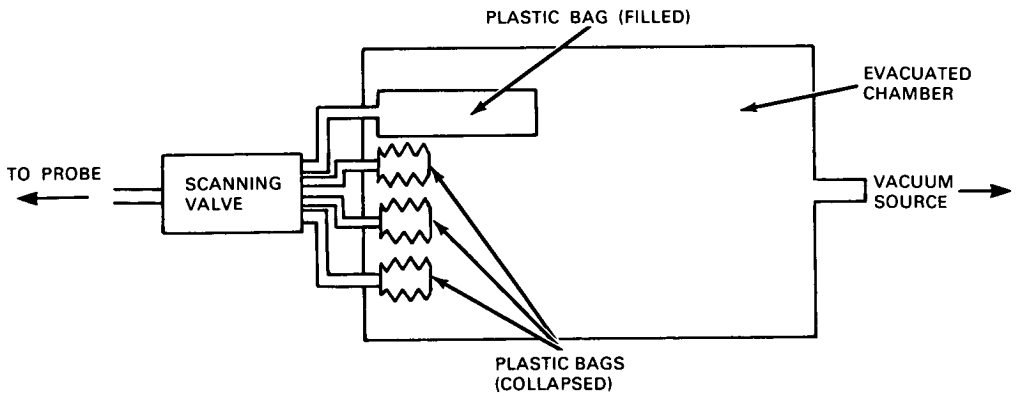
NASA TECH BRIEF

Plastic Bags in Evacuated Chamber Make Lightweight Gas Sampling System



The problem: The collection of exhaust gas of an aircraft or space vehicle during flight for use in analyzing system combustion efficiency. Normal ground test systems cannot be applied to flight conditions because of the weight and size of the equipment involved.

The solution: A lightweight, portable system that uses an evacuated chamber and plastic bags to collect the exhaust gas in flight for later analysis on the ground.

How it's done: Prior to flight, the plastic bags are attached to their inlet ports in the collapsed state and the vacuum chamber and inlet lines are evacuated. The system is connected to the exhaust gas sampling probe and the scanning valve operates to fill the plastic bags sequentially. Impact pressure at the sampling probe entrance is sufficient to drive the gas into the plastic bags during flight. Bags as small as 50 ml in volume at an internal pressure of 4 psia will collect sufficient gas for laboratory analysis.

Notes:

1. The chamber could be sufficiently evacuated during flight by a static pressure port on the side of the vehicle.
2. The bags must be of a material that is strong and impervious to hydrogen diffusion.
3. Inquiries concerning this innovation may be directed to:

   Technology Utilization Officer
   Flight Research Center
   P.O. Box 273
   Edwards, California, 93523
   Reference: B65-10264

Patent status: NASA encourages commercial use of this innovation. No patent action is contemplated by NASA.

Source: W. M. Shaffernocker of
General Electric
under contract to
Flight Research Center
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