ACS | TESTING FOR A BETTER PLANET

Angelantoni

powered by mykratos

acstestchambers.com

ACS | Angelantoni TECHNOLOGY FOR LIFE

Angelantoni Test Technologies
stay ahead to meet the needs
of the Industry of the Future, where
Internet Technology,
Remote Connections,
Communication & Networking
are the keywords for success.

ACS is proud to announce their newest and most innovative chamber series yet - **Discovery My**. Discover the brilliant and innovative design of Discovery My chambers featuring the new cutting edge control system based on **MyKratos™** S/W, which makes it possible to manage and monitor the chamber from the on board panel and desktop/mobile devices.
This line of chambers comes in both thermostatic (temperature only) and climatic (temperature and humidity) versions.

discovery
New climatic and thermostatic chambers

discovery is everywhere
Cutting-edge control software, allowing to **manage, monitor, assist the chamber** in any place at any time in multiple ways (WiFi, Ethernet, mobile network).

discovery is safety
Maximun safety of tests, thanks to door opening by **personal codes and settable temperature limits.**

discovery is everything
Full range of performances, matching all requirements from stability tests to the most severe stress screening applications.

discovery is versatile
Specific test outfits for the following applications: Battery Testing, Fast Cooling by LN2, Solar Simulation Test, Air Conditioning Unit.

discovery is eco-friendly
- Low GWP refrigerant **(R449A)** used in all the Discovery My models
- Low energy consumption thanks to the **Flower®** version.

ECO FRIENDLY
REFRIGERANT
R449A

discovery

mykratos
an intelligent Control System ready for the Future

Thanks to their hyper-connectivity, ACS test chambers can match current and future needs related to the new demands of the Industrial Internet of Things and Industry 4.0 for integrated, interconnected and communicating machines.

Available on the new 10 inch display

Simple to use graphical interface
Clarity, consistency and efficiency of use

Embedded Control Software
MyKratos™ inside, to control monitor and assist the chamber from any device. No additional hardware or software required

Easy remote access and control
via integrated Wi-Fi / mobile network and Ethernet

Chamber Internal Cloud
for data storage

The interface consists of a powerful software accessible from the 10 inch on board display and from remote devices (PC, tablet, smartphone), **MyKratos™**. The interactive assistance system **MyAngel24™** is optional.

The chamber is equipped with a **PLC** (Programmable Logic Controller) for managing all the chamber's functions and safety interlocks. A special device controls the chamber via mobile devices, such as tablets and smartphones, or establishing a remote Internet connection.

mykratos
the same software in any device

MyKratos™ control software makes it possible to manage, monitor and assist the chamber anywhere, at any time, in multiple ways via the on-board panel and desktop/mobile devices (Wi-Fi, Ethernet, mobile network). The chamber wireless (Wi-Fi) connection permits operation using tablets and smartphones (iOS or Android compatible). The operator interface can also be remotely accessed through a chamber connection to the customer's LAN or via mobile network (on activation of a SIM card data).

Main features

- Wi-Fi or Ethernet connection to the chamber
- Visualization and graphical analysis of measures and recordings
- Synoptic charts of the entire system
- Multilanguage support
- High configurability of chamber parameters
- Unlimited measures recording possibilities
- Program and Manual chamber operation modes
- Delayed start of a program
- Possibility to select more than one chamber from a single Tablet: secure access by means of multiple password levels
- Automatic notifications of event and alarms
- Archive manager for easy access to the stored recordings
- Possibility to send email notification (MyAngel24™ required)
- Possibility to send SMS notification (SIM card required)
- Multi-chamber management
- System available in several languages

Test program editor

- Unlimited possibilities for storing cycles of 350 segments delaying their execution
- Internal repetitions of 10 groups of segments up to 999 times each
- Possibility to upload, edit, export, and delete already existing cycles and recordings
- Graphic and numeric profile parameters data entry

Graphic functions (Graphic viewer)

- Live data update of measures on the charts
- Graphic charts or numeric table representation views on the monitor
- Graphic cursor for in-chart data measurements and evaluations
- Calculation of Measure Slopes and report generation.
- Enable/disable of chart display
- Zoom in, zoom out and scroll functions

Export function to convert the MyKratos™ log file into ASCII format (usable in Excel or other applications)

Sample screenshots

Hardware
10 inch Touch Panel,
16M colors, with TFT technology

Sample screenshots:
Main screen, Graphical analysis of data recordings, Synoptic charts, Program and Manual operation modes, Archive of stored recordings.

