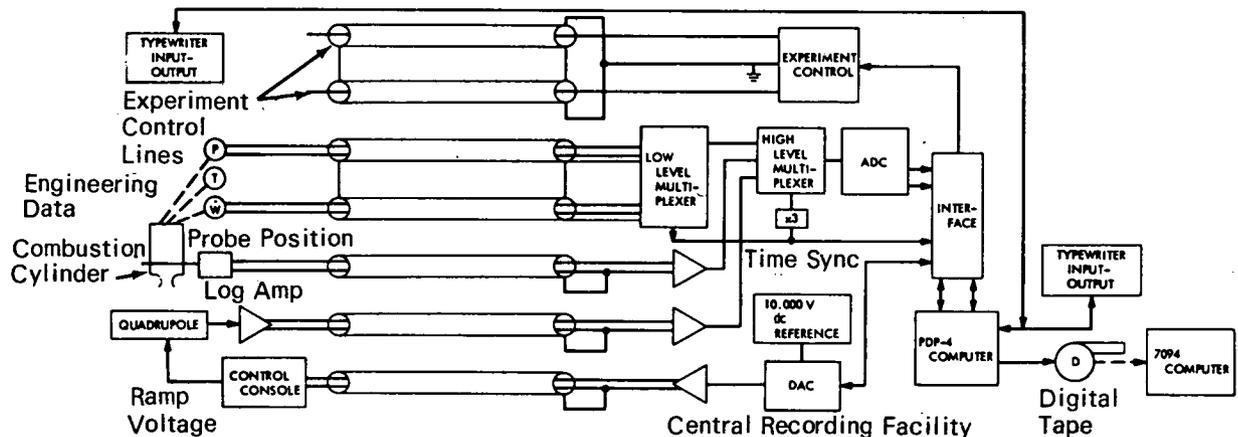


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Computer-Controlled Mass Spectrometer for On-Line Gas Analysis

A quadrupole mass spectrometer system, interfaced with a digital computer, performs an on-line chemical analysis of gases in combustion chambers. Hydrogen, oxygen, nitrogen, nitric oxide, carbon monoxide, and others can be detected and their

computer to yield the absolute concentrations of the combustion gases. An analysis rate of 9 msec per peak has been demonstrated and this rate is high enough for a real-time general purpose gas analysis in most systems.



Data Acquisition System

levels of concentration recorded. The system is applicable to the field of air pollution control.

In normal operation, a sample of gas is continuously withdrawn from the chamber with a water-cooled probe and analyzed in the mass spectrometer. The digital computer is preprogrammed to control the mass spectrometer such that only specific portions of the mass spectrum are analyzed. Since the output of the mass spectrometer in this case consists of only the peak heights of selected gases, there is no need to record the whole spectrum.

A major advantage of this system is the simplified data recording and reduction process. The output is recorded on digital tape and processed by

In addition to mass spectrometer data, other information such as probe position, and engineering data such as pressures and temperatures, can be recorded on the same tape. The data acquisition system is shown schematically in the figure.

Note:

Requests for further information may be directed to:

Technology Utilization Officer
 NASA Pasadena Office
 4800 Oak Grove Drive
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 Reference: TSP71-10191

(continued overleaf)

Patent status:

Inquiries about obtaining rights for the commercial use of this invention may be made to:

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Source: J. Houseman and F. W. Hafner of
Caltech/JPL
under contract to
NASA Pasadena Office
(NPO-11427)