



discovery flower

New eco-friendly test chambers



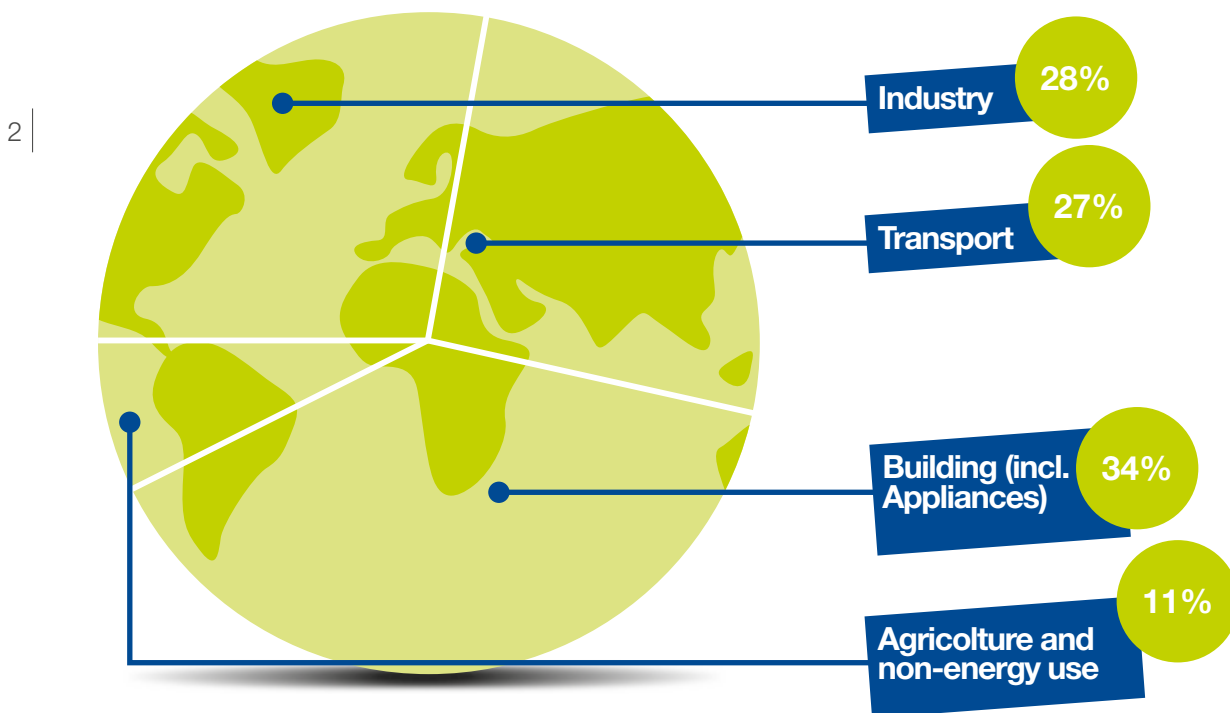
acstestchambers.com



Why is it important to save energy?

The depletion of fossil fuels and the uncontrolled increase of greenhouse gases have caused attention to be focused on the subject of **energy savings**, making it a factor capable of **guiding companies' business decisions**, leading to considerable **economic benefits**.

Global Energy Demand by Sector



Today ACS is proud to present the new Flower® test chamber answering to the new market demands of energy-saving machines.

Flower®

Born to be Green



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

| | 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 | 919 | 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, in Energy Saving mode | 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, in Cooling Booster mode | 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 (%) ($\tau=-3/+94^{\circ}\text{C}$) 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 | | |

1) For Temperature only version add the suffix T

2) $\tau = +4^{\circ}\text{C}/+94^{\circ}\text{C}$ 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

Energy savings pioneers!

Already in **2004**, ACS paved the way to energy savings applied to the environmental simulation sector, obtaining a patent for **Flower®**, the first climatic chamber mindful of the environment... and of the wallet!

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Patent for Flower®
Conceived and engineered for a drastic reduction of energy consumption

2004

2016

New Flower®
The only one able to outdo itself!

Flower® technology The ideal partner

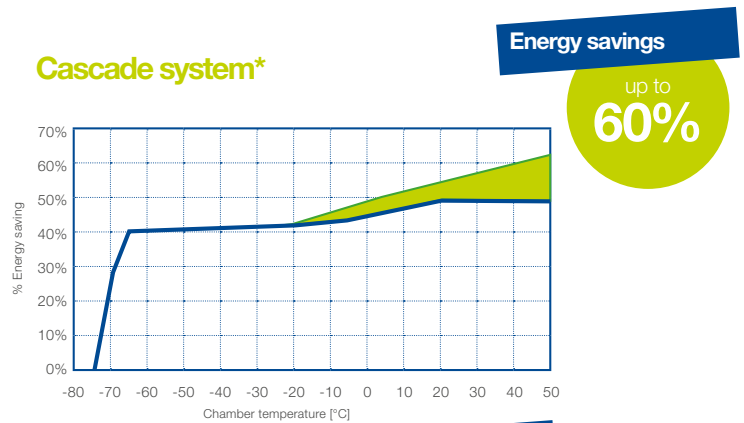
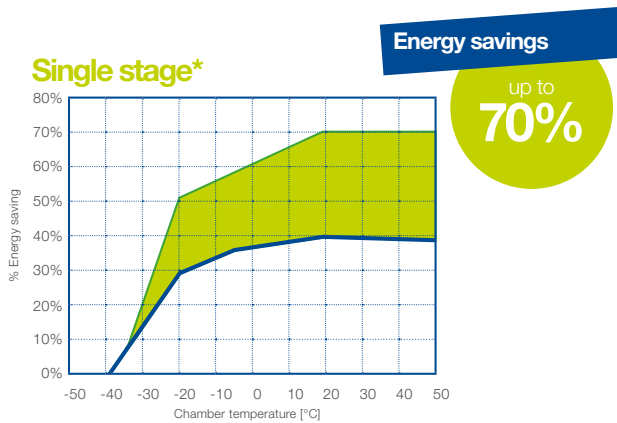
During the test phase, when the requested cold is less than that available, the compressor is kept at the lowest rotation speed (by means of the inverter), and the exceeding cooling capacity is used to cool a special device: the Cold Sink. Today Flower® is equipped with a **new software** system and latest power management algorithms to maximize performance and decrease energy consumption.

