



ICPT-15
**Inductively Coupled
Plasma Tunnel**
High-Enthalpy Plasma Test System

ICPT- 15 OVERVIEW

Technical Description

The PlasmaSonic ICPT 15 is a compact, high-performance inductively coupled plasma tunnel designed for advanced material testing and plasma-based research. It delivers controlled, continuous plasma conditions for thermal protection system (TPS) validation, and enthalpy material characterization.

Key Technical Specifications

- **Plate power:** 15 kW
- **Plasma gas:** Ar / Air
(CO₂/Ar and N₂/Ar configurations available)
- **Maximum torch pressure:** 1 bar
- **Minimum torch enthalpy:** 3 MJ/kg
- **Maximum torch enthalpy:** 8 MJ/kg
- **Chamber pressure:** 10–1000 mbar
- **Operation mode:** Continuous

Applications

- **Thermal Testing:** TPS erosion testing

Available upgrades

- **Coatings:** Plasma material coating
- **Powder Processing:** Powder spheroidization
- **Material Synthesis:** Nanoparticle synthesis
- **Plasma gas:** O₂/Ar and H₂/Ar configurations available

Intrusive Instrumentation

Enthalpy Probe

- Stagnation pressure
- Temperature
- Mach speed
- Velocity

Heat-Flux Measurement

- Gardon gauge (0–10 MW/m²)

Ablation Probe

- Ablation test sample
- Graphite stem
- Sample holder

Enthalpy probe



Gardon gauge (0–10 MW/m²)



Ablation probe



← Ablation test sample

← Holder

Non-Intrusive Instrumentation

Optical Diagnostics & Monitoring

- Video monitoring of plasma on operator control screen #1
- Reactor window angled at 15° field of view

Viewing & Access Ports

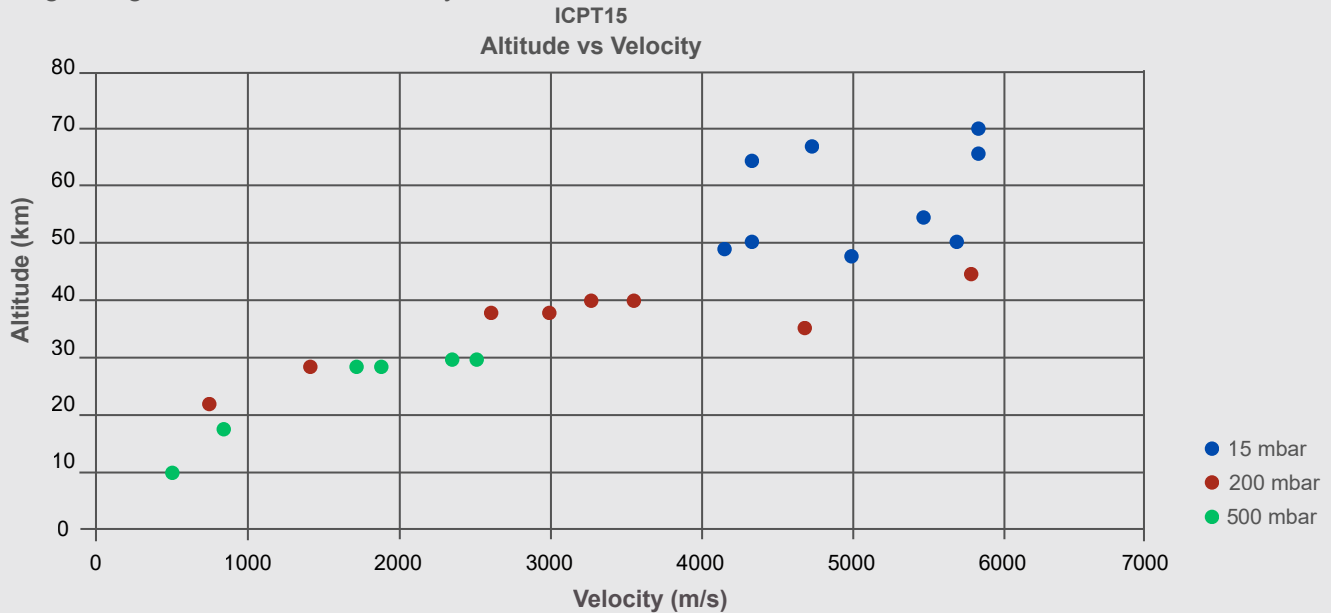
- 7 viewing ports
- Two aligned viewing ports for optical diagnostics
- Access for additional non-intrusive instrumentation

