

SELECTION OF EVAPORATIVE TOWERS / COOLERS

Things to take into account

29/04/2021

Michael Schippers

*Owner SCS – Representative of cooling
tower Manufacturer **Evapco** in BeLux*



Evaporative Cooling

- Evaporative cooling is Thermodynamically the most efficient way of cooling
 - Low Energy consumption
 - Small footprint
 - Low Sound

Things to take into account when selecting your perfect cooling tower

- Today's limited selection of topics:
 - Thermal Performance
 - Sound
 - Water Source



**Certificated Capacity
performance =**

**Guaranteed Energy
performance**

Your Calculation = Reality



APPROVED

EUROVENT CERTIFIED PERFORMANCE
www.eurovent-certification.com

evapco

CHILLER

BUILDING AIR HANDLER

OUTSIDE AIR →

RETURN AIR ↑

SUPPLY AIR →

**EUROVENT Certification
on Cooling Towers**

**Thermal Performance Guarantee
of your Building Cooling System**

The diagram illustrates a building cooling system. At the top is an evaporator coil with a Eurovent logo and the word "evapco". Below it is a chiller unit with a Eurovent logo. At the bottom is a building air handler with a Eurovent logo. The air handler has "OUTSIDE AIR" entering from the left, "RETURN AIR" entering from the bottom, and "SUPPLY AIR" exiting to the right. Blue lines represent the chilled water loop connecting the evaporator, chiller, and air handler. A purple line represents the condenser water loop connecting the evaporator, chiller, and air handler. The word "APPROVED" is written in large, orange, 3D letters at the top right. The Eurovent logo is repeated on the evaporator, chiller, and air handler. Below the diagram, the text "EUROVENT Certification on Cooling Towers" is followed by an equals sign, and then "Thermal Performance Guarantee of your Building Cooling System".

If not



Reality of calculated energy consumption of the building

Guaranteed Thermal Performance

Product Lines Certified by Eurovent - CTI



Independent Certification Program, performing tests and measurements, guaranteeing thermal performance

Visit
www.eurovent-certification.com
or www.cti.org





- On the data sheet is mentioned:

Product Line is CTI/ECC Certified. Selection is rated in accordance with CTI Standard 201 RS.

- Remark: CT of Manufacturers with production plant in Belgium have certified products

<https://www.eurovent-certification.com/>



Certified products >

HOME > ADVANCED SEARCH

Fields of application / *Application*

Certification Mark / *marque de certification*

* Product / *Produit*

Manufacturer / *Fabricant*

Trade mark / *Marque*

Product type / *Type de produit*

Certificate number / *N° de certificat*

CLEAR

SEARCH

<https://www.eurovent-certification.com/>

80 results

80 results in [Cooling Towers / Tours de refroidissement](#)

SHOW



<https://www.eurovent-certification.com/>

Recently Chosen values:



Manufacturer / Fabricant

Trade mark / Marque

Certificate number / N° de certificat

Keywords / Mots clés

Range / Gamme

Product type / Type de produit

CLEAR



<https://www.eurovent-certification.com/>

CT > EVAPCO EUROPE BVBA > AT Line-AT

Manufacturer / Fabricant

EVAPCO EUROPE BVBA



Trade mark / Marque

Choose



Certificate number / N° de certificat

Keywords / Mots clés

Range / Gamme

Product type / Type de produit

AT LINE-AT



Choose



< CLEAR ALL

CLEAR

UPDATE

CT > EVAPCO EUROPE BVBA > ΔT Line-ΔT

Manufacturer / Fabricant: EVAPCO EUROPE BVBA

Trade mark / Marque: Choose

Certificate number / N° de certificat: [Empty]

Keywords / Mots clés: [Empty]

Range / Gamme: ΔT LINE-ΔT

Product type / Type de produit: Choose

< CLEAR ALL CLEAR UPDATE

To download 1 Product Performance Rating - click on the PFR icon next to the model name.
 To download > 1 Product Performance Rating - use the checkboxes and click on the green Download button **DOWNLOAD** located above the tables.
Important: downloads or exports are limited to 10 files.

Pour télécharger le Product Performance Rating – cliquer sur l'icône à côté du nom du modèle.
 Pour télécharger > 1 Product Performance Rating – sélectionner les modèles et cliquer sur le bouton **DOWNLOAD** situé au-dessus des tableaux.
Important: les téléchargements ou exports sont limités à 10 modèles.

Please scroll to the bottom of the page to read more result. / Faire défiler vers le bas de la page pour voir plus de résultats.


