New climatic and thermostatic chambers
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** 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
Maximum 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.

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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.

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

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.
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
- 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)
A PIN code can be set to open the chamber and ensure maximum safety for the products being tested.

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.

**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.
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.

Example program
LabVIEW

User interface

Development environment

Example program
LabWINDOWS CVI

User interface

Development environment

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

Reading data from the chamber
The function is called on a device
for each device update device (Dev, panel, Dev control, for every, with modbus (Dev eventual), for eventual)
for switch (event)

Save entire state

Report current state

//see the events menu, rjpl etc.

Development environment
Interactive Assistance System

MyKratos™ software includes the innovative ACS interactive assistance system MyAngel24™, operating via mobile network wireless connection, complete with SIM card. This makes it possible to access the operator interface remotely via VPN 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

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
Useful capacity (l) | MODEL 1  | DM340 (C) | DM600 (C) | DM1200 (C) | DM1600 (C)
---|---|---|---|---|---
Width | 601 | 850 | 1000 | 1000 |
Depth | 810 | 730 | 1130 | 1510 |
Height | 694 | 892 | 953 | 953 |

Internal dimensions approx. (mm) | Width | 875 | 1124 | 1278 | 1278 |
Depth | 1786 | 1768 | 2222 | 2600 |
Height | 1765 | 2049 | 2111 | 2111 |

External dimensions approx. (mm) | Width | 601 | 850 | 1000 | 1000 |
Depth | 810 | 730 | 1130 | 1510 |
Height | 694 | 892 | 953 | 953 |

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) | 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 |
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
Full range of performances, matching all requirements from stability tests to the most severe stress screening applications.

<table>
<thead>
<tr>
<th></th>
<th>MODEL</th>
<th>DM340 (C) ES</th>
<th>DM600 (C) ES</th>
<th>DM1200 (C) ES</th>
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<tbody>
<tr>
<td><strong>Useful capacity (l)</strong></td>
<td></td>
<td>337</td>
<td>553</td>
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<td></td>
<td>Height</td>
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<td>892</td>
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<td>C model</td>
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<td>±0.1…±0.3</td>
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<td>6K/min</td>
<td>6K/min</td>
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<td></td>
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<td>6K/min</td>
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<td>±1…±3</td>
<td>±1…±3</td>
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<td>±1…±3</td>
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<td>Basic T=+25°C</td>
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<td>4500</td>
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<td><strong>Rated current absorption (A)</strong></td>
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<td>17</td>
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<td><strong>Sound pressure level dB(A)</strong></td>
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<td>63</td>
<td>64</td>
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<td></td>
<td>C model</td>
<td>63</td>
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<td><strong>Supply voltage (Vac)</strong></td>
<td>Basic</td>
<td>400V ±10%/50Hz/3 + N + G</td>
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<td>C model</td>
<td>400V ±10%/50Hz/3 + N + G</td>
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### MODEL 2

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<td>1020</td>
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<td><strong>Temperature fluctuation (K)</strong></td>
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<td>±0.5…±1</td>
<td>±0.5…±1</td>
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<tr>
<td><strong>Temperature changing rate Heating 4/5</strong></td>
<td>C 10 ESS (−70/+180°C)</td>
<td>10K/min</td>
<td>10K/min</td>
<td>10K/min</td>
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<tr>
<td></td>
<td>C 15 ESS (−70/+180°C)</td>
<td>15K/min</td>
<td>15K/min</td>
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<tr>
<td><strong>Temperature changing rate Cooling 4/5</strong></td>
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<td>10K/min</td>
<td>10K/min</td>
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<td></td>
<td>C 15 ESS (+180/-70°C)</td>
<td>15K/min</td>
<td>15K/min</td>
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<td>±3…±5</td>
<td>±3…±5</td>
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<td><strong>Maximum thermal Load (W)</strong></td>
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<td>C 15 ESS T=+25°C</td>
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<td>9000</td>
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<td>C 15 ESS</td>
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<td><strong>Rated current absorption (A)</strong></td>
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<td><strong>Sound pressure level dB(A)</strong></td>
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<td>400V ±10%/50Hz/3 + N + G</td>
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</tbody>
</table>
**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.