Full safety thanks to access through personal touch screen code

Operator Safety
It is possible to customize the temperature range for opening the door (the default range is between 0 and 60°C).

Personal Identification Number
A PIN code can be set to open the chamber and ensure maximum safety for the products being tested.

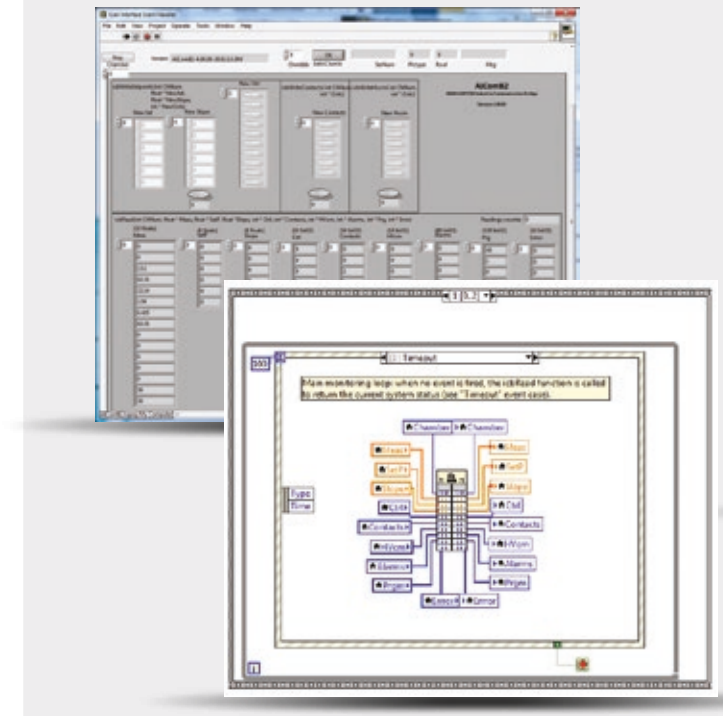
Additional S/W tools for an Easy Integration of Discovery My chambers in Test Labs

Communication drivers for an easy integration into customer-developed Serial or Ethernet based applications, (LabVIEW, LabWindows CVI, Microsoft.NET, Visual Basic 6, etc…) can be supplied on request. The drivers come with a set of examples written in Visual Basic 6, LabView, LabWindows CVI, VB.NET, and permit total interaction with Discovery My chambers, for both reading and writing.

Our communication protocol - ModBUS RTU for serial or Fetch/write for Ethernet communication, can be supplied to allow any chamber connection using the customer's own programming languages and operating systems.

