EUROVENT

EUROVENT
CERTIFIED PERFORMANCE

Eurovent Association

Eurovent Certification

Activities related to

ENERGY EFFICIENCY

INTRODUCTION

- Eurovent Association:
  Working Groups
- Eurovent Certification:
  For a fair competition on the market
- Energy and:
  - Air Filters
  - Chillers
  - Air Conditioners
  - Air Handling Units
  - Heat Exchangers
  - Cooling Towers
  - Refrigerated Display Cabinets

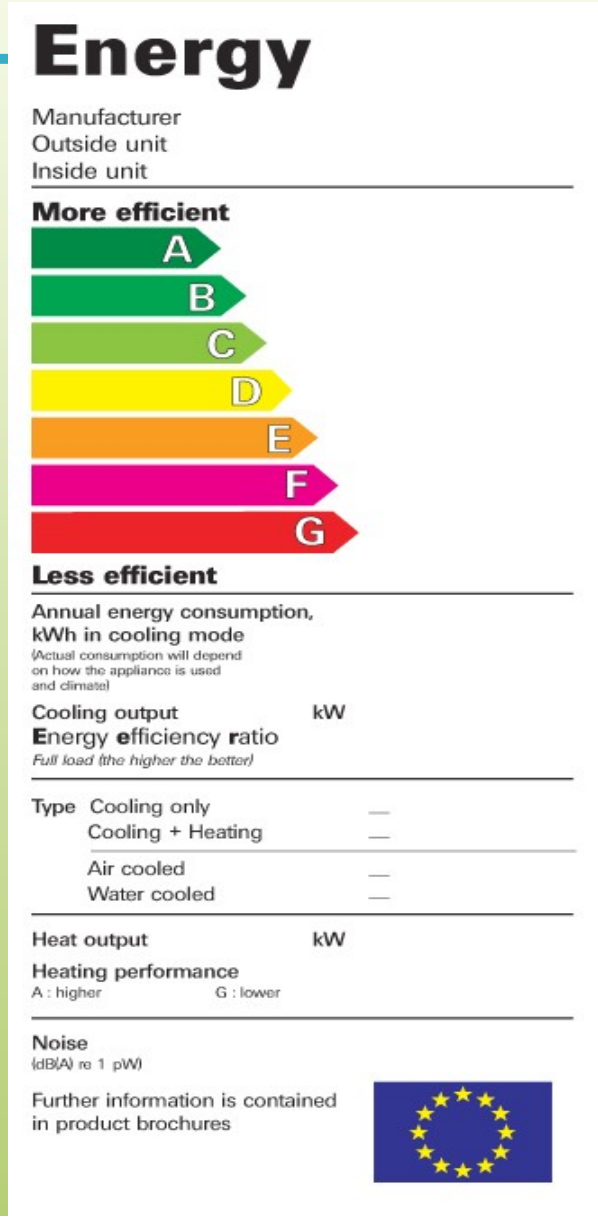
ENERGY EFFICIENCY

- Energy classification
- Minimum energy efficiency
- Implementation through Eurovent certification

AIR CONDITIONERS

- Mandatory Energy labelling
  - – Classification from Eurovent Directory
  - – The Labelling Directive May 2004
  - – Test Standard

