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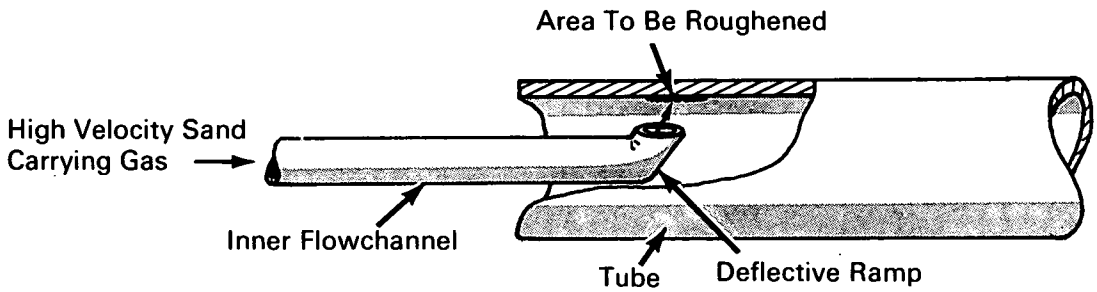
Brief 66-10610

NASA TECH BRIEF

Selective Tube Roughening Increases Heat Transfer Capability



The problem:

To increase the heat transfer capability in tubes at selected locations. Increased surface roughness on the inside of tubes increases the heat transfer capability, but it also increases undesirable pressure drop.

The solution:

Minimize the pressure drop by selectively roughening only those areas which require higher heat transfer.

How it's done:

Selective roughening can be accomplished at specified locations inside tubes by using an inner flow channel, flexible or rigid, for supplying a sand carrying gas at high velocity. A ramp which covers approximately half the channel cross-sectional area deflects the sand particles so they strike the surface to be roughened at an oblique angle.

Notes:

1. This technique is being used to construct roughened test sections for hydrogen heat transfer studies.
2. Inquiries concerning this innovation may be directed to:

   Technology Utilization Officer
   Marshall Space Flight Center
   Huntsville, Alabama 35812
   Reference: B66-10610

Patent status:

No patent action is contemplated by NASA.

Source: L. W. Carlson
(M-FS-599)

Category 05