Example program LabVIEW

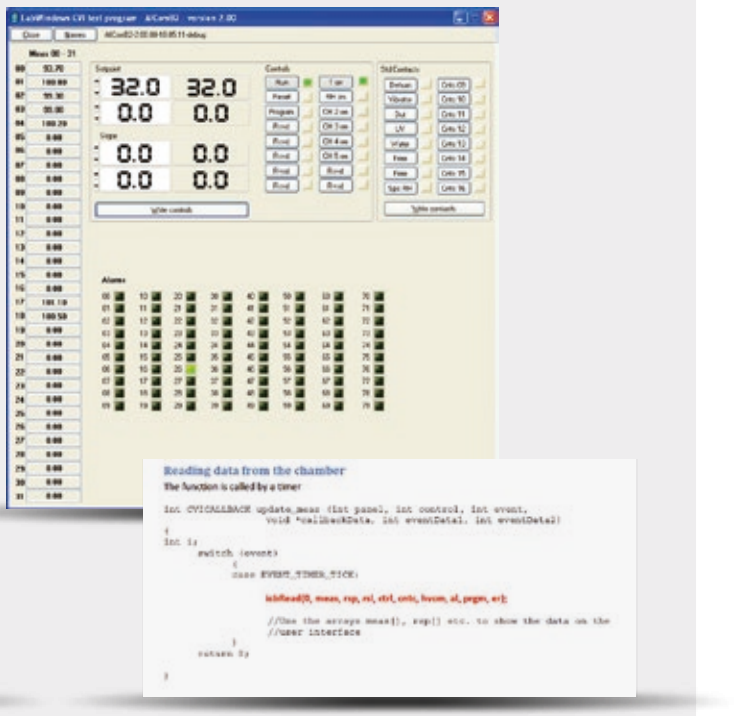
User interface



Development environment

Example program LabWINDOWS CVI

User interface



Development environment

Interactive Assistance System

myangel24

The innovative ACS interactive assistance system **MyAngel24™** operates via mobile network wireless connection, complete with SIM card. This makes it possible to access the operator interface remotely via secure connection and send **SMS notifications**. Cabled connection is also available, via customer's LAN.
N.B.: MyAngel24™ activation on demand

Diagnostics

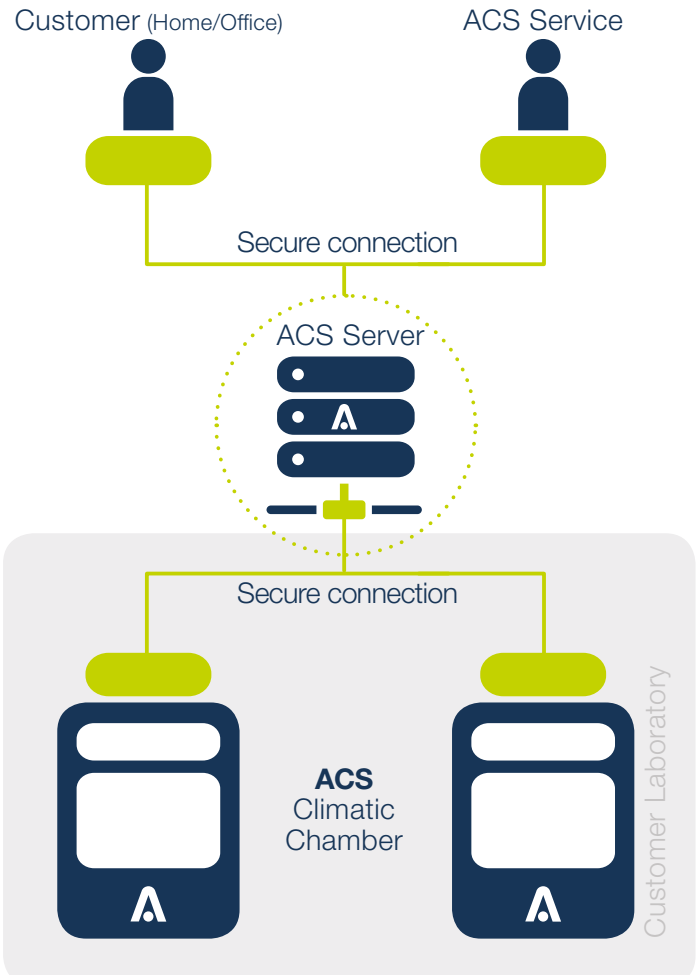
With **MyAngel24**™, the climatic chambers stay connected to the remote server 24 hours a day, monitoring running conditions in order to guarantee faster and more efficient service and maintenance activities.

Accessibility

With **MyAngel24**™, you can stay in contact with the climatic chamber whenever you want and wherever you are, accessing its control panel from any web browser.

Safety

MyAngel24™ uses the highest security standards available for authentication, secure connection, data encryption and storage. Moreover, you can suspend or limit the data sent to the central server for security reasons during one or more test sessions.



Customer Advantages

24h

Maintenance Cost Reduction

- **Less on-site intervention**
  - **MyAngel24**™ permits the identification of problems with a remote test and an examination of the recorded data
  - ACS can diagnose many problems remotely ensuring the service engineers know how to resolve the problem before visiting site and in some instances avoiding the need for a site visit.
- **Reduced chamber downtime**
  - ACS is able to schedule maintenance to chamber test plan and life cycle monitoring of the main components
- **Efficient on site intervention**
  - Service staff know the problem and which parts may require replacing before attending site
- **Remote support**
  - ACS can adjust PID parameters remotely
  - ACS can make changes to PLC programs remotely for chamber optimisation.

New!

