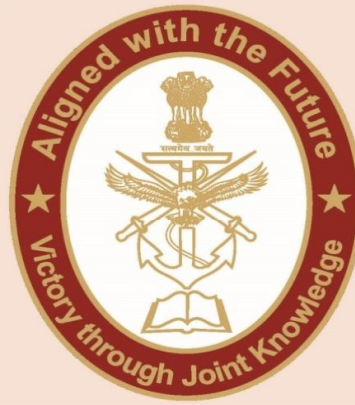


CENTRE FOR JOINT WARFARE STUDIES



CENJOWS

HYPERSONIC WEAPONS

Hypersonic flight has no agreed upon scientific definition but is typically understood as flight within the atmosphere at speed of Mach 5 and beyond, which is five times the speed of sound. Generally, three different vehicle types may be considered for the hypersonic flight regime:-

- **Boost Glide Vehicles.** An unpowered hypersonic vehicle is carried to altitude (boosted) by a rocket, detaches in the vicinity of 100 km altitude, and subsequently glides on the top of the atmosphere at speeds of 8–10 Mach. This type is also known as hyper-glide vehicle (HGV).
- **Supersonic Combustion Ramjet (SCRJ) Powered Vehicles.** These are variants of a ramjet (RJ) air-breathing jet engine in which combustion takes place in supersonic airflow throughout the entire engine. This allows the vehicle to operate at considerably high speeds, theoretically getting efficient at about Mach 5. Obviously, these vehicles need to fly lower in the atmosphere to ensure the oxygen supply for the engine.
- **Exo-atmospheric Ballistic Missiles.** These are the classical rocket-powered exo-atmospheric ballistic missiles, which are not considered in the current regime of hypersonic weapons, even though they operate in the hypersonic speed regime.

Dipl.-Ing. Hans-Ludwig Besser, et al., "Hypersonic Vehicles: game Changers for Future Warfare", https://www.researchgate.net/publication/319944114_Hypersonic_Vehicles_-_Game_Changers_for_Future_Warfare#