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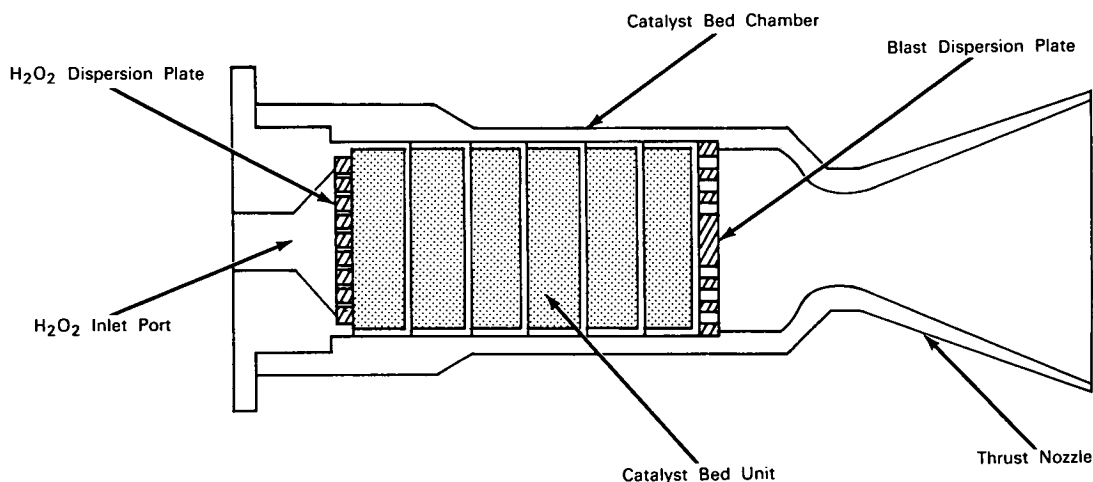
Brief 65-10321

NASA TECH BRIEF



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Plated Nickel Wire Mesh Makes Superior Catalyst Bed



The problem: In using 90% hydrogen peroxide thrust chambers for attitude control of vehicles above the operational limit of aerodynamic surfaces, repeatability, longevity, and fast response of the control device are measures of its effectiveness. Catalyst beds presently used to achieve gas evolution in these thrust chambers suffer fusing and attrition related to poor surface area-to-volume ratios. This condition results in excessive response times and short overall life that limits repeatability.

The solution: A catalyst bed of porous nickel mesh screen whose open surfaces are plated in rugose form with a coating of 99% silver and 1% gold.

How it's done: The thrust chamber contains 6 catalyst bed units, a blast dispersion plate, and a thrust nozzle. Each catalyst bed unit consists of a stainless-steel cup holding a stack of nickel wire mesh

disks each of which is plated with a 0.0015-inch coating of 99% silver and 1% gold. Plating by vapor deposition or by electroplating are equally effective in this application. The unique feature of the chamber lies in its catalyst bed units; all other features are standard.

Note: This catalyst bed would be useful wherever a catalyst is required to decompose hydrogen peroxide.

Patent status: Title to this invention has been waived under the provisions of the National Aeronautics and Space Act (42 U.S.C. 2457 (f)), to the Bell Aerosystems Company, Niagara Falls Boulevard, Buffalo 5, New York.

Source: MacDonald Sill of Bell Aerosystems Company under contract to Manned Spacecraft Center (MSC-216)
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