- ✓ **Automatic Reporting**
- ✓ **Self Diagnosis**
- ✓ **Preventive Maintenance**

discovery

discovery
e-**very**where with you


ACS
discovery
ACS
discovery

discovery
is everything.

Universal Use

	MODEL[1]	DM340 (C)	DM600 (C)	DM1200 (C)	DM1600 (C)
Useful capacity (l)		337	553	1076	1439
Internal dimensions approx. (mm)	Width	601	850	1000	1000
	Depth	810	730	1130	1510
	Height	694	892	953	953
External dimensions approx. (mm)	Width	875	1124	1278	1278
	Depth	1786	1768	2222	2600
	Height	1765	2049	2111	2111
Temperature range (°C)	Basic	-40…+180	-40…+180	-40…+180	-40…+180
	C model	-75…+180	-75…+180	-75…+180	-75…+180
Temperature fluctuation (K)		±0.1...±0.3	±0.1...±0.3	±0.1...±0.3	±0.1...±0.3
Temperature changing rate Heating [4+5]	Basic (-40/+180°C)	4,5K/min	4,5K/min	4,5K/min	3,5K/min
	C model (-70/+180°C)	4,5K/min	4,5K/min	4,5K/min	3,5K/min
Temperature changing rate Cooling [4+5]	Basic (+180/-40°C)	3K/min	4,5K/min	3,3K/min	2,7K/min
	C model (+180/-70°C)	2,3K/min	4K/min	2,3K/min	2K/min
Humidity range (%) (τ=-3/+94°C) [2]		10...98	10...98	10...98	10...98
Temperature range for climatic test (°C)		10...95	10...95	10...95	10...95
Humidity fluctuation (%)		±1...±3	±1...±3	±1...±3	±1...±3
Maximum thermal Load (W) [5]	Basic T=+25°C	2300	4500	4500	4500
Maximum thermal Load (W) [5]	C model T=+25°C	1500	3000	3000	3000
Rated power (kW)	Basic	7	10,5	13	13
	C model	8	13	15	15
Rated current absorption (A)	Basic	11	19	24	24
	C model	13	25	28	28
Weight (kg)	Basic	665	875	1070	1200
	C model	720	990	1170	1300
Sound pressure level dB(A) [3]	Basic	56	61	61	61
	C model	60	63	63	63
Supply voltage (Vac)		400V ±10%/50Hz/3 + N + G			

1. for Temperature only version add the suffix T
2. τ= +4°C/+94°C for continuous test
3. measured at 1 m distance in front of the unit in 1,6 m height,free field measurement
4. according to IEC 60068-3-5 and IEC 60068-3-6
5. The performance data refer to +22°C ambient temperature, 400V nominal voltage, without specimen

Stability test

	MODEL	DM340 E	DM600 E	DM1200 E	DM1600 E
Useful capacity (l)		337	553	1076	1439
Internal dimensions approx. (mm)	Width	601	850	1000	1000
	Depth	810	730	1130	1510
	Height	694	892	953	953
External dimensions approx. (mm)	Width	875	1124	1278	1278
	Depth	1786	1768	2222	2600
	Height	1765	2049	2111	2111
Temperature range (°C)		-20…+180	-20…+180	-20…+180	-20…+180
Temperature fluctuation (K)		±0.1...±0.3	±0.1...±0.3	±0.1...±0.3	±0.1...±0.3
Temperature changing rate Heating [4+5]	(0/+100°C)	1,5K/min	1,5K/min	1,5K/min	1,5K/min
Temperature changing rate Cooling [4+5]	(+100/0°C)	1,5K/min	1,5K/min	1,5K/min	1,5K/min
Humidity range (%) (τ=-3/+94°C) [2]		10...98	10...98	10...98	10...98
Temperature range for climatic test (°C)		10...95	10...95	10...95	10...95
Humidity fluctuation (%)		±1...±3	±1...±3	±1...±3	±1...±3
Maximum thermal Load (W) [5]	T=+25°C	600	850	850	900
Rated power (kW)		7	10,5	13	13
Rated current absorption (A)		11	19	24	24
Weight (kg)		665	875	1070	1200
Sound pressure level dB(A) [3]		56	61	61	61
Supply voltage (Vac)		400V ±10%/50Hz/3 + N + G			

