

### 19 m3 bi-climatic chamber

#### CUSTOMIZED: DOUBLE TANK BI-CLIMATIC CHAMBER

The equipment financed for the 2015-2021 State-Region Plan Contract (Pays de la Loire Region, Nantes Métropole, State and European Union) is part of a range of equipment aimed at better understanding the degradation of materials in sea and their monitoring by instrumentation. This range of equipment is unique in France and allows the University of Nantes to meet the challenges of Renewable Marine Energies but also the adaptation of port structures or large coastal bridges to major changes. The equipment installed by Climats is intended to carry out **climatic tests on structural components** of a size of magnitude of 0.5 meters to a few meters. It allows to **reproduce the environmental conditions (temperature and humidity)** a given place using as input data a recording emitted from a weather station. The purpose of this climatic chamber is to facilitate the passage from the laboratory to the site of non-destructive testing methods (sensors, measurement and analysis methods) developed by the GeM Laboratory within the Sciences and Techniques UFR of Nantes for monitoring in service of strategic infrastructures. Open to the needs of society, this equipment will be used in the service of research projects and industrial projects.

This **bi-climatic chamber** covers a **temperature range from -30°C to +150°C**, with a **lowering speed of 2°C/min average from + 120°C to -20°C according to IEC 60068-3- 5.**



The specificity of this climatic chamber is its constitution in **two identical and independent cabinets**, which can be combined for tests on large parts. Each cabinet is completely independent and has its own temperature and relative humidity control system. The cabinets are separated by a removable bulkhead, made up of ergonomic panels that can be easily installed or removed depending on the nature of the test. You have **3 possibilities for using this equipment**: each independent cabinet or the optimal use of two cabinets simultaneously to obtain the total volume. In total volume use, only one of the two PCs controls all the two cabinets. This equipment has the Energy Saving feature, which saves energy.

This machines' family can also work over a **temperature range from -70°C to +150°C.**

[www.climats-tec.com](http://www.climats-tec.com)

Climats - Technopole Bordeaux Montesquieu- 2/4 allée Jacques Latrille

CS 50067 - 33650 Martillac - FRANCE

Tél. +33 (0)5 56 20 25 25

e-mail: [sales@climats-tec.com](mailto:sales@climats-tec.com)

This chamber benefits from **Spirale Vision** control and its quality of regulation. You can also be able to appreciate the recognized programming and archiving features of this control system. Spirale, already present in more than 6,000 environmental test chambers and test benches in the world, is the most intuitive and versatile human-machine interface on the market.

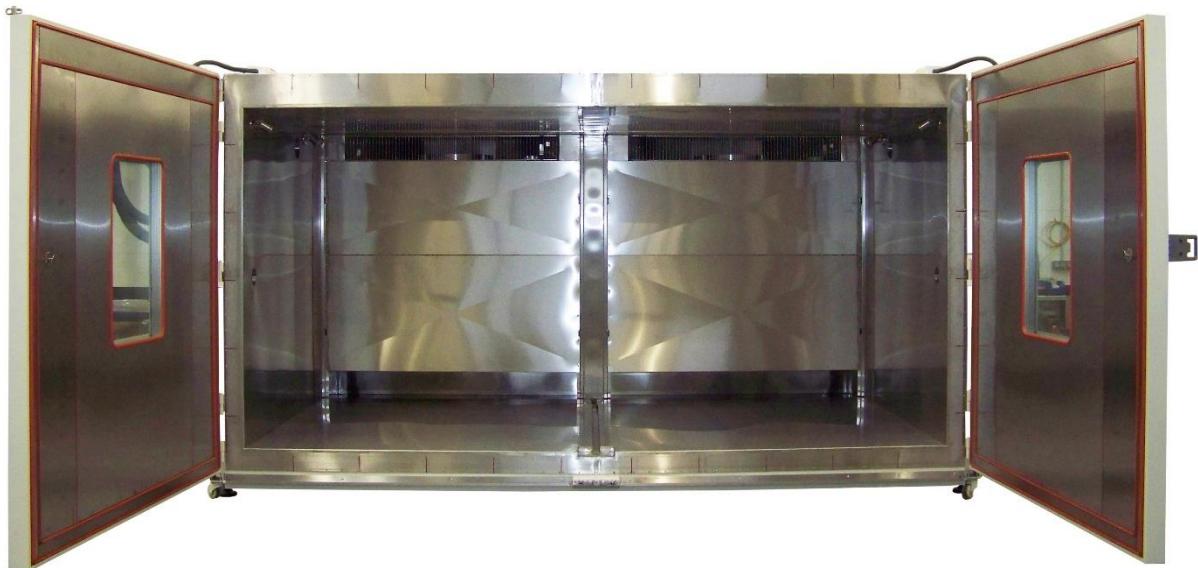
### Technical features

#### Caractéristiques :

##### Single-zone or dual-zone mode

- ▶ Temperature range: -30°C to +150°C
- ▶ Cooling rate of 2°C/min average from +120°C to -20°C **according to IEC 60068-3-5.**
- ▶ Useful volume : 18,592 m<sup>3</sup>