Download selected (0) PDF **DOWNLOAD** Export selected (0) CSV **EXPORT**

Diploma Nr. : 15.04.001	Range : AT Line-AT	download PDF	<input type="checkbox"/>
Participant : EVAPCO EUROPE BVBA	Factory country : Italy		
Factory city : Piateda Sondrio	Web link : www.evapco.com		
Software name : Spectrum	Software version : 2.2020.3101		
Diploma Nr. : 15.04.001	Range : AT Line-AT	download PDF	<input type="checkbox"/>
Participant : EVAPCO EUROPE BVBA	Factory country : Belgium		
Factory city : Tongeren	Web link : www.evapco.com		
Software name : Spectrum	Software version : 2.2020.3101		



Diploma Nr. : 15.04.001

Range : AT Line-AT

[download PDF](#) 

Participant : EVAPCO EUROP

CTI Certification Validation Number C13A-99R21

March 28, 2019 (Revision 21)

AT Line – AT

Factory city : Tongeren

AT Line – AT Models, USS/UAT Models, And UT Models 4 ft Nominal Width Units

Software name : Spectrum

14-2E4	14-2F6	14-2E9	14-2F12
14-3E4	14-3F6	14-3E9	14-3F12
14-2F4	14-2G6	14-2F9	14-2G12
14-3F4	14-3G6	14-3F9	14-3G12

All models above have prefix "AT", "USS", "UAT", or "UT"
See Footnotes for Additional Information

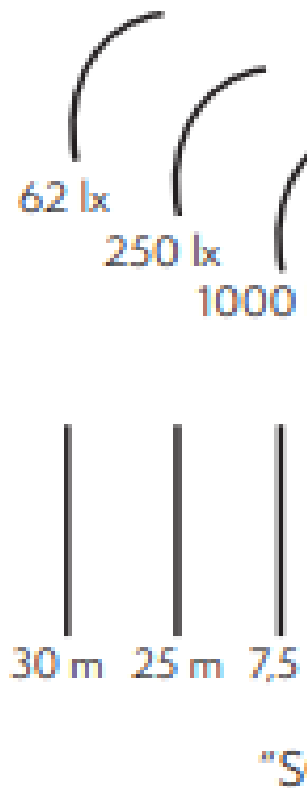
AT Line – AT Models, USS/UAT Models, And UT Models 7 ft Nominal Width Units

17-2G9	17-2G18	27-2G36	214-2H12
17-2H9	17-2H18	27-2H36	214-2I12
17-2I9	17-2I18	27-2I36	214-2J12
17-2J9	17-2J18	27-2J36	214-2K12
17-3G9	17-3G18	27-3G36	214-3H12
17-3H9	17-3H18	27-3H36	214-3I12
17-3I9	17-3I18	27-3I36	214-3J12
17-3J9	17-3J18	27-3J36	214-3K12
17-3K9	17-3K18	27-3K36	214-3L12
17-4G9	17-4G18	27-4G36	214-4H12
17-4H9	17-4H18	27-4H36	214-4I12
17-4I9	17-4I18	27-4I36	214-4J12
17-4J9	17-4J18	27-4J36	214-4K12
17-4K9	17-4K18	27-4K36	214-4L12
17-2H12	27-2H24	214-2G9	214-2G18
17-2I12	27-2I24	214-2H9	214-2H18
17-2J12	27-2J24	214-2I9	214-2I18
17-2K12	27-2K24	214-2J9	214-2J18
17-3H12	27-3H24	214-3G9	214-3G18
17-3I12	27-3I24	214-3H9	214-3H18
17-3J12	27-3J24	214-3I9	214-3I18

Sound



Sound



Typical Sound Pressure Levels of Well Known

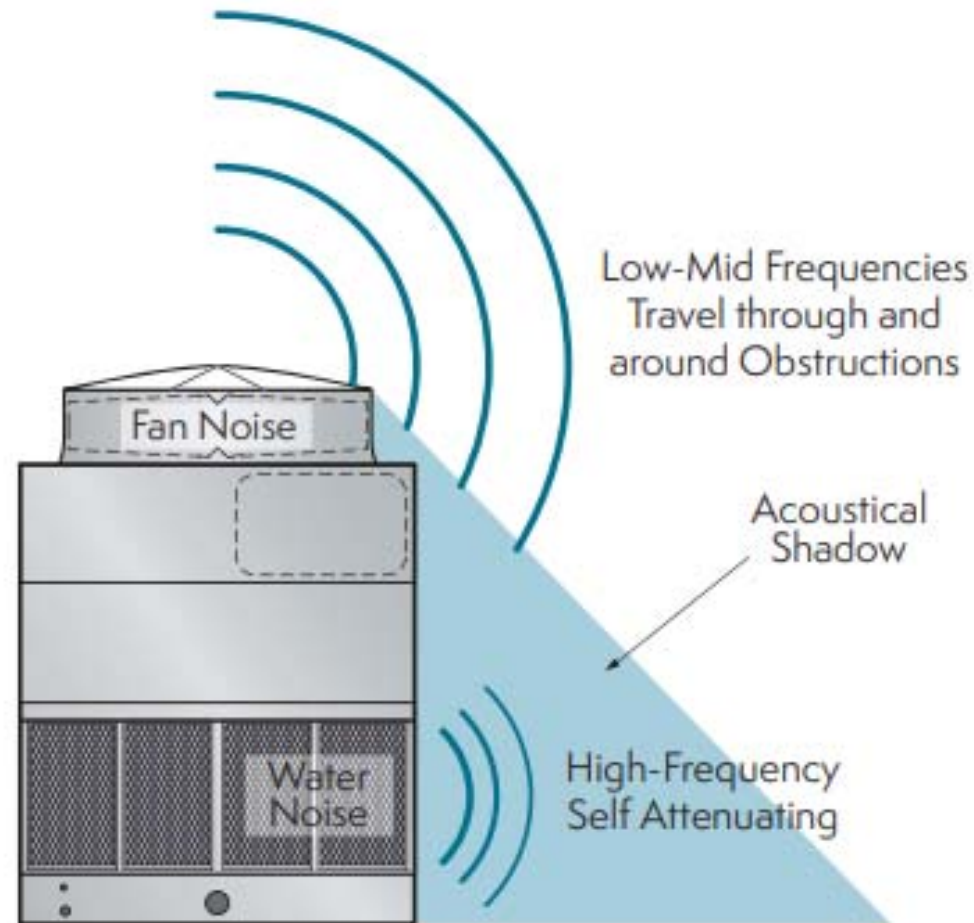
Noises:

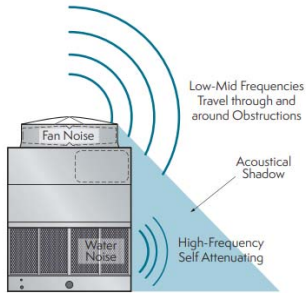
Jet Airplane, 45 m away	140 dB(A)
Circular Saw	110 dB(A)
Nightclub	100 dB(A)
Semi Truck	90 dB(A)
Sidewalk of a Busy Road	80 dB(A)
Household Vacuum, 1 m away	70 dB(A)
Normal Conversation	60 dB(A)
Quiet Library	40 dB(A)

Notable Facts about Sound:

- +/- 1 dB(A) is inaudible to the human ear
- Decreasing a noise source by 10 dB(A) sounds half as loud to the human ear

Sound at Cooling tower

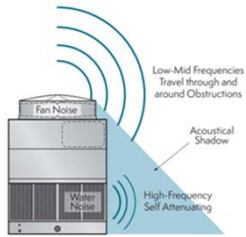




Sound at a cooling tower

Not only the fan, but

Fan & Water



1 Cell Data

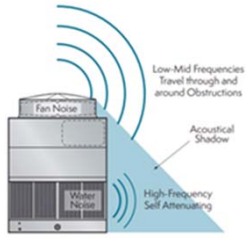
Band	Sound Pressure Level (dB)										Sound Power Level (db)
	End		Motor Side		Opp End		Opp Mtr. Side		Top		
	5.0 ft (1.5m)	50.0 ft (15.2m)	5.0 ft (1.5m)	50.0 ft (15.2m)	5.0 ft (1.5m)	50.0 ft (15.2m)	5.0 ft (1.5m)	50.0 ft (15.2m)	5.0 ft (1.5m)	50.0 ft (15.2m)	
63 HZ	73	62	72	68	73	62	76	69	72	64	98
125 HZ	69	63	75	65	69	63	71	62	78	65	95
250 HZ	67	54	68	54	67	54	65	54	68	59	87
500 HZ	62	52	67	53	62	52	64	52	65	57	85
1 KHZ	62	52	66	53	62	52	63	52	65	53	84
2 KHZ	61	46	65	48	61	46	61	48	64	51	80
4 KHZ	62	41	62	44	62	41	61	43	63	49	77
8 KHZ	63	42	64	42	63	42	63	41	64	52	78
Calc dBA	69	56	72	57	69	56	69	57	72	60	89

Sound

Sound Data are different on each side of the cooling tower

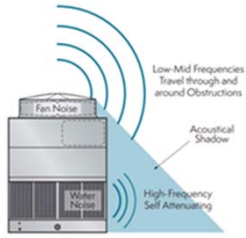
The different sound pressure levels results in an overall Sound Power

Sound specialists refer mostly to the Sound Power in their models



Sound

- Sound Pressure Levels are according to:
 - CTI Standard ATC-128 and
 - verified by an independent CTI-licensed sound test agency
 - Sound Power comparable with EN ISO 3744



Sound

- This means again
 - Data are according to a standard and even more important
 - **Verified by an independent licensed sound test agency**



Water Source

- Water that can be used for a cooling tower
 - (pre-treated) City water
 - Rain water
 - Well water (de-ironed & pre-treated)



Water Source

- Chemical Parameters important to avoid scaling and diposits
 - pH
 - Conductivity
 - Suspended solids
 - **Hardness**
 - **Alkalinity**



Water Source

- **Hardness**

- Mostly in Spec's
- Covered by installing softener

- **Alkalinity**

- Rarely in spec's
- NOT covered by a softener
- Sometimes the limited factor for increasing the cycles



Water Source



Look at the complete water quality before installing expensive pre-treatment installations



Water Source - mixture

- **Ideal**

- Rain water with a little bit of city water
- => Highest Cycles => Lowest water use

- **Avoid**

- Rapid switch between different sources
- This results in an instant adaptation of the water treatment (unless foreseen)



Water Source - mixture

- Think about
 - The available water sources on site
 - The water consumption of your equipment
 - How to achieve the most optimal mixture
 - During design
 - Before Start up

Summary



What was not discussed today

- Materials
- Fire protection
- Water treatment systems
- ...

The End

Questions?