Eurovent Certification Programme

Main features

EUROVENT
THE EUROPEAN COMMITTEE OF HVAC&R MANUFACTURERS

Eurovent Association

Definition and objectives

Definition and objectives of Eurovent Association

- **Eurovent**, the European Committee of Air Handling and Refrigeration is the representative of the European refrigeration, air conditioning, air handling, heating and ventilation industry and representing trade associations from European and non-European countries.
- Represents over 1,000 companies in 13 European countries.
- Eurovent's main objectives:
  - To support the National Associations effectively
  - To develop third party product certification programmes for our industry through *Eurovent Certita Certification* (ECC).
  - To represent the members interests towards relevant European, national and worldwide bodies.
- Eurovent's structure includes
  - Board Assembly.
  - General Assembly

Membership levels:

Name	Description
MEMBER ASSOCIATION EUROVENT	National associations from the EMEA region.
AFFILIATED MANUFACTURER EUROVENT	Manufacturers that belong to one of Eurovent's national association Members.
CORRESPONDING MEMBER EUROVENT	Manufacturers from EMEA countries, which do not yet have a national association Member within the Eurovent network.
ASSOCIATE MEMBER EUROVENT	Organisations that are engaged in activities related to the sectors the Eurovent association covers.

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«Eurovent Certified Perfomance» Mark

Certification body, programmes,
basic principles and procedure

Certification Body Eurovent Certita Certification (ECC)

- *Eurovent Certita Certification* (**ECC** is a major European certification body in the field of:
  - Heating (H)
  - Ventilation (V)
  - Airconditioning (AC)
  - **Refrigerationn** (R)

  = **HVAC&R**

Key facts and figures:

- A staff of **41 people.**
- **More than 400 audits** performed per year..
- Partnership with **29 independent** testing laboratories.
- **4 operational departments** (Thermodynamics, Refrigeration, Ventilation & Comfort)

Association	Certification Body	Certification Mark

Key figures about ECP

- The **Eurovent Certified Perfomance mark (ECP)** is defined by:
  - Voluntary third party certification programmes**.**
  - Mark recognized in all Europe and beyond.
  - Accreditation according to ISO/EN 17062:2012.
  - Continuous verification process:
    - Tests performed by independent and accredited laboratories
    - Factory audits

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Key figures of Eurovent Certified Perfomance:

- 18 certification programmes in activity
- 195 certified manufacturers
- 223 certified tradenames
- +50 000 certified references
- +80 experts participating to our compliance committees
- 13 European independent laboratories
- +18 years of experience

Refrigerated Display Cabinets	Air Handling Units
Air-conditioners	Rooftops
Fan coil units	Cooling towers
Filters	Drift elimiminators
Chilled Beams	VRF
Condensers	Dry coolers
Chillers	Air to air heat exchangers

Key figures about ECP

Main features of the Certification Programs:

- Each certification program, is designed for each type of product.
- Eurovent certification is open to all manufacturers of European products and non-europeans, regardless of the membership of the national associations of Eurovent, size or volume of sale of the company.
- Only certified products to be sold in Europe.
- The programs are based on ISO or CEN standards, if it does not exist, is used a remarkable document of Eurovent.
- This is to certify the entire product range, not isolated models.
- Are certified only a limited number of parameters in order to facilitate comparisons.
- For each program you select an independent laboratory. In the event that more than a laboratory certifies the same product, it is performed, with regularity, the verification that the results obtained are comparable.
- When the product is certified the participant can incorporate the certification logo in all its documentation. The certificate is valid until a date determined defined in each program.