Dimensions (mm)	Width	Depth	Height
Useful	4150	2240	2000
Overall	4636	4473	2690



#### Specificities :

- ▶ Two R449a single floor machines integrated at the back of the chamber, two humidifiers, and a single air dryer
- ▶ Negative dew point regulation (couple 10°C and 30% RH)
- ▶ Bi-climatic chamber with 2 Panel PCs (one master - one slave)
- ▶ Equipment delivered in two parts, assembled at the customer's premises

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Performances :

**Empty performance:**

- ▶ Cooling rate from +120°C to -20°C (according to standard IEC 60068-3-5):

**2°C/min average** (higher speed on request)

- ▶ Cooling rate from + 100 ° C to -20 ° C (according to standard IEC 60068-3-5):

**4°C/min average** (higher speed on request)

- ▶ Temperature and humidity regulation on the following couples:

<b>Temperature</b>	+10°C	+40°C	+85°C	+85°C	+40°C	+10°C
<b>Humidity</b>	95%	95%	40%	10%	10%	30%

**Performance with 500kg load :**

- ▶ Cooling rate from +85°C to -20°C

**Higher than 2.5°C/min average** (according to standard IEC 60068-3-5)

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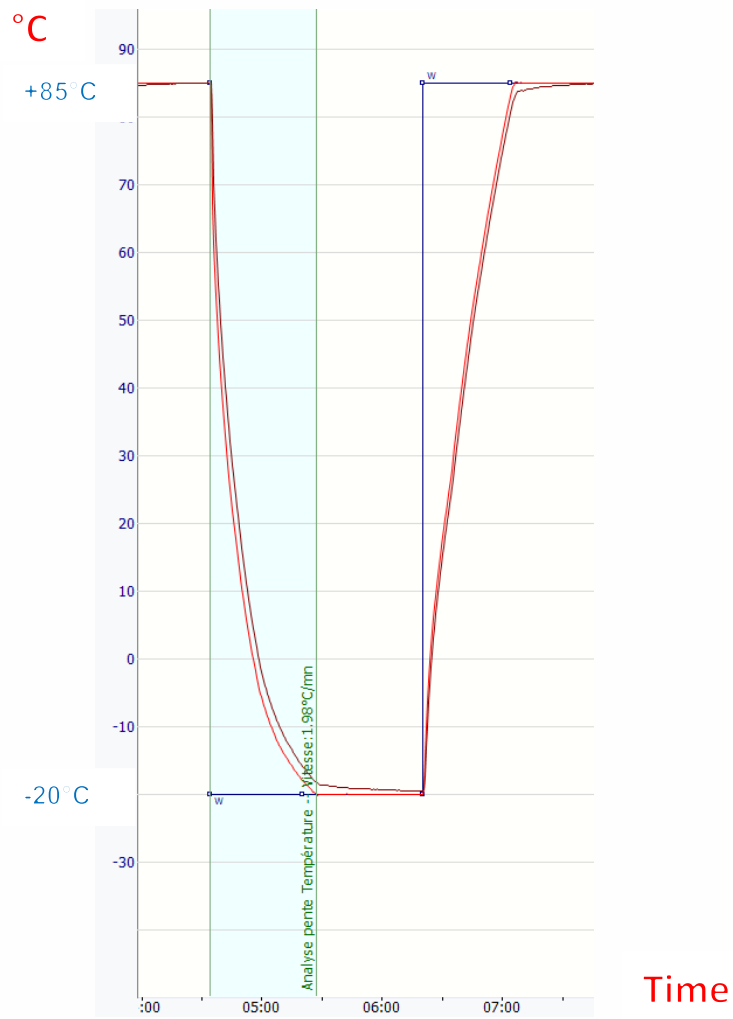
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Performance with 500kg load :



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Delivery of equipment to the customer:



Equipment craning for delivery to the customer



Delivery of equipment to the customer



Installation on its site

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