azercosmos | SPACE AGENCY OF THE REPUBLIC OF AZERBAIJAN

“AITVAC 03”

Thermal Vacuum Chamber

Compact, high-performance solution for space environment testing.

www.azercosmos.az

Overview

- Designed to validate satellite performance under realistic orbital conditions.
- Simulates thermal and vacuum space environment
- Optimized for CubeSats and small payloads
- Developed and tested by Azercosmos

Local manufacture

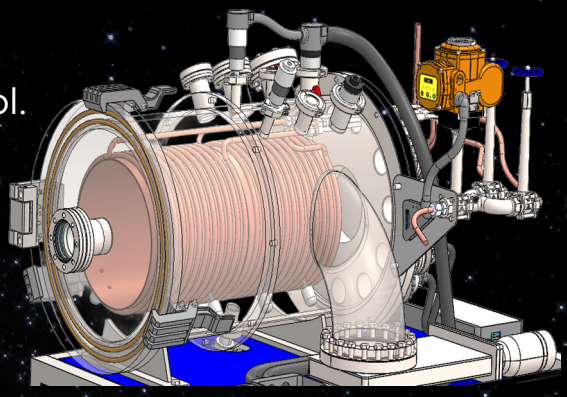
Developed and manufactured by **Research and Development engineers of Azercosmos**, Space Agency of the Republic of Azerbaijan.




Key Differentiator

Engineered for efficient and precise thermal control.

- Segmented, weld-free copper shroud
- Two independently controllable thermal zones
- Optimized for 1U and 3U CubeSats
- Improved thermal uniformity
- Reduced LN_2 consumption



Performance at a Glance

- Key parameters for quick evaluation.
- Temperature: −80°C to +100°C (up to −150°C...+150°C)
- Vacuum: down to 1×10^{-5} mbar
- Pump-down to 1×10^{-1} mbar in <10 min
- Pump-down to 1×10^{-5} mbar in <4 h
- Volume: Ø260 × 500 mm

Main futures

Flexible Test Area

Adaptable configuration for different payloads.

- Approx. Ø260 × 500 mm usable volume
- Suitable for 1U–3U CubeSats, subsystems, components
- Supports small payload testing
- Full-area heating and cooling via radiative shroud and heater cages

Vacuum Performance

High Vacuum & Pump-Down
Fast and efficient vacuum generation.

- Oil-free dry pump + turbomolecular pump
- From atmosphere to 1×10^{-1} mbar in <10 min
- Down to 1×10^{-5} mbar in <4 h
- Stable high-vacuum conditions

Space Environment Simulation

Reproduces realistic orbital temperature conditions.