2. τ= +4°C/+94°C for continuous test
3. measured at 1 m distance in front of the unit in 1,6 m height,free field measurement
4. according to IEC 60068-3-5 and IEC 60068-3-6
5. The performance data refer to +22°C ambient temperature, 400V nominal voltage, without specimen

Stress Screening

	MODEL	DM340 (C) ES	DM600 (C) ES	DM1200 (C) ES
Useful capacity (l)		337	553	1076
Internal dimensions approx. (mm)	Width	601	850	1000
	Depth	810	730	1130
	Height	694	892	953
External dimensions approx. (mm)	Width	875	1124	1278
	Depth	1786	1768	2222
	Height	1765	2049	2111
Temperature range (°C)	Basic	-40…+180	-40…+180	-40…+180
	C model	-75…+180	-75…+180	-75…+180
Temperature fluctuation (K)		±0.1...±0.5	±0.1...±0.3	±0.1...±0.3
Temperature changing rate Heating [4+5]	Basic (-40/+180°C)	8K/min	6K/min	6K/min
	C model (-70/+180°C)	8K/min	6K/min	6K/min
Temperature changing rate Cooling [4+5]	Basic (+180/-40°C)	5K/min	6,5K/min	7K/min
	C model (+180/-70°C)	5,5K/min	5,5K/min	5K/min
Humidity range (%) (τ=-3/+94°C) [2]		10...98	10...98	10...98
Temperature range for climatic test (°C)		10...95	10...95	10...95
Humidity fluctuation (%)		±1...±3	±1...±3	±1...±3
Maximum thermal Load (W) [5]	Basic T=+25°C	4500	4500	4500
	C model T=+25°C	3000	3000	3000
Rated power (kW)	Basic	9,9	12,5	18,3
	C model	12	14,3	20,9
Rated current absorption (A)	Basic	17	24	34
	C model	21	29,2	41
Weight (kg)	Basic	710	985	1180
	C model	755	1090	1280
Sound pressure level dB(A) [3]	Basic	58	63	64
	C model	63	66	68
Supply voltage (Vac)		400V ±10%/50Hz/3 + N + G		

2. τ= +4°C/+94°C for continuous test
3. measured at 1 m distance in front of the unit in 1,6 m height,free field measurement
4. according to IEC 60068-3-5 and IEC 60068-3-6
5. The performance data refer to +22°C ambient temperature, 400V nominal voltage, without specimen

Severe Stress Screening

	MODEL[1]	DM250 C10 (15) ESS	DM500 C10 (15) ESS	DM1000 C10 (15) ESS	DM1400 C10 (15) ESS
Useful capacity (l)		255	438	1040	1368
Internal dimensions approx. (mm)	Width	601	850	1000	1000
	Depth	615	580	1020	1342
	Height	692	890	1020	1020
External dimensions approx. (mm)	Width	883	1137	1287	1287
	Depth	2080	2058	2512	2891
	Height	1767	2050	2180	2180
Temperature range (°C)		-75…+180	-75…+180	-75…+180	-75…+180
Temperature fluctuation (K)		±0.1...±0.5	±0.1...±0.5	±0.1...±0.5	±0.1...±0.5
Temperature changing rate Heating [4+5]	C 10 ESS (-70/+180°C)	10K/min	10K/min	10K/min	10K/min
	C 15 ESS (-70/+180°C)	15K/min	15K/min	15K/min	15K/min
Temperature changing rate Cooling [4+5]	C 10 ESS (+180/-70°C)	10K/min	10K/min	10K/min	10K/min
	C 15 ESS (+180/-70°C)	15K/min	15K/min	15K/min	15K/min
Humidity range (%) (τ=-3/+94°C) [2]		10...98	10...98	10...98	10...98
Temperature range for climatic test (°C)		10...95	10...95	10...95	10...95
Humidity fluctuation (%)		±1...±3	±1...±3	±1...±3	±1...±3
Maximum thermal Load (W) [5]	C 10 ESS T=+25°C	6000	7000	8000	8000
	C 15 ESS T=+25°C	8000	8000	9000	9000
Rated power (kW)		21,2	30,5	45,3	57,1
Rated current absorption (A)		40,6	52	85	104
Weight (kg)		1070	1225	1800	1900
Sound pressure level dB(A) [3]		69	74	76	76
Supply voltage (Vac)		400V ±10%/50Hz/3 + N + G			

1. for Temperature only version add the suffix T
2. τ= +4°C/+94°C for continuous test
3. measured at 1 m distance in front of the unit in 1,6 m height,free field measurement
4. according to IEC 60068-3-5 and IEC 60068-3-6
5. The performance data refer to +22°C ambient temperature, 400V nominal voltage, without specimen

discovery is eco-friendly

Flower® patented technology allows to reduce energy consumption and minimize environmental impacts.

