

## **Development of Ultra-Hypersonic Shock Tunnel for Aerodynamics Test**

**Kirk Hanawa, Yasuhiro Tomioka, Mutsuo Kotake  
Tadashi Mikami, Yasuhiko Tanaka**

IHI has constructed a Shock Tunnel for use in development test for ultra-hypersonic vehicles. The system uses a free piston in a shock tube accelerated by high pressure. The high-temperature and high-pressure air generated downstream of the piston breaks the membrane at the shock tube end. This provides an ultra-hypersonic air flow with a shock wave into a vacuum chamber through a conical nozzle. In the aerospace field, large test facilities of this type are planned at research laboratories. This paper outlines the design, manufacturing, and operational characteristics with test results obtained at the National Defense Academy.

**Ishikawajima-Harima Engineering Review** September 1992

**Vol. 32 No. 5 pp. 367-372**