PERFORMANCE & TESTING

High-Enthalpy Plasma Performance & Test Capabilities

Modeled Performance Envelope

Coverage range of altitude and velocity



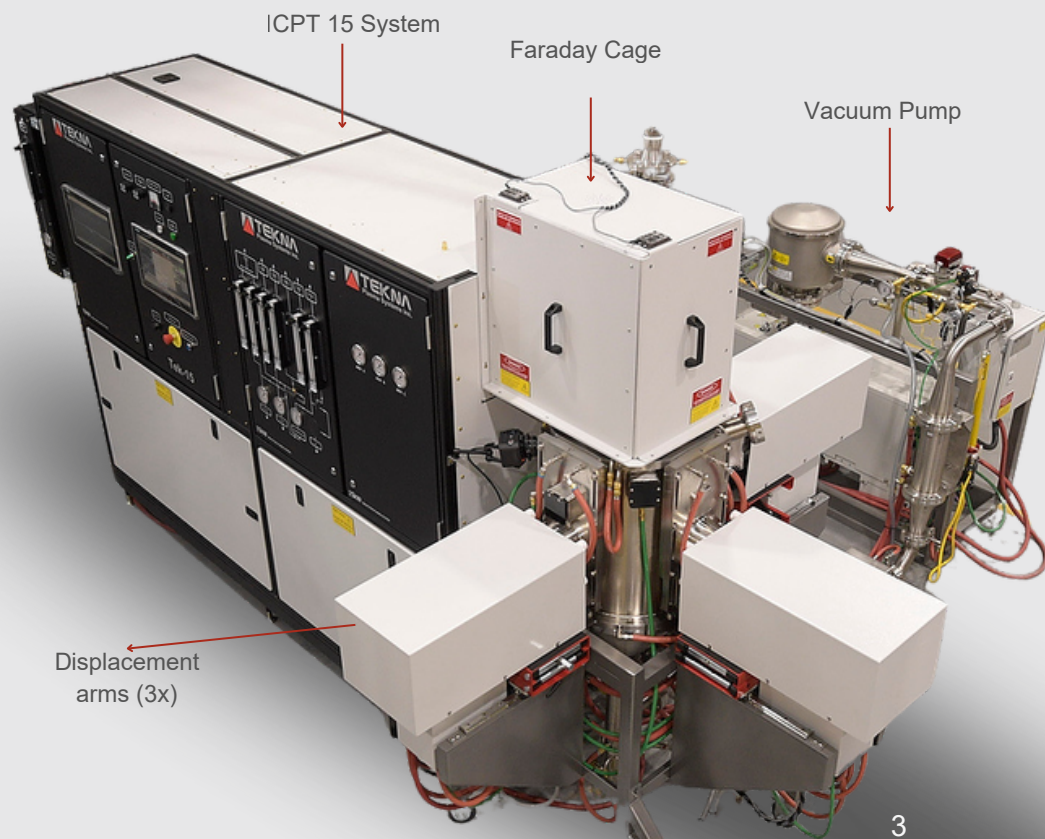
Note: Calculated values are highly dependent on the object's shape, material, and size. The results are derived from a combination of modeling and empirical calculations.

Test Capabilities

- **Test sample size:** up to 10 mm diameter
- **Heat flux:** up to 4 MW/m²
- **Stagnation pressure:** up to 750 mbar
- **Estimated capacity:** up to 20 tests/day

Compact Footprint

- **Width:** 12.25 ft (≈ 3.7 m)
- **Length:** 18.6 ft (≈ 5.7 m)
- **Height:** 8.25 ft (2.51 m)



CONTACT US

Get in touch with our team for technical information and inquiries

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