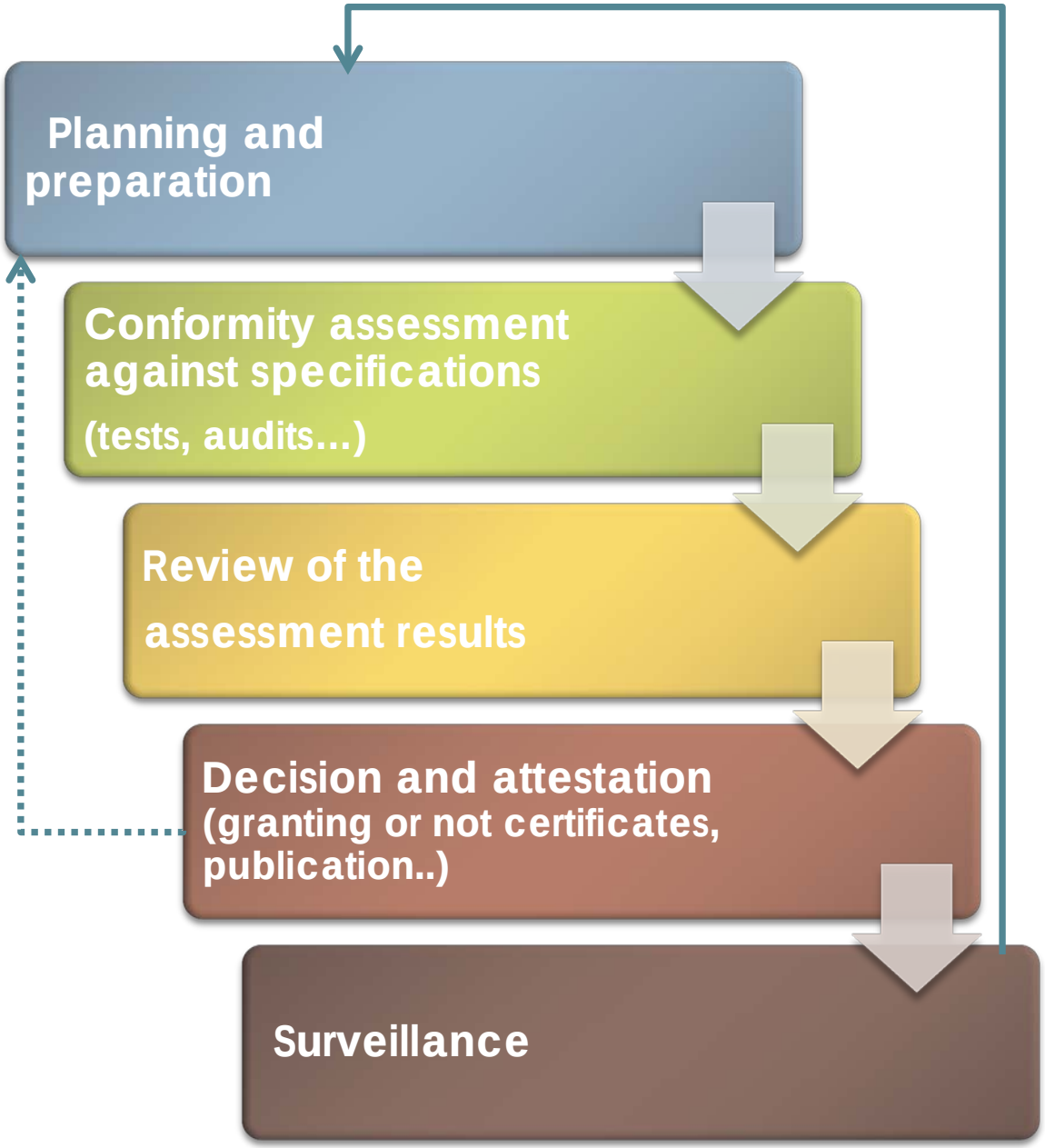
Main features of the ECP

Basic principles of certification:

- Declaration of data by manufacturers
- Tests in independent laboratories
- Main components of the cabinets are certified
- Verification that measurements match with declared values
- Audit of each concerned production facility
- Data are made public
- Continuous upgrade of rules because of the market or new regulations

Basic principles of certification ECP

Certification Procedure



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Certification Programme of Refrigerated Display Cabinets (RDC)

Objectives, main features, certification procedure, publishing data and energy labelling

Main features ECP of RDC:

- Scope defined to cover the **full range** of remote cabinets
  - 5 categories, a total of 100 Basic Model Group (BMG)
  - At least two models by BMG to enter the programme (about 80% of sales are declared on the web site)
- Manufacturers declare
  - Range / Name of the model
  - Cross-sections of the cabinet
  - Performance under laboratory conditions
  - List of main components = Bill of Material (BOM)
  - List of production places
- ECC arranges tests and audit + evaluates
  - Energy Efficiency Index and Energy Efficiency Class

Main features Certification Programme of RDC

Reasons to participate in ECP:

1. European targets on energy savings are set at 20% by 2020 (Kyoto, 1997).
2. Refrigeration can be counted between 30 to 60 % of the electricity costs of a supermarket.
3. Incentives: White certificates (France: CEE, Italy: TEE, UK, Denmark…).
4. Difference in efficiency of products should be visible for design offices, consultants and end-users, so that it is possible to make the right choice

Reasons to participate in ECP of RDC

And... how do we certify our cabinets?

1 Planning

Manufacturers declare:

- ✓ Range / Name of the model
- ✓ Cross-sections of the cabinet
- ✓ Performance under laboratory conditions
- ✓ List of main components (BOM)
- ✓ List of production places

2 Test cabinets

Cabinets tests in independent laboratories (IMQ- Milán)

*To see the test procedure below

3 Evaluation

ECC compares the test results with the data provided by the manufacturer in order to evaluate the conformity of them according to specific criteria

European Standard EN/ISO23953:2006 + Certification manual, Operation manual, Rating standard

4 Certification

Reviewof the assessment results

Publishing the data readability of the ECC website

WWW

5 Surveillance

Surveillance and control of the production with periodic factory audits

Control that what is sold is declared

Control that what is declared is sold

Certification Procedure for RDC:

- A very large number of configurations dedicated to each type of product and usage of customers
- Integrated vs. Remote
- **5 categories:**


Service counters


Multidecke rs and vertical open


Semi and verticals with doors


Islands


Combi freezers

Testing requirements and certified characteristics:

- Reference standards:
  - European Standard EN/ISO 23953:2006 + amendment A1 (2012)
  - Certification manual
  - Operation manual
  - Rating standard

  } Internal

- Certified performance:
  - Warmest and coldest product temperature **(temp. class)**
  - Heat Extraction rate
  - Evaporating temperature
  - **DEC**- Direct Electrical energy Consumption
  - **REC** - Refrigeration Electrical energy Consumption
  - **TDA** – Total Display Area
  - **EEI – Energy efficiency Index & class**

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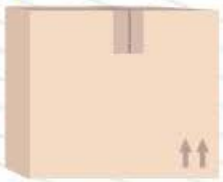
Independent testing:

- IMQ – Milan (Italy)
  - International independent company
  - Variety of customers
  - Working on new knowledge, better products and clear recommendations for policy and processes.

*How does the test cabinet procedure work?



FROST-TROL delivers the cabinet itself and information needed for the installation

The technician of FROST-TROL attends to the setting up of the cabinet

The test begins

These data are recorded:

Temperatures
Humidity
Pressures
Flows
Energy consumption

24h

The independent laboratory (IMQ) prepares a test report

ECC analyses and compares the test results

Cabinet Certification

Certified performance

Warmest and coldest product temperature (temp. class)
Heat Extraction rate
Evaporating temperature
Direct Electrical energy Consumption (DEC)
Refrigeration Electrical energy Cons. (REC)
Total Display Area (TDA)

Energy efficiency Index (EEI) and class

Testing procedure (I):

- The manufacturer deliver the cabinet itself and information needed for the installation
- The compressor and condenser used for the test are provided by the laboratory and are in a separate room next to the climate test chamber
- The technician of the manufacturer attend to the setting up of the cabinet
- The test is conducted by the laboratory during 24 hours, the manufacturer can't attend to this test
- Cabinetisloadedwithstandardpackagestomeasurethepr oducttemperatureinthedifferentareasofthecabinet
- Ambient conditions strictly controlled (temp. class 3)
- Temperatures, humidity, pressures, flows and energy consumption are recorded

Testing procedure (II):