<table>
<thead>
<tr>
<th>MODEL</th>
<th>FM340 (C)</th>
<th>FM600 (C)</th>
<th>FM1200 (C)</th>
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<tr>
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<tr>
<td>Temperature fluctuation (K)</td>
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<tr>
<td>±0.1...±0.3</td>
<td>±0.1...±0.3</td>
<td>±0.1...±0.3</td>
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<tr>
<td>Temperature changing rate Heating</td>
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<td>Basic</td>
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<td>6K/min</td>
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<tr>
<td>Temperature changing rate Cooling without the &quot;cold sink&quot;</td>
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<td>Basic</td>
<td>6K/min</td>
<td>6,5K/min</td>
<td>7K/min</td>
</tr>
<tr>
<td>C model</td>
<td>3,8K/min</td>
<td>5,5K/min</td>
<td>5K/min</td>
</tr>
<tr>
<td>Humidity range (%) (τ=-3/+94°C)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10...98</td>
<td>10...98</td>
<td>10...98</td>
<td></td>
</tr>
<tr>
<td>Temperature range for climatic test (°C)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10...95</td>
<td>10...95</td>
<td>10...95</td>
<td></td>
</tr>
<tr>
<td>Humidity fluctuation (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>±1...±3</td>
<td>±1...±3</td>
<td>±1...±3</td>
<td></td>
</tr>
<tr>
<td>Maximum thermal Load (W)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basic T=+25°C</td>
<td>2300</td>
<td>4500</td>
<td>4500</td>
</tr>
<tr>
<td>C model T=+25°C</td>
<td>1500</td>
<td>3000</td>
<td>3000</td>
</tr>
<tr>
<td>Rated power (kW)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basic</td>
<td>6,4</td>
<td>12,5</td>
<td>18,3</td>
</tr>
<tr>
<td>C model</td>
<td>7,3</td>
<td>14,3</td>
<td>20,9</td>
</tr>
<tr>
<td>Rated current absorption (A)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basic</td>
<td>12,8</td>
<td>24</td>
<td>34</td>
</tr>
<tr>
<td>C model</td>
<td>16</td>
<td>29,2</td>
<td>41</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basic</td>
<td>780</td>
<td>985</td>
<td>1180</td>
</tr>
<tr>
<td>C model</td>
<td>830</td>
<td>1090</td>
<td>1280</td>
</tr>
<tr>
<td>Sound pressure level dBA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basic</td>
<td>58</td>
<td>63</td>
<td>64</td>
</tr>
<tr>
<td>C model</td>
<td>83</td>
<td>66</td>
<td>68</td>
</tr>
<tr>
<td>Sound pressure level at steady cond. dBA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basic</td>
<td>54</td>
<td>56</td>
<td>59</td>
</tr>
<tr>
<td>C model</td>
<td>56</td>
<td>60</td>
<td>63</td>
</tr>
</tbody>
</table>

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-Sand 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.

**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.

**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.

**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 chambers come with a wide range of included accessories:

- MyKratos™ and MyAngel24™
- Electromagnetic closing system
- Inspection window
- Self-pivoting wheels and feet
- Air condenser
- Internal light
- Self feeding system (town water through chamber embedded softener)
- No. 1 internal grid shelf
- Humidification water recycling system
- Min/max digital thermostat with independent probe
- Silicone portholes
- Auxiliary free contacts
- Ethernet port
- RS232 serial interface

ACS Smart Cooling Kit

Developed by Angelantoni Test Technologies, ACS Smart Cooling Kit* (patent pending) is a new concept of the compressor Stand-by mode, based on an innovative configuration of the refrigeration circuit managed through new, dedicated software algorithms.

The new system allows a more efficient management of pressures upstream and downstream of the compressor, producing a better control of the cooling capacity and a reduction of the mechanical effort.

The resulting benefits are:

- Up to 20% reduction of power consumption
- Up to 50% noise attenuation
- Increased system reliability
- Better temperature regulation inside the chamber

* Now available on «Universal Use» and «Stability Test» models.

Stand-by mode: the compressor works in “reduced effort” conditions, during the phases in which cooling capacity is not required. Total stand-by times can even reach 70% of the total time of a test cycle.
**Options**

- Additional portholes
- UV lamp
- Handling port hole (available for models from 500 litres up)
- Internal shelves
- Water condenser
- Reinforced floor
- Capacitive probe
- Notch
- 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
- 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.

### 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.