Energy Consumption

Up to 70% reduction of energy consumption can be assured during the stabilization and transition phases due to a unique and "patented system" which includes:

1. an inverter that controls compressor speed and allows the adaptation of compressor power to different working needs.
2. a "cold sink" to increase the cooling efficiency.

Noise Level

Up to 50% sound pressure reduction is obtained due to:

1. an inverter on the compressor which reduces the rotation speed according to working conditions
2. an automatic control system that reduces condenser blower rotating speed according to ambient temperature and cooling power.

	MODEL	FM340 (C)	FM600 (C)	FM1200 (C)
Useful capacity (l)		337	553	1076
Internal dimensions approx. (mm)	Width	601	850	1000
	Depth	810	730	1130
	Height	694	892	953
External dimensions approx. (mm)	Width	875	1124	1278
	Depth	1786	1768	2222
	Height	1765	2049	2111
Temperature range (°C)	Basic	-40…+180	-40…+180	-40…+180
	C model	-75…+180	-75…+180	-75…+180
Temperature fluctuation (K)		±0.1...±0.3	±0.1...±0.3	±0.1...±0.3
Temperature changing rate Heating [4+5]	Basic (-40/+180°C)	4,5K/min	6K/min	6K/min
	C model (-70/+180°C)	4,5K/min	6K/min	6K/min
Temperature changing rate Cooling without the "cold sink" [4+5]	Basic (-40/+180°C)	3K/min	4,5K/min	4K/min
	C model (-70/+180°C)	2,3K/min	4K/min	3K/min
Temperature changing rate Cooling with the "cold sink" [4+5]	Basic (-40/+180°C)	6K/min	6,5K/min	7K/min
	C model (-70/+180°C)	3,8K/min	5,5K/min	5K/min
Humidity range (%) (τ=-3/+94°C) [2]		10...98	10...98	10...98
Temperature range for climatic test (°C)		10...95	10...95	10...95
Humidity fluctuation (%)		±1...±3	±1...±3	±1...±3
Maximum thermal Load (W) [5]	Basic T=+25°C	2300	4500	4500
	C model T=+25°C	1500	3000	3000
Rated power (kW)	Basic	6,4	12,5	18,3
	C model	7,3	14,3	20,9
Rated current absorption (A)	Basic	12,8	24	34
	C model	16	29,2	41
Weight (kg)	Basic	780	985	1180
	C model	830	1090	1280
Sound pressure level dB(A) [3]	Basic	58	63	64
	C model	63	66	68
Sound pressure level at steady cond. dB(A) [3]	Basic	54	56	59
	C model	56	60	63
Supply voltage (Vac)		400V ±10%/50Hz/3 + N + G		

2. τ= +4°C/+94°C for continuous test - **3.** measured at 1 m distance in front of the unit in 1,6 m height,free field measurement - **4.** according to IEC 60068-3-5and IEC 60068-3-6 - **5.** The performance data refer to +22°C ambient temperature, 400V nominal voltage, without specimen

discovery is versatile

A made-to-measure outfit for every test.

Air Conditioning Unit kit

The chamber can be used either stand-alone or for conditioning an external test box connected by means of flexible pipes.

Solar Simulation Kit

A special lamp array located on the top of the chamber makes it possible to meet the main solar simulation standards, such as DIN 75220, IEC 60068-2-5, ISO 9022-9, VDA 230-219.

Fast cooling Kit by LN2

Permits accelerating the rate of cooling down to the lowest temperature limits, increasing the severity of the test.