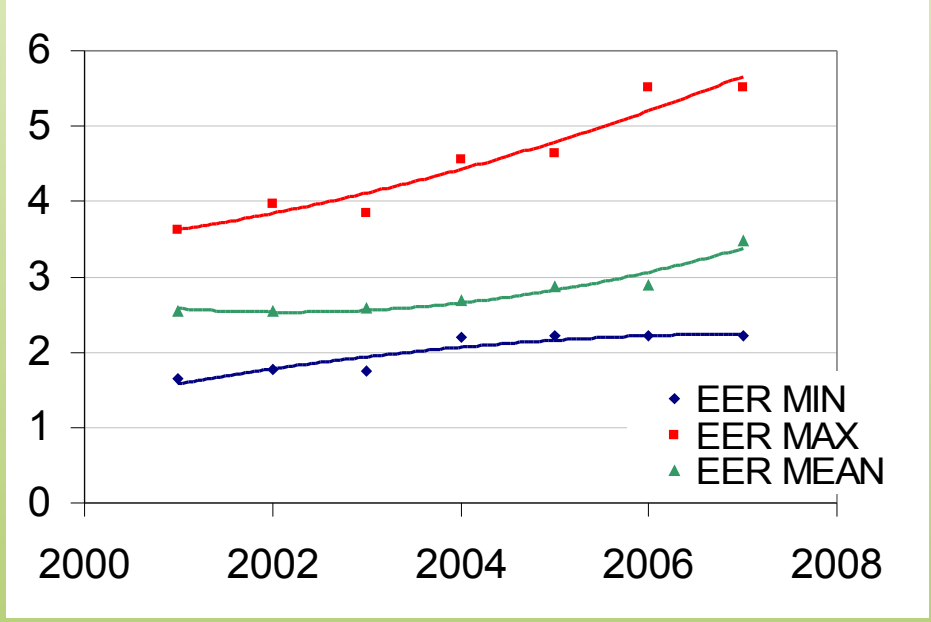
    EN 14511



AIR CONDITIONERS

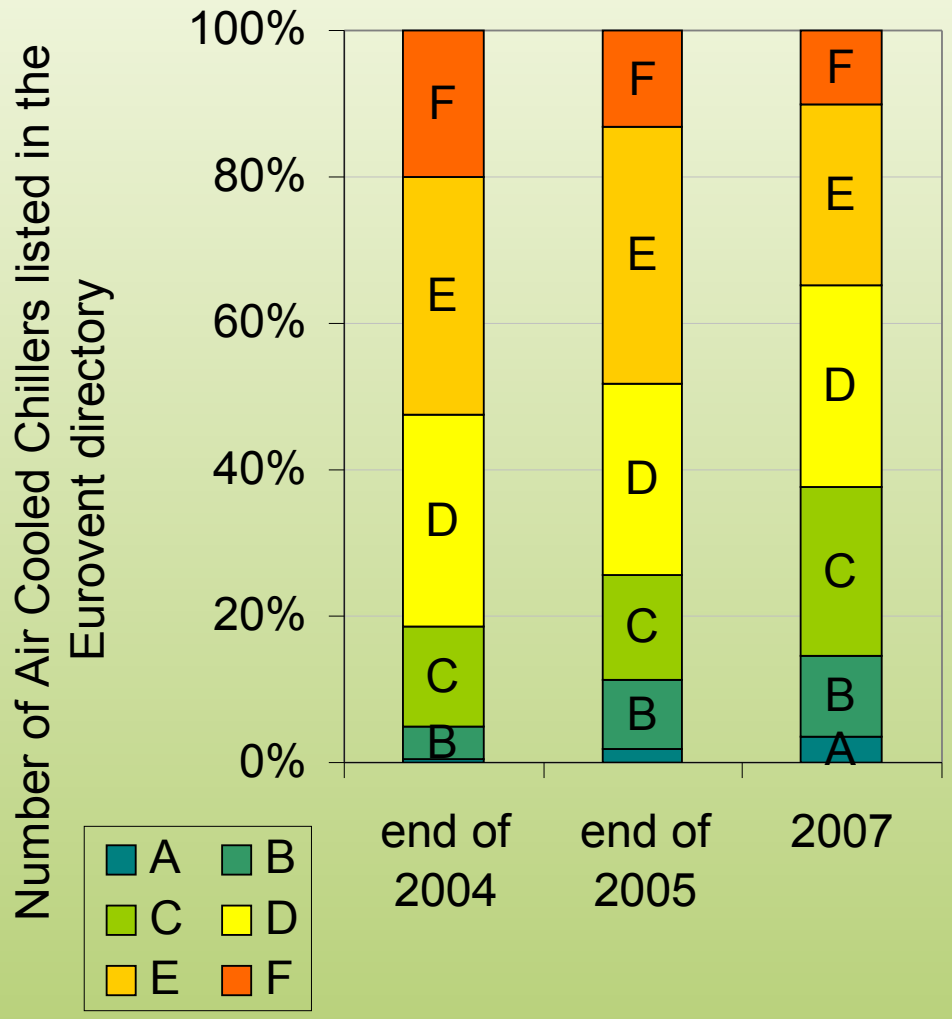
- WG6B and Eurovent Certification
  - Class G already eliminated, elimination of class F in the future
  - Evolution of EER (Split Non-ducted Air Cooled):

	EER MIN	EER MAX	EER MEAN	NB OF UNITS
2001	1,64	3,63	2,55	2597
2002	1,76	3,97	2,55	3251
2003	1,75	3,85	2,58	3078
2004	2,2	4,55	2,68	2081
2005	**2,21**	4,64	2,87	3502
2006	**2,21**	5,51	2,88	2396
2007	**2,21**	5,51	3,47	2973



