



USE CASE

Sunlight simulation for industry & research

Small but efficient



terraXcube

terraXcube is Eurac Research’s extreme climate simulation center at the NOI Techpark in Bolzano, South Tyrol, Italy. Within its chambers, even the most extreme environmental conditions on our planet can be created. By combining hypobaric and altitude technology with state-of-the-art environmental simulation, we aim to investigate the effects of extreme climate conditions on humans, ecological processes and industrial products. The climate chambers differ in size and equipment and can accommodate people, plants and other living organisms for up to extended periods and have the space to accommodate large machines and products. Each day our team breaks new ground with scientists and industry partners and prepares the path to gain discoveries.









Photo: Simone Padovani

The four small terraXcube climate chambers may be compact, but they are highly important instruments for industry & research. In the Small Cubes, we can simulate sunlight and in doing so, recreate a 24-hour cycle. Different heights can be simulated in each of the four chambers making the Small Cubes particularly suitable for comparative long-term tests: different objects can be tested in parallel in the four chambers under comparable conditions. This makes it possible to study plants, soil or entire ecosystems under realistic environmental conditions and thereby identify key factors for certain ecosystem processes.

Thanks to sunlight simulation, equipment functionality and performance can be tested our Small Cubes and simulations can be carried out to recreate an entire day in terms of different sunlight intensity, humidity, and temperature.

In addition, it is possible to test whether your product’s cooling system can withstand the sun’s rays in a particular location which is exposed to the sun or which position is best for the energy production of a solar collector attached to a device.

The test in a nutshell:

			
Temperature range	Humidity	Day and night	Spectrum of light
			
Irrigation	Small cube sizes		

Measures:

The internal dimensions of the individual Small Cubes are 2.8 m x 3 m x 2.8 m (L x W x H). In the Small Cubes we can simulate extreme heights up to 4000 m.

Accredited tests:

[Tests accredited by Accredia](#) according to the following standards:
 CEI EN 60068-2-1:2007, IEC 60068-2-1:2007
 Environmental testing: Cold
 CEI EN 60068-2-2:2008, IEC 60068-2-2:2007
 Environmental testing: Dry heat
 IEC 60068-2-13:2021
 Environmental testing: Low air pressure,
 IEC 60068-2-39:2015, CEI EN 60068-2-39:2016
 Environmental testing: Temperature and low air pressure



Technical data:

- Temperature: -40...+50 °C
- Relative humidity: 10 % – 90 %rH
- Maximum simulated altitude: 4000 m
- Air pressure: 95 kPa – 62 kPa
- Solar spectrum: 280 – 900 nm
- Light intensity: 2.500 μmol/m²s

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