

**ThermoKey**<sup>®</sup>  
Heat Exchange Solutions

# Tk Archimede

## User Manual

ARCHIMEDE EN 03 2018

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## 1. Riferimenti normativi

Tk-Archimede is a software developed by THERMOKEY S.p.A. to help his partners and customers to easily select the unit which best complies with the customer's requests.

The aim of this software is to allow you to select ThermoKey Air Heat Exchangers for the requested application in the most profitable way. You can select the unit by entering some working data and then configure it choosing the accessories from the list of options to add to the basic