ACS Flower® is now equipped with the latest and most innovative **software MyKratos™** and the remote diagnostics and servicing system **MyAngel24™**.



More than a slogan

We've compared the **New Flower®** with a chamber of similar functioning performance.



• The values on the blue line represent the lowest energy savings

• The values on the green line indicate the highest energy savings



INVERTER

Regulates the rotation speed of the compressor on the basis of the requested cold.



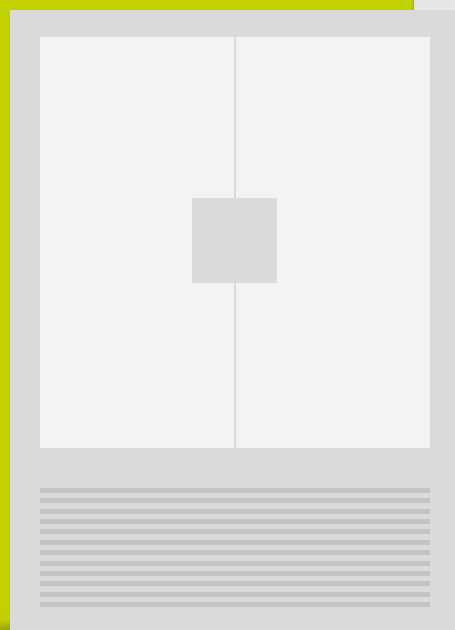
COLD SINK

"Stores" the exceeding cold produced by the cooling system.



NEW SOFTWARE

Special algorithms to increase performance reducing energy-consumption.



Conventional climatic chamber

The cooling system is normally calibrated on the basis of the highest performance required. During the stabilization phase, a significant part of the cooling effect generated by the compressor is not used (the compressor works in bypass mode).

Low efficiency

High energy consumption

Waste of money

Comparison with competitors

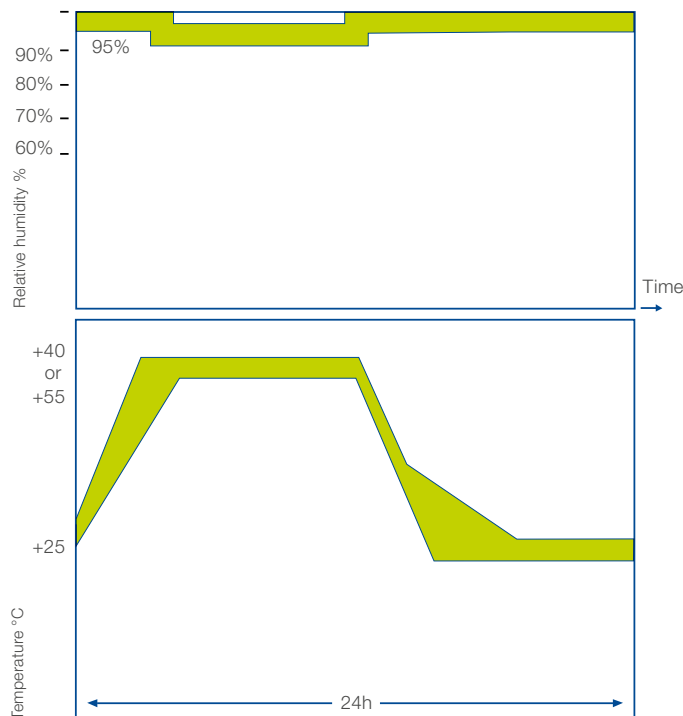
ACS has tested its chambers, comparing them with its competitor's best product, both in stationary conditions and according to international standards:

Comparative tests at steady conditions

| Temp. setting | Flower® 340 single stage | Competitor single stage | Energy Saving |
|---------------|--------------------------|-------------------------|---------------|
| +5°C | 1.12 kw | 1.92 kw | 42% |
| -20°C | 1.26 kw | 2.11 kw | 40% |

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Comparative tests on the International standard: IEC 600 68-2-30



24 hours climatic test, which combines conditions of high humidity with ascending and descending ramps and subsequent stabilization periods

25%

Energy savings



Angelantoni
MORE THAN YOU THINK



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.



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