LIQUID CHILLING PACKAGES

- WG 6A and Eurovent Certification
  - – Voluntary A–G classification (full load) 2005
  - – Class EER
  - Decrease of proportion of classes E and F (figure)
    - – Class COP



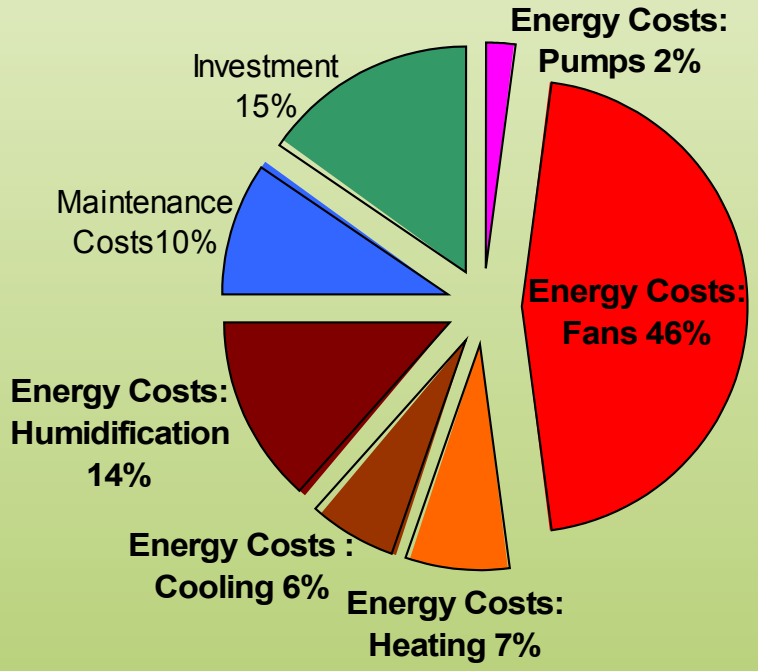
LIQUID CHILLING PACKAGES

- Minimum Energy Efficiency to be Implemented: elimination of lowest class

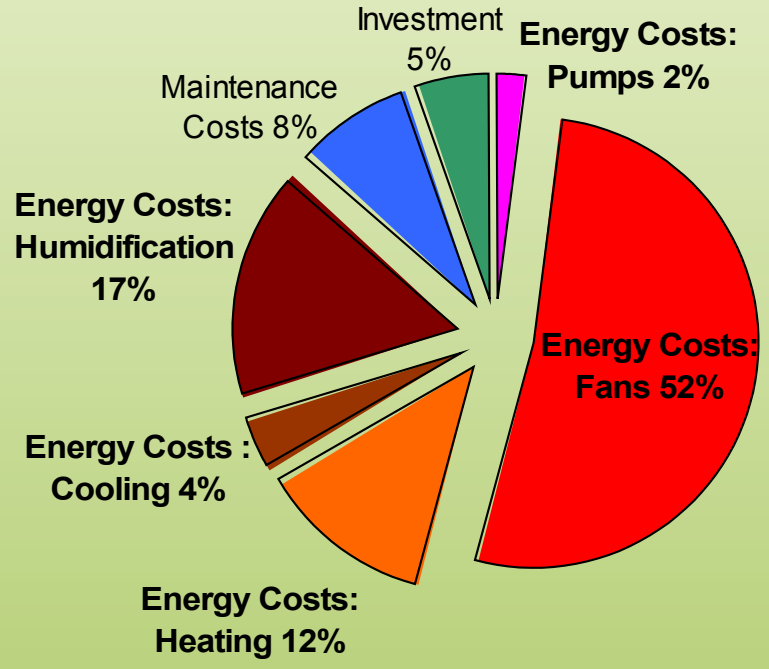
- Development of European Seasonal Energy Efficiency
  - For cooling: ESEER implemented (2006)
  - For heating: ESCOP to be implemented

AIR HANDLING UNITS

- Working Group AHU and Life Cycle Cost
  - ⇒ Document 6/8 "Recommendations for the Calculations of the Energy Consumption for Air Handling Units"
  - ⇒ Document 6/9 "Recommendation for the Calculation of the Maintenance Cost for Air Handling Units"



