



*Angelantoni*  
MORE THAN YOU THINK

**discovery** flower

New eco-friendly  
test chambers



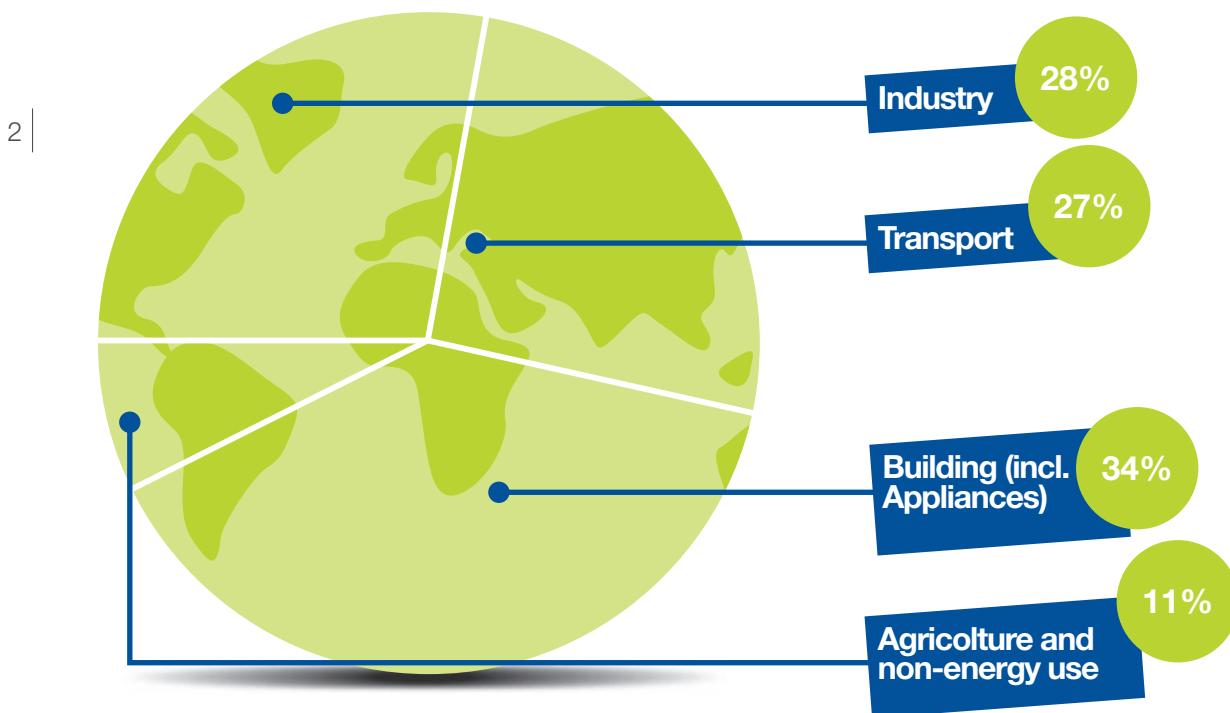
[acstestchambers.com](http://acstestchambers.com)



# 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 <sup>4+5</sup>	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 (%) ( $\tau=-3/+94^{\circ}\text{C}$ ) <sup>2</sup>		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) <sup>5</sup>	Basic T=+25°C	2300	4500	4500
	C model T=+25°C	1500	3000	3000
Rated power (kW)	Basic	6,9	13,4	20
	C model	8,4	16,2	24,2
Rated current absorption (A)	Basic	12,5	24	35
	C model	15	29	42,5
Weight (kg)	Basic	780	985	1180
	C model	830	1090	1280
Sound pressure level dB(A) <sup>3</sup>	Basic	58	63	64
	C model	63	66	68
Sound pressure level at steady cond. dB(A) <sup>3</sup>	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!

4 |



**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

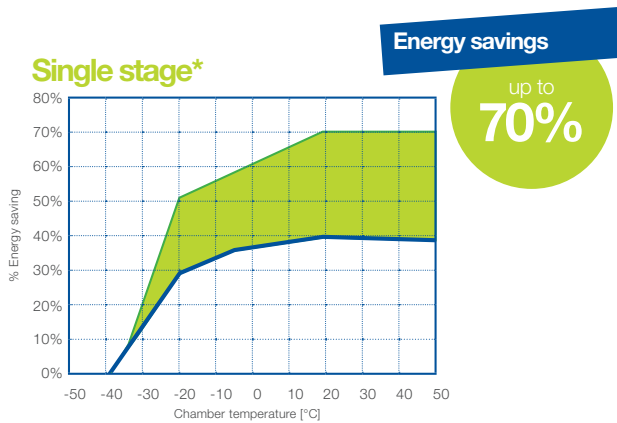
During the test phase, when the requested cold is less than that available, the compressor is kept at the lowest rotation speed (by means of the inverter), and the exceeding cooling capacity is used to cool a special device: the Cold Sink. Today FLOWER® is equipped with a **new software** system and 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™**.