- Test report is sent by the laboratory to *Eurovent Certita Certification* which must analyze data and declare the conformity (or not) of obtained performances
- **Tolerances.** When tested in the independent laboratory, the obtained results shall not differ from the claimed values by more than:

Warmest product temperature (laboratory conditions)	+0,5ºC
Coldest (chilled) product temprerature (laboratory conditions)	-0,5ºC
Heat extraction (laboratory conditions) - Kwh/24h	+10%
Evaporating temperature (laboratory conditions)	-1ºC
DEC (Kwh/24h)	+5%
REC (Kwh/24h)	+10%
TEC (Kwh/24h)	+10%
TDA (m2)	-3%
EEI – Energy Efficiency Index EEI (laboratory conditions)	Failed if TEC is failed
The measured M-package temperature class shall equal to or inside the claimed class, with a tolerance of:	+/-0,5ºC

Control of production:

- Control that what is sold is declared
  - Detailed procedure for audit of factory, where recent orders should match with declared products, including a control of the Bill of Material (BOM)
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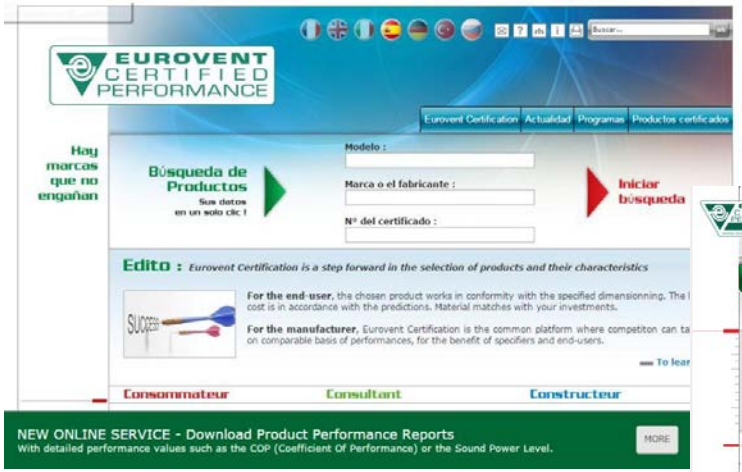
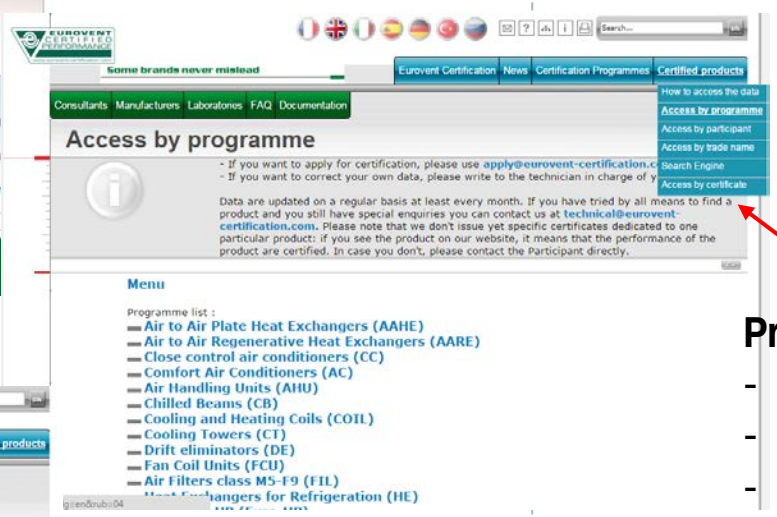
  - Detailed procedure for audit of factory, where declaration should match with recently sold products, including a control of the Bill of Material (BOM)

- **Publishing the data. Readability of the ECC website.**
- End-users look for products by sizing and not always according to their ISO class (RVC1...)
  - Presentation of data per type and then by cross-sections (main dimensions) + sketch
- Not easy to decrypt temperature classes (3M1, 3M2...)
  - Introduction of the temperature of the store and field coefficients
  - Data are provided to ECC under laboratory conditions (standard conditions)
  - Heat Extraction Rate and Evaporation Temperature are converted into store conditions

Publishing the data. Readability of the ECC website.