Typical Ratios for LCC AHU



Office Building

For Continuous Operation

AIR HANDLING UNITS

- Eurovent Certification Programme

Energy classification January 2008

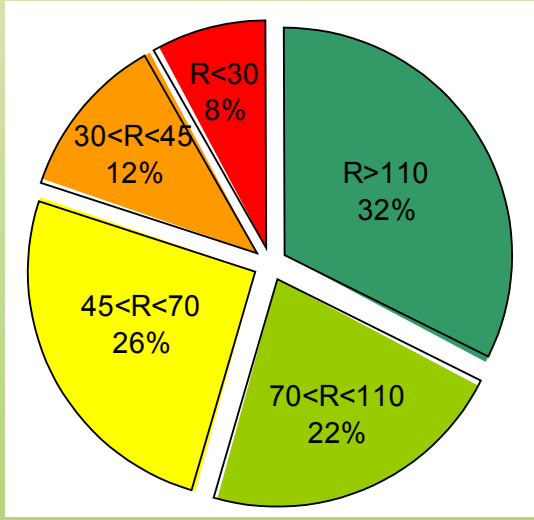
CLASS	AHU Configuration	Requirements for			
		Velocity v [m/s]	Heat recovery [1)]		Absorbed fan motor power
			Efficiency [%]	Pressure drop [Pa]	
A	Units without thermodynamic air treatment	2,5< v ≤ 3,0	-	-	0,95x P_{max}
	Units with air heating	2,0< v ≤ 2,5	-	-	
	Units with additional functions: $q_v \leq 1,5$ m^3/s	2,0< v ≤ 2,5	≥ 47%	≤ 180	
	Units with additional functions: $1,5 < q_v \leq 3,0$ m^3/s	2,0< v ≤ 2,5	≥ 50%	≤ 200	
	Units with additional functions: $3,0 < q_v \leq 7,0$ m^3/s	1,5< v ≤ 2,0	≥ 55%	≤ 225	
	Units with additional functions: $7,0 < q_v \leq 14$ m^3/s	1,5< v ≤ 2,0	≥ 64%	≤ 250	
	Units with additional functions: $q_v > 14$ m^3/s	1,5< v ≤ 2,0	≥ 69%	≤ 270	
B	Units without thermodynamic air treatment	v > 3,0	-	-	P_{max}
	Units with air heating	2,5< v ≤ 3,0	-	-	
	Units with additional functions: $q_v \leq 1,5$ m^3/s	2,5< v ≤ 3,0	≥ 43%	≤ 200	
	Units with additional functions: $1,5 < q_v \leq 3,0$ m^3/s	2,5< v ≤ 3,0	≥ 45%	≤ 225	
	Units with additional functions: $3,0 < q_v \leq 7,0$ m^3/s	2,0< v ≤ 2,5	≥ 50%	≤ 250	
	Units with additional functions: $7,0 < q_v \leq 14$ m^3/s	2,0< v ≤ 2,5	≥ 58%	≤ 275	
	Units with additional functions: $q_v > 14$ m^3/s	2,0< v ≤ 2,5	≥ 63%	≤ 300	
C	Any	No requirements			

HEAT EXCHANGERS

- Eurovent Certification Programme

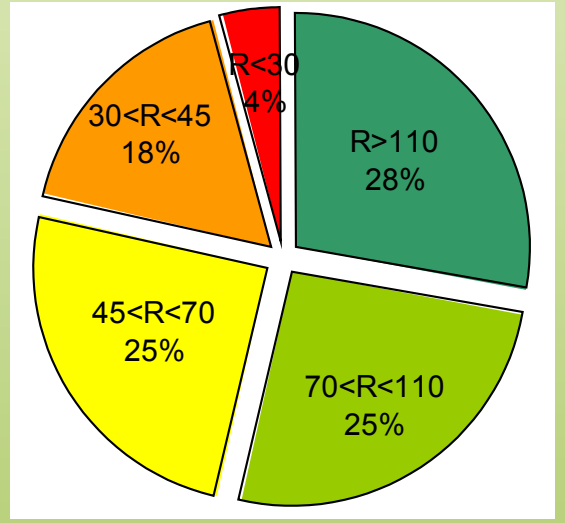
Energy classification

Air Cooled Condensers



Class	Energy Consumption	Energy Ratio *R*
A	Extremely low	*R* > 110
B	Very low	70 < *R* < 110
C	Low	45 < *R* < 70
D	Medium	30 < *R* < 45
E	High	*R* < 30