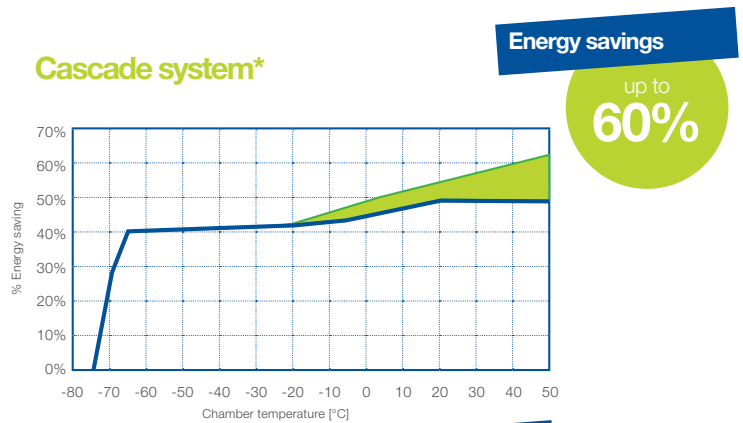


# More than a slogan

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.



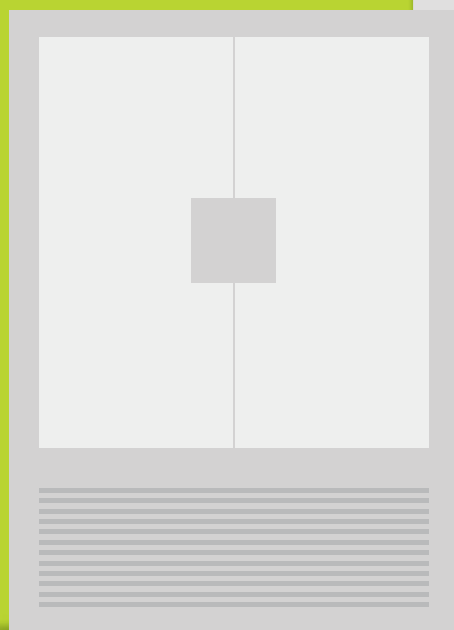
**COLD SINK**

"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).



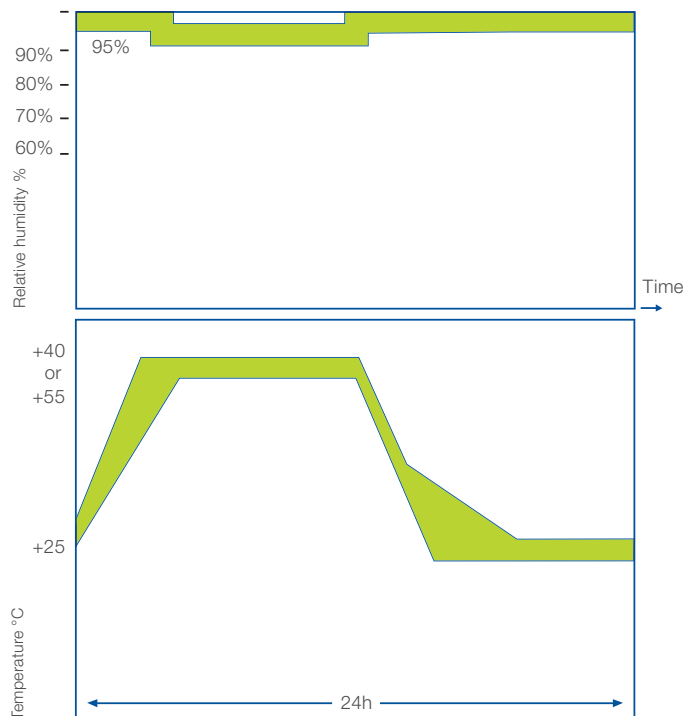
# Comparison with competitors

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%

## 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



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**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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**ThermoFisher**  
SCIENTIFIC



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