Home: Product search



Product search by:

- **Programme**
- **Participant**
- **Certificate**
- **Trade name**

Product category choice

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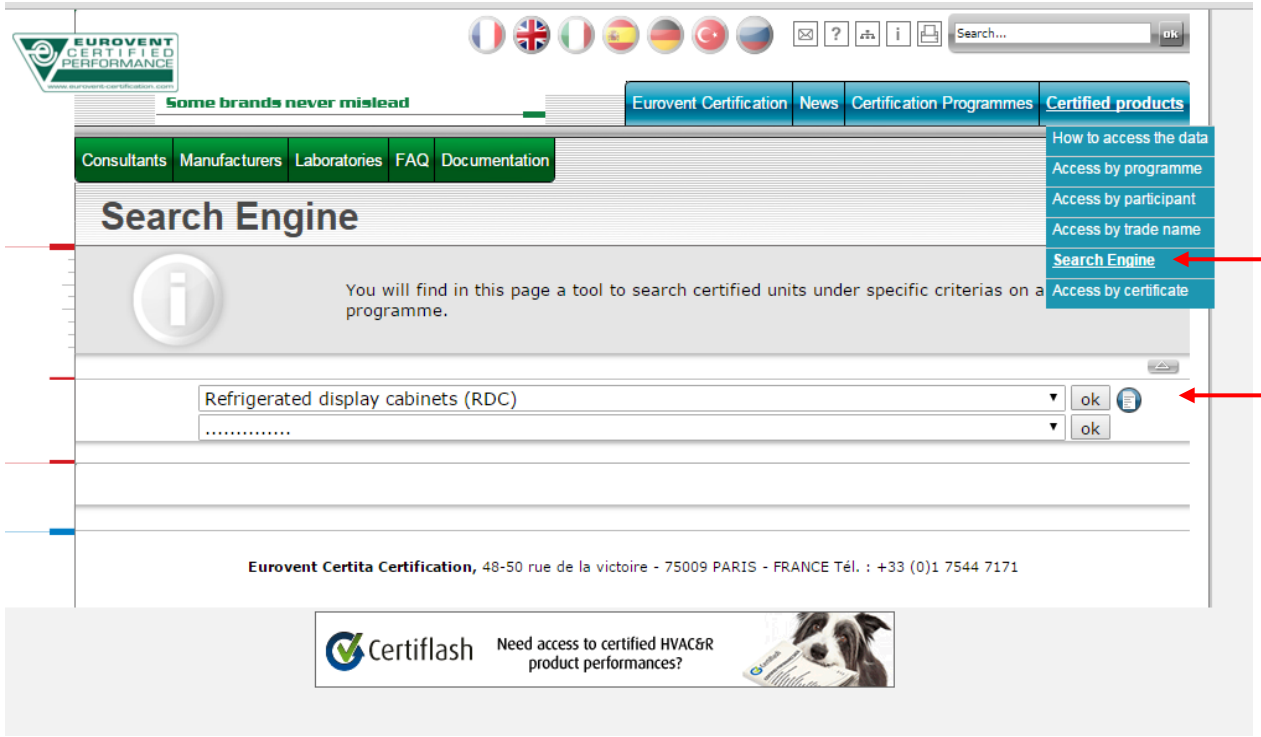
Publishing the data. Readability of the ECC website.