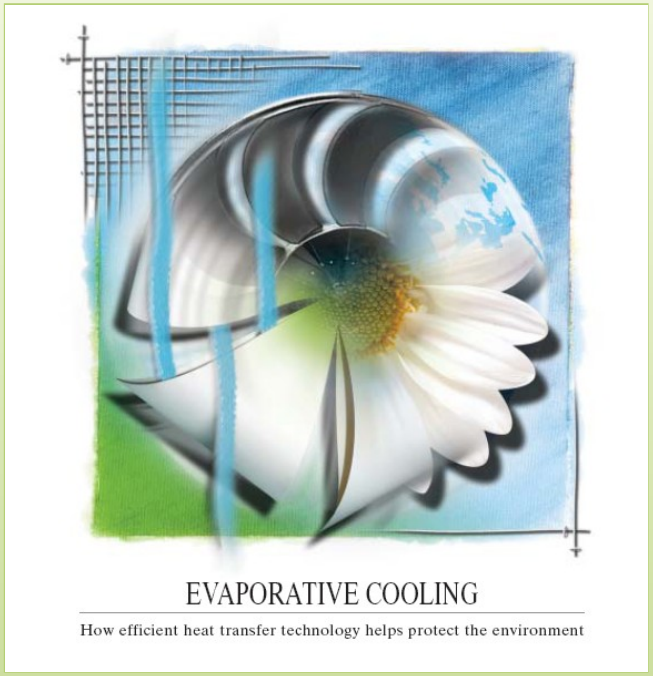
Dry Coolers



COOLING TOWERS

- Eurovent WG9
  - Document 9/7 and 9/8

    *Proposal for Standards "Recommended Operation and Design of **Evaporative Cooling** Equipment"*



- Certification in collaboration with CTI

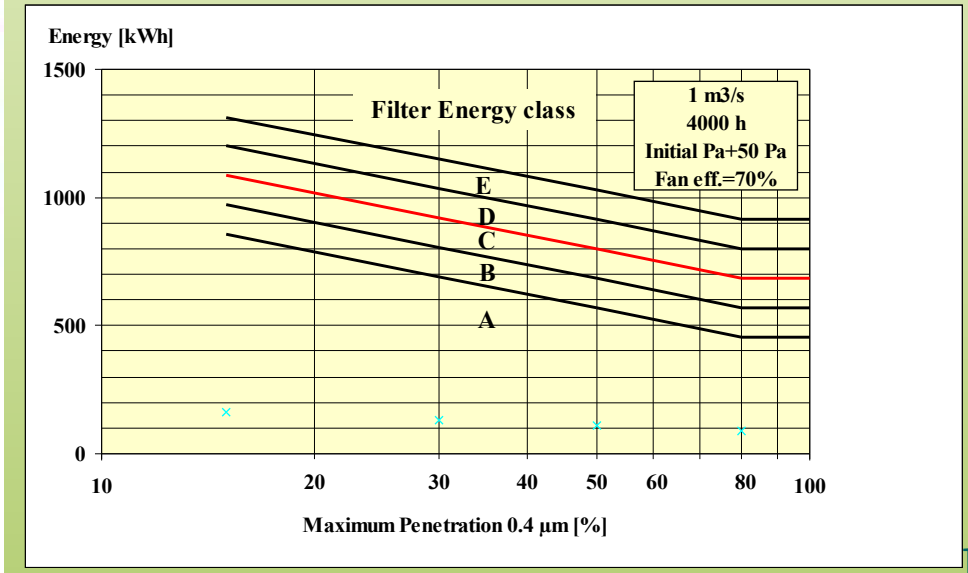
AIR FILTERS

- Life Cycle Cost
  - Eurovent Working Group WG4B
  - Recommendation REC 10
  - Pressure drop ⇒ Fan energy consumption
  - Clean the air and save energy

AIR FILTERS

- Energy Rating
  - Eurovent Working Group WG4B
    - ⇒ ***Proposals of classification « Minimum Life Efficiency »***

- Eurovent Certification Programme
  - Fine Air-Filters class F5-F9
  - Started Feb. 2007



Conclusions

- Standardisation
- Certification to check an remove low efficiency product
- Commitment of EUROVENT to energy efficiency improvement

THANK YOU FOR YOUR ATTENTION