- Dual-zone LN_2-cooled shroud
- Resistive heaters for thermal cycling

−80°C to +100°C
Typical range

−150°C...+150°C
Configurable up to

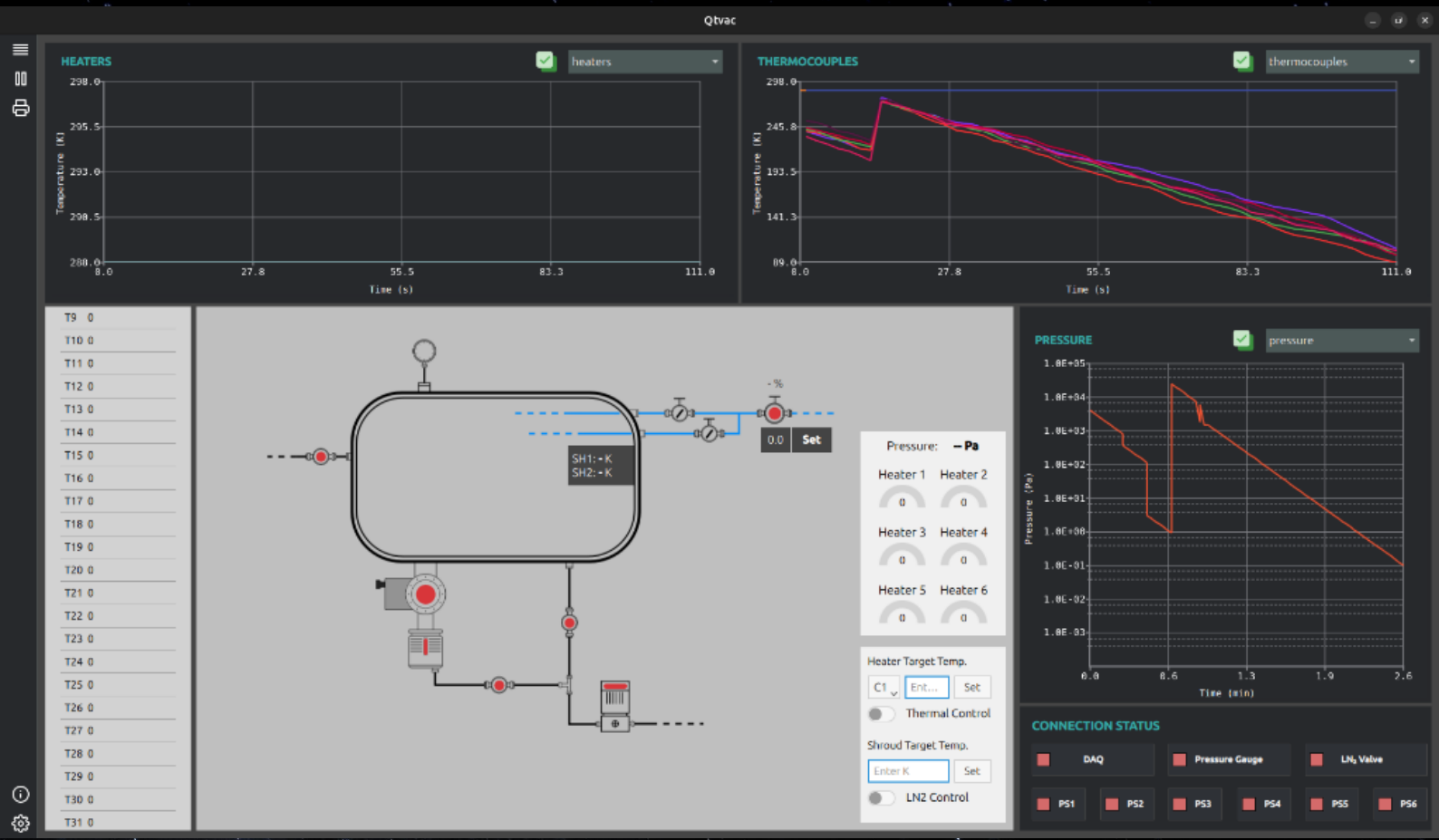
Main futures

Control & Software

User-friendly monitoring and automation.

- Up to **32** temperature channels
- DAQ-based equipment control
- Fully integrated QTVAC software
- Real-time trends and logging
- Automated test profiles
- Easy-to-use pumping & temperature control