How to use the new searh engine

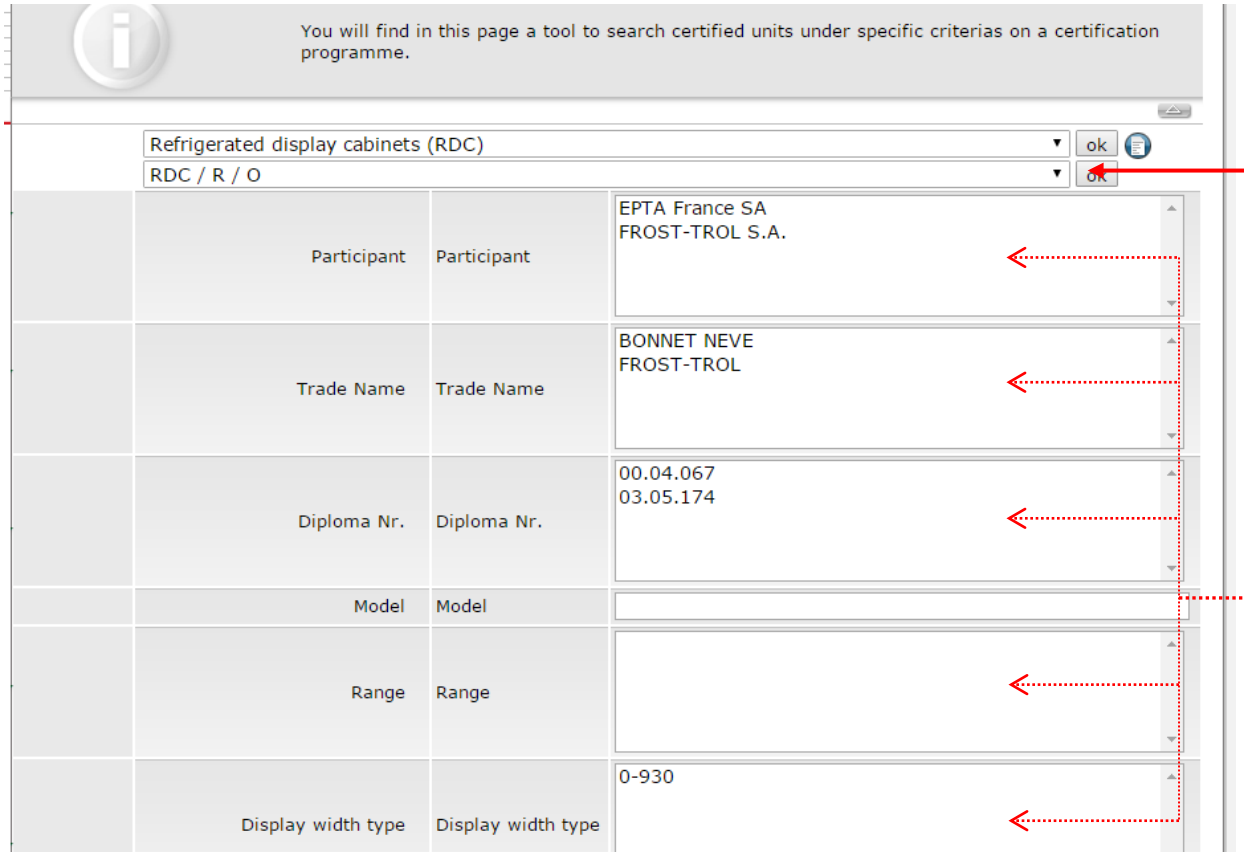


1. Select «SEARCH ENGINE»

2. Select «RDC»

Publishing the data. Readability of the ECC website.