Battery Testing

A set of dedicated options is now available for this specific market. Gas detection, protection system and overpressure valves: all devices have been optimized in accordance with the EUCAR Hazard Levels so as to create a standard for safety analyses.

discovery Basic configuration

Discovery chambers come
with a wide range of included accessories

- **MyKratos™**
- Inspection window
- Self-pivoting wheels and feet
- Air condenser
- Internal light
- Self feeding system
- No. 1 internal grid shelf
- Humidification water recycling system
- Min/max digital thermostat with independent probe
- Silicone portholes
- Auxiliary free contacts
- Ethernet port

Options

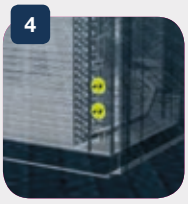
New Refrigerant Gas R472B
the "green" refrigerant gas by ACS with the lowest GWP value available on the market. Designed for U.L.T. applications, it allows to meet the requirements of the most common standards used by worldwide testing laboratories.
www.newrefrigerantgas.com

- **MyAngel24™**
- Additional portholes 1
- UV lamp 2
- Handling port hole (available for models from 500 litres up) 3
- Internal shelves
- Water condenser 4
- Reinforced floor 5
- Capacitive probe
- Notch 6
- Set of no.4 analogic inputs
- Set of no. 4 PT100 inputs
- Set of no. 4 PT100 probes
- Set of no. 8 auxiliary contacts
- No break power unit for PLC
- Temperature extension to +200°C
- Air fan motor speed adjustment
- Air flow booster
- Specimen switching off in case of chamber alarm
- Compressed air dehumidification kit 7
- T e RH analogic retransmission
- Surface cleaning set

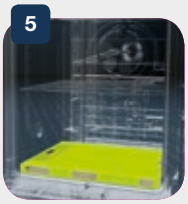
Through holes
Ø 80 and 150mm. For electrical, mechanical, and hydraulic connections inside and outside the chamber.

UV lamp
For ageing tests on painted, plastic, rubber, and other surfaces.

Handling hole
Ø 125mm. Located on the door, it allows the samples handling.



Water cooled condenser
Ideal for test areas without air conditioning.

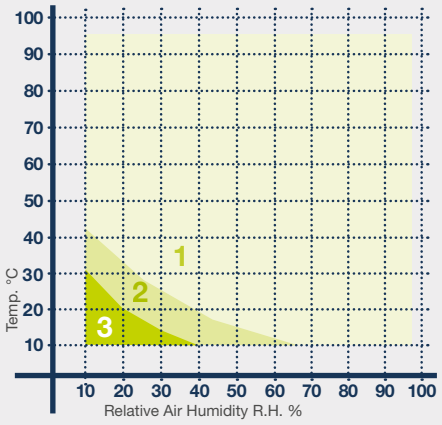


Reinforced floor
Withstands samples up to 500 kg.

Notch
70x50(h) mm. Ideal for complex connections to the sample.

7

Humidity diagram
1. Standard working range
2. For limited periods
3. Dew point extension -40°C (Optional)