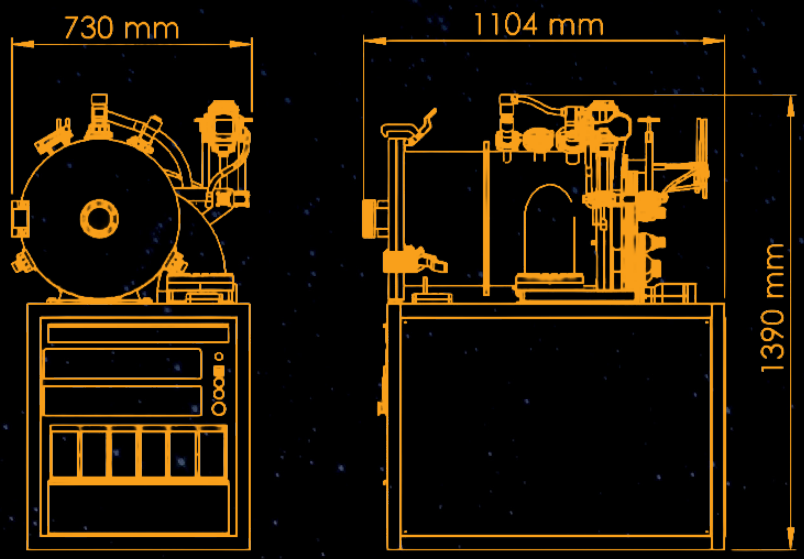
32
temperature channels

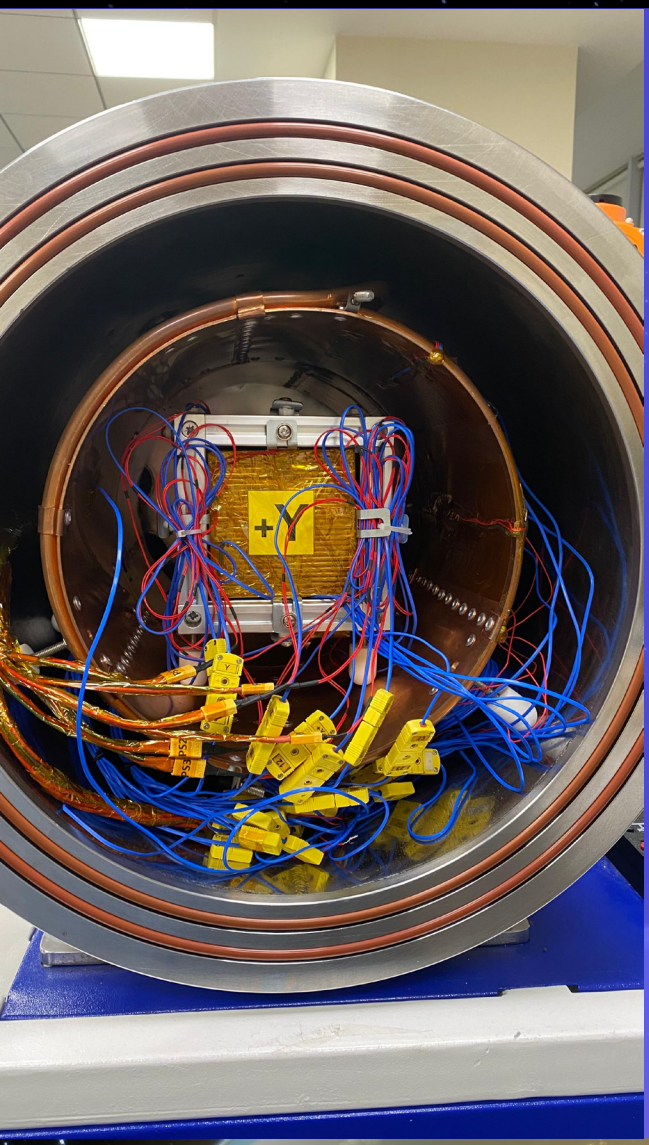


Main futures

Portable, service-friendly design

- Compact and service-friendly.
- Dimensions: 730 × 1100 × 1490 mm
- Frame-mounted structure
- Easy installation and relocation
- Maintenance-friendly design





CubeSat-oriented fixtures

Designed specifically for small satellite testing.

- Fixtures for 1U and 3U CubeSats
- Side-level temperature monitoring
- Precise control of conditions

Safety & Reliability

Ensures secure and stable operation.

- Electrical safety interlocks
- O_2-level monitoring
- Equipment protection systems
- Automatic test pause
- Safe lockdown
- Vacuum holding during power loss

Main futures

Applications

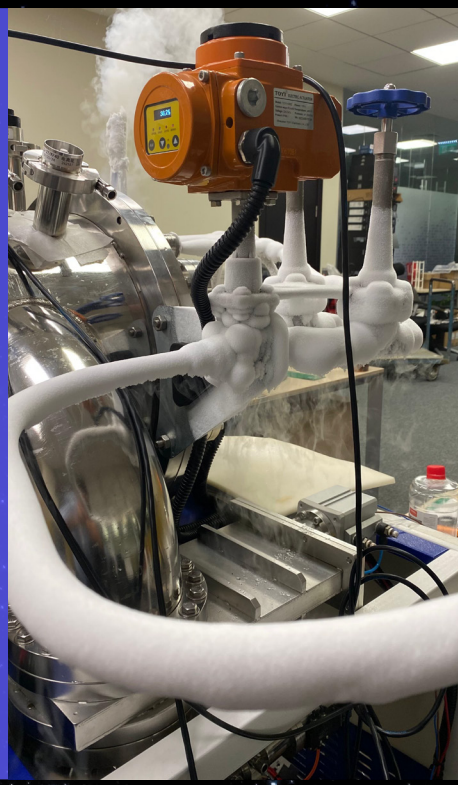
Supports a wide range of use cases.

- CubeSat testing
- Subsystem validation
- R&D projects
- Educational use

Industry & Collaboration

Enabling local capability and innovation.

- Academia–industry collaboration
- Training future engineers
- Local testing infrastructure
- Reduced dependency on external facilities



Engagement Options

Flexible collaboration formats.

- Testing services
- Research partnerships
- Institutional use
- Custom configurations

Contact us

Get in touch to explore collaboration opportunities.

hello@azercosmos.az