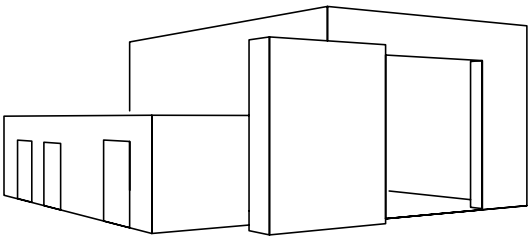
terra x cube
eurac research



Large Cube

Design	Rooms: 1. Test chamber 2. Ambulatory room 3. Control room 4. Airlock & Restroom
Useful Square Footage	137 m² + 100 m² for test setup
Access to test chamber	Large sliding door: 3.6 m × 4 m (W × H)
Load Capacity	Objects and vehicles with a mass up to 40 t
Combination of the Parameters	All the environmental parameters can be simultaneously combined to simulate complex scenarios.
Pressure Control	Independent for test room, ambulatory room and airlock

1. Test chamber

General Characteristics and Environment Control

Internal dimensions	12 m × 6 m × 5 m (L × W × H)
Maximum simulated altitude	9,000 m ±10 m (~ 30,000 ft)
Maximum Rate of Climb (ROC)	6 m/s (~ 1,180 ft/min)
Minimum Rate of Climb (ROC)	0.1 m/s (~ 20 ft/min)
Temperature Range According to IEC 60068-3-5	-40...+60°C (± 1°C in time ± 2°C in space)
Temperature Rate of Change According to IEC 60068-3-5	± 0.5°C/min (cooling & heating)
Relative Humidity T > 4°C and according to IEC 60068-3-6	10...95% ± 3%
Humidity Rate of Change T > 4°C and according to IEC 60068-3-6	0.4%/ min cooling; 0.5%/ min heating
Wind	Up to 30 m/s
Precipitations	Rain: 0...60 ±1 mm/h Snow: up to 50 mm/h
Light	Day/night simulation up to 1,000 lux
O_2 level control	6...20.9% ± 0.1%
Gas Exhaust Extraction System	1,100 m³/h

Medical Studies: human reactions to extreme environmental conditions

Capacity	Up to 12 participants and 3 investigators
Duration of the Study	Up to 45 days without interruption
Medical Monitoring System	Full medical monitoring system for both test subjects and investigators: – – Portable harness – Wireless data transmission within the chamber – Real time medical data acquisition • ECG • SpO_2 • Blood pressure • Core temperature – Synchronised medical and environmental parameters – Threshold alarms
Available Equipment	Climbing wall Treadmills and cycle ergometers Audio & video projection system

2. Ambulatory Room

General Characteristics	The ambulatory room allows participants to be medically examined during tests. It can also be used to evaluate small or medium-sized objects at high altitudes and non-extreme temperatures. The room has a line of sight between the control room on one side and the test chamber on the other via pressure-tight windows.
Internal dimensions	4.5 m × 2.8 (L × W)
Maximum simulated altitude	9,000 m ±10 m (~ 30,000 ft)
Maximum Rate of Climb (ROC)	6 m/s (~ 1,180 ft/min)
Minimum Rate of Climb (ROC)	0.1 m/s (~ 20 ft/min)
Temperature Range	20...30°C ± 1°C
O_2 level control	6...20.9% ± 0.1%

3. Control Room

General Characteristics	The control room contains the control unit for the chamber and its technological infrastructure. The operators set test parameters or execute automated programs for temporal variation of the parameters according to the test's specifications. A data acquisition system records the climatic and operating parameters. The test chamber is visible to the control room via three large pressure-tight windows. The two environments are connected by a "pass-through" for the exchange of small objects (for example blood samples, tools, etc.) that avoids use of the compensation chamber.

4. Airlock & Restroom

General Characteristics	The airlock (compensation chamber) allows entry and exit from the pressurized test chamber. The airlock has a restroom with sink, shower and toilet for use during testing. Rapid depressurisation is also possible in the airlock, which simulates the ascent rate typical of air rescue operations in the high mountains.
Internal dimensions	~ 9 m² (~ 3 m²)
Maximum simulated altitude	9,000 m ±10 m (~ 30,000 ft)
Maximum Rate of Climb (ROC)	14 m/s (~ 2,750 ft/min)
Minimum Rate of Climb (ROC)	0.1 m/s (~ 20 ft/min)
Temperature Range	20...30°C ± 1°C
O_2 level control	6...20.9% ± 0.1%

Support services offered

- Data-acquisition system
- Data security management: the system guarantees the integrity of data and ensures that the data is inaccessible to unauthorised parties
- Support during the whole testing chain: from experimental design to test execution and reporting