How to use the new searh engine



3. Select kid of product:

RDC/R/CF: Combi freezers

RDC/R/I: Islands

RDC/R/O: Multideckers and vertical open

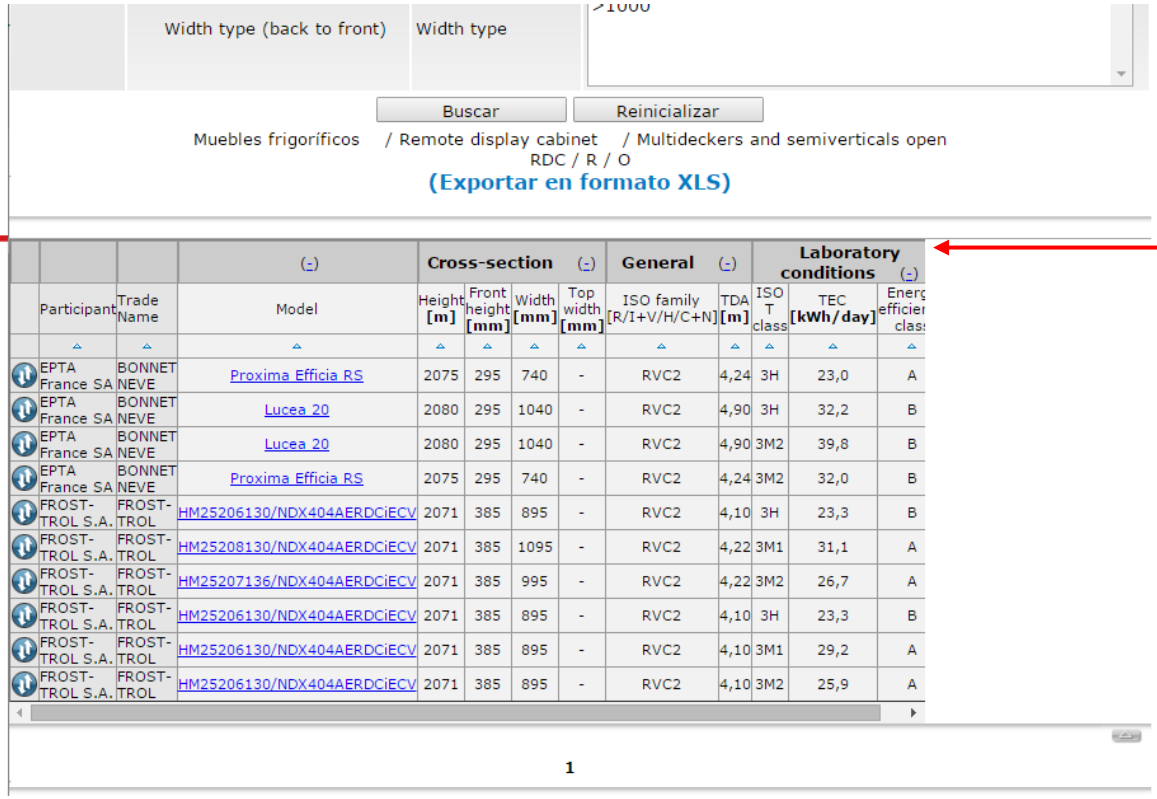
RDC/R/SC: Service counters

RDC/R/WD: Semi and verticals with doors

4. Select to filter

Publishing the data. Readability of the ECC website.

How to use the new searh engine



			(-)	Cross-section				(-)	General			Laboratory conditions		(-)
	Participant	Trade Name	Model	Height [m]	Front height [mm]	Width [mm]	Top width [mm]		ISO family [R/I+V/H/C+N]	TDA [m]	ISO T class	TEC [kWh/day]	Energ efficie class	
	EPTA France SA	BONNET NEVE	Proxima Efficia RS	2075	295	740	-		RVC2	4,24	3H	23,0	A	
	EPTA France SA	BONNET NEVE	Lucea 20	2080	295	1040	-		RVC2	4,90	3H	32,2	B	
	EPTA France SA	BONNET NEVE	Lucea 20	2080	295	1040	-		RVC2	4,90	3M2	39,8	B	
	EPTA France SA	BONNET NEVE	Proxima Efficia RS	2075	295	740	-		RVC2	4,24	3M2	32,0	B	
	FROST-TROL S.A.	FROST-TROL	HM25206130/NDX404AERDCiECV	2071	385	895	-		RVC2	4,10	3H	23,3	B	
	FROST-TROL S.A.	FROST-TROL	HM25208130/NDX404AERDCiECV	2071	385	1095	-		RVC2	4,22	3M1	31,1	A	
	FROST-TROL S.A.	FROST-TROL	HM25207136/NDX404AERDCiECV	2071	385	995	-		RVC2	4,22	3M2	26,7	A	
	FROST-TROL S.A.	FROST-TROL	HM25206130/NDX404AERDCiECV	2071	385	895	-		RVC2	4,10	3H	23,3	B	
	FROST-TROL S.A.	FROST-TROL	HM25206130/NDX404AERDCiECV	2071	385	895	-		RVC2	4,10	3M1	29,2	A	
	FROST-TROL S.A.	FROST-TROL	HM25206130/NDX404AERDCiECV	2071	385	895	-		RVC2	4,10	3M2	25,9	A	

