

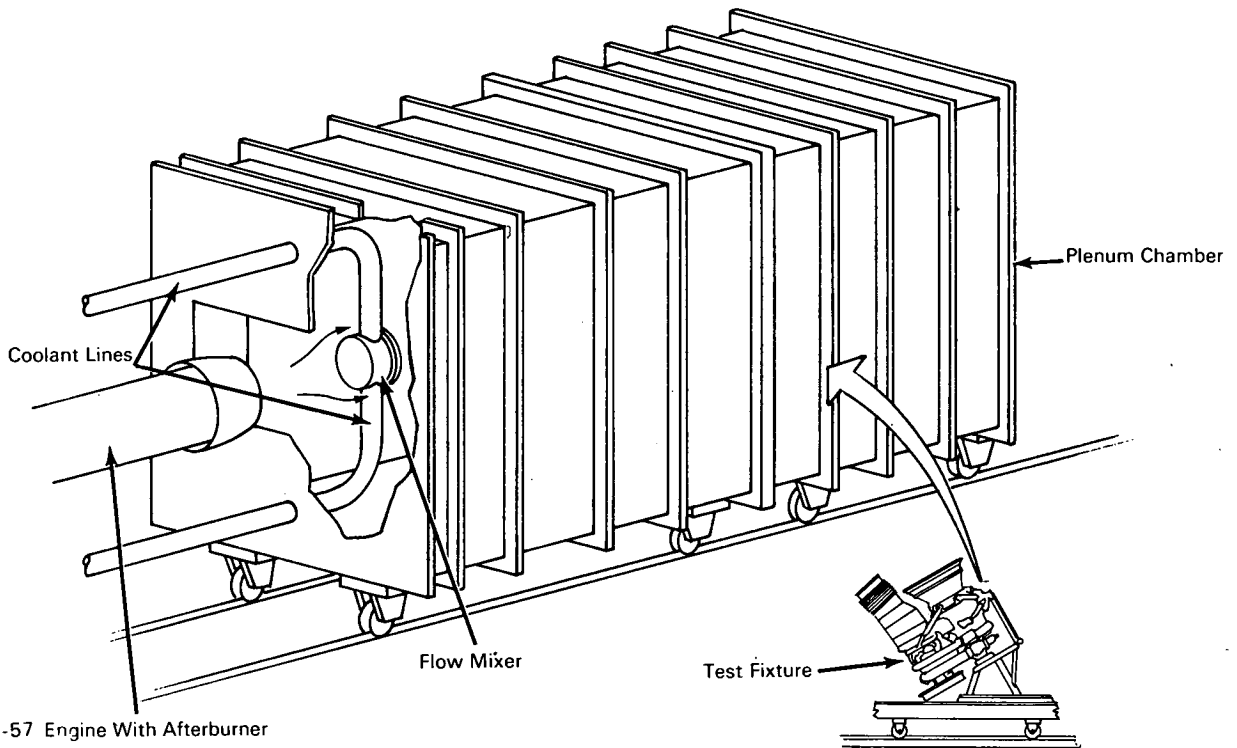
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# NASA TECH BRIEF



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## Jet Engine Powers Large, High-Temperature Wind Tunnel



**The problem:**

To design and develop a wind tunnel which can accommodate large parts for testing at high temperatures and controlled gas velocities. Previously, no facility was available for testing large parts under these conditions.

**The solution:**

A large, economical wind tunnel for large component testing, using a jet engine with afterburner to provide high temperatures (1200° to 2000°F) and

high velocity gas. The wind tunnel can accommodate parts 10 feet by 10 feet or larger.

**How it's done:**

The jet engine and afterburner act as a gas generator for the wind tunnel. It is positioned at the end of a plenum chamber and discharges its exhaust through the chamber.

By varying the mixture ratio on the engine, controlled temperatures between 1200° and 2000°F can be obtained in the chamber. The gas velocity and dynamic pressure can be controlled by bleeding off the hot gases upstream of the test specimen.

(continued overleaf)

**Notes:**

1. Since the hot gases from the jet engine will not be at a uniform velocity or temperature across a given cross section, the concentration of exhaust products will vary at different locations in the chamber. Quantitative evaluations will therefore be difficult with this technique. However, if only qualitative information is desired, the technique will be quite useful.
2. Inquiries concerning this invention may be directed to:

Technology Utilization Officer  
Marshall Space Flight Center  
Huntsville, Alabama 35812  
Reference: B67-10621

**Patent status:**

Inquiries about obtaining rights for the commercial use of this invention may be made to NASA, Code GP, Washington, D.C. 20546.

Source: T. F. Benham and S. R. Mulliken  
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under contract to  
Marshall Space Flight Center

(MFS-13544)

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