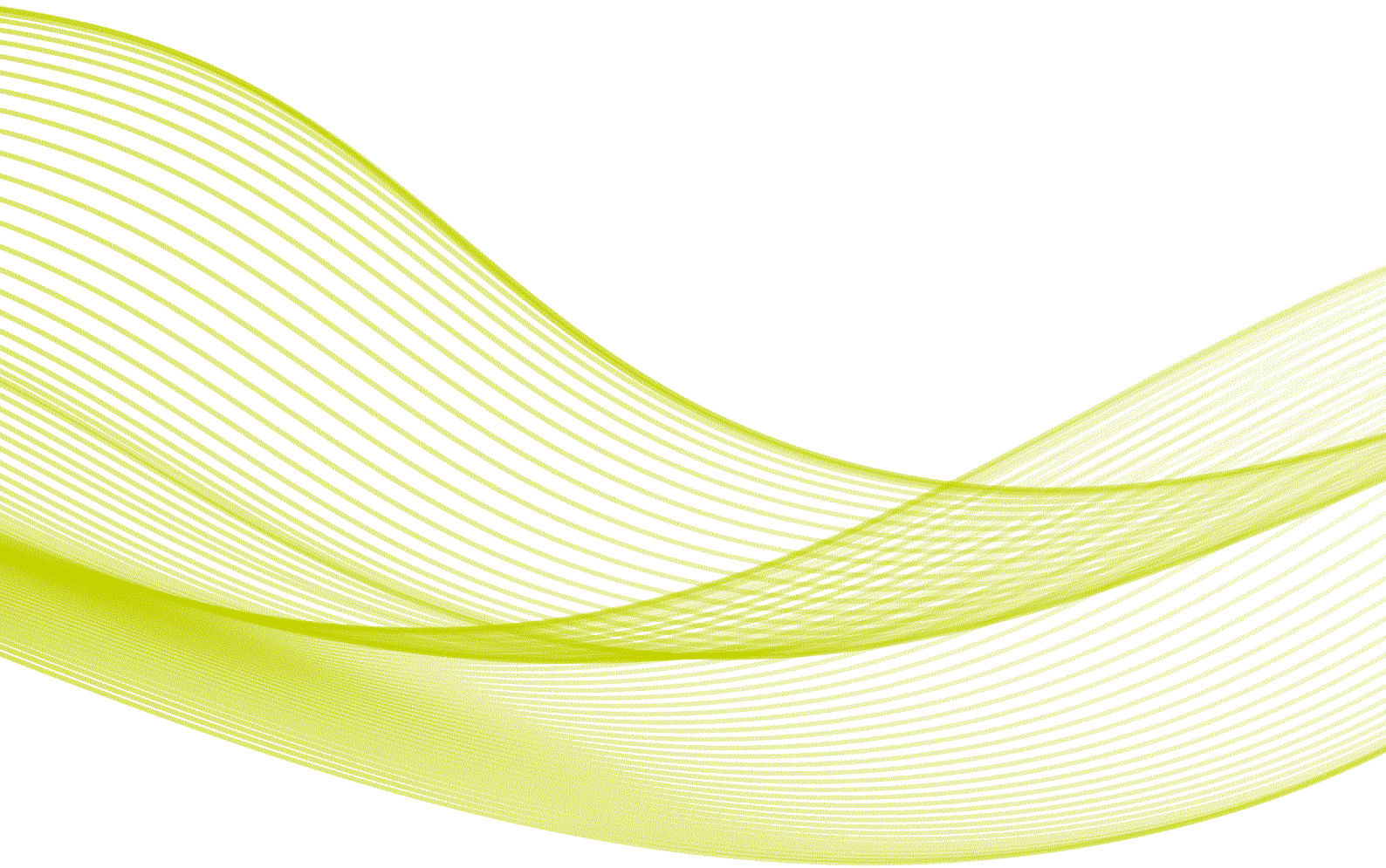
Angelantoni Test Technologies, owned by the **Angelantoni Group**, is the only company capable of offering a comprehensive range of environmental test chambers - **ACS** branded - for a great variety of applications, thanks to the expertise and technical know-how of its teams of experts. Innovation, flexibility and organization have always been the keys to success for ACS, world-famous since 1952 also for its high-tech test equipment such as Thermal High Vacuum Chambers for Aerospace applications and Calorimeters.

ENVIROMENTAL SYSTEM CERTIFICATION DNV·GL ISO 14001

QUALITY SYSTEM CERTIFICATION DNV·GL ISO 9001

Angelantoni Test Technologies
Località Cimacolle, 464
06056 Massa Martana (Pg) - Italy
Tel. +39 075.89551 (a.r.)
Fax +39 075 8955200
info@acstestchambers.it

ACS | Angelantoni TECHNOLOGY FOR LIFE



© Angelantoni Test Technologies Srl - All rights reserved

EN

© Angelantoni Test Technologies Srl - All rights reserved - April 2023 - Illustrations, descriptions and technical data may be changed without notice

Angelantoni
TECHNOLOGY FOR LIFE

Subsidiaries

Ofterdingen, GERMANY
info@att-umweltsimulation.de

Canéjan, FRANCE
info@angelantoni.fr

Beijing, P.R. CHINA
info@attasiapacific.com

Noida, INDIA
info@attindia.in

ACS

Angelantoni Test Technologies
Loc. Cimacolle, 464 - 06056 Massa Martana (Pg) - Italy
Tel. +39 075.89551 (a.r.) - Fax +39 075 8955200
info@acstestchambers.it

www.acstestchambers.com