NASA TECH BRIEF

Marshall Space Flight Center

Microresonator for Damping Flow Oscillations

The problem:

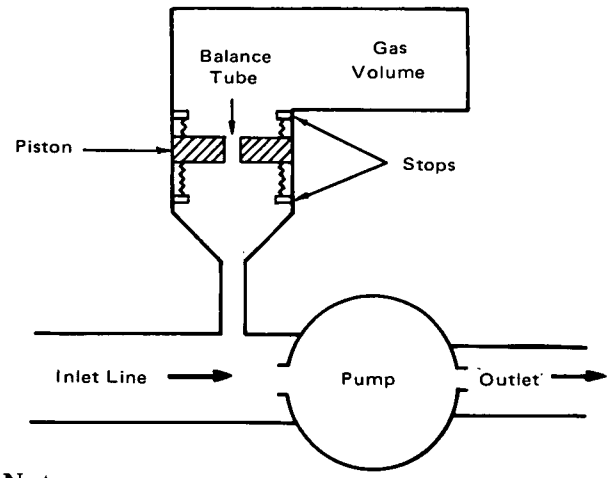
Excessive longitudinal oscillations in fluidic systems cause structural damage.

The solution:

Detune the inlet line to the pump through the use of a microresonator tuned at or slightly above the predicted system oscillation frequency and 180° out of phase.

How it's done:

The microresonator uses a resonant spring-mass system to detune the flow oscillations of the line. As the flow rates in the system change due to the change in mass, the vibration frequencies change accordingly; at a low rate of mass the frequencies tend to multiply and become potentially destructive. The microresonator, tuned properly, will cancel or reduce the magnitude of these oscillations.



Note:

Requests for further information may be directed to:
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Reference: B72-10105

Patent status:

No patent action is contemplated by NASA.

Source: E. Bramblett of
Rocketdyne Division of
North American Rockwell Corp.
under contract to
Marshall Space Flight Center
(MFS-18401)

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