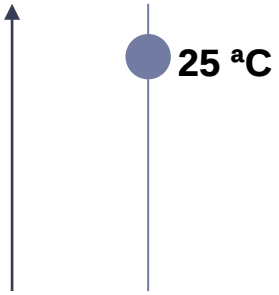
1

5. After filtering, you will obtain a completed list with all the certified cabinets that meet the requirements.
This list can be exported as an Excel file in order to do comparatives easily

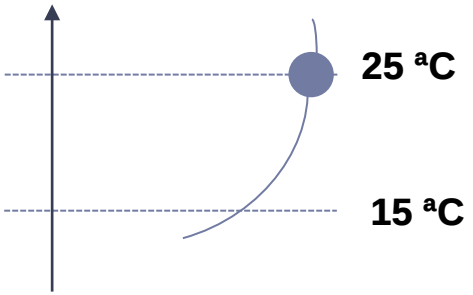
Publishing data. Store conditions:

- Laboratory conditions: *tests chamber climate CLASS 3*

Dry Temp (ºC)	Relative Humidity (%)	Duty point (ºC)	Absolute humidity [gwater/kgdrya air]
25	60	16,7	12



- Store conditions 25°C
  - Not so homogeneous than perfect laboratory conditions
  - Real-usage of cabinets is affected
  - All manufacturers use the same coefficients: so it remains comparable
  - One reference refrigerant: R404a



Labelling (Current system):

1º. Calculate the Efficiency of the cabinet (a)

a= TEC (kWh/día) / TDA (m2)

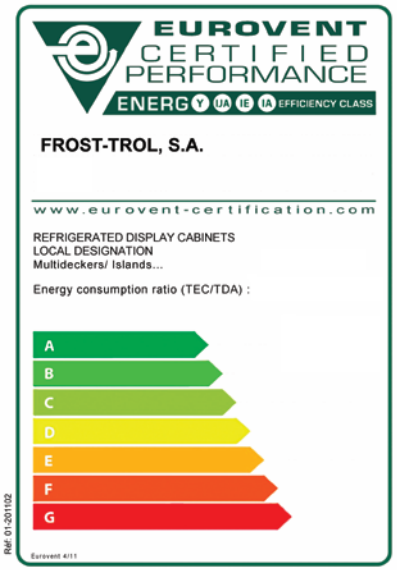
- Roughly represents an energy consumption reported to quantity of products presented
- To be noted: the lowest the efficiency, the most efficient is the cabinet (!)

2º. Market figures (b):

b= (TEC/TDA)**reference**

3º. EEI = (a/b)x100

Energy efficiency index EEI	Energy efficiency class
EEI <55	A
55 ≤ EEI < 75	B
75 ≤ EEI < 90	C
90 ≤ EEI < 100	D
100 ≤ EEI < 110	E
110 ≤ EEI < 125	F
125 ≤ EEI	G



Energy labelling

Type of cabinet		Application: ISO Temperature class	Reference value for (TEC/TDA)
	RVC1, RVC2	3H	10.1
		3M2	12.3
		3M1	13.4
		3M0	14.5
	RVC3	3H	13.8
		3M2	16.0
	RVF1	3L3	29.0
	RVF4	3L1	28.5
	RVC4	3H	6.1
		3M2	7.4
		3M1	8.0
		3M0	8.7
	RHC1	3H	6.2
		3M2	6.7
		3M1	7.2
	RHF1	3L3	21.0
	RHC3, RHC4	3H	5.5
		3M2	5.8
		3M1	6.2
	RHF3, RHF4	3L1	15.0
		3L2	14.0
		3L3	13.0
	RHC5, RHC6	3H	4.3
		3M2	4.7
		3M1	5.0
	RHF5, RHF6	3L1	12.0
		3L2	11.2
		3L3	10.4
	RYF3	3L2	30.0
		3L3	29.0
	RYF4	3L2	28.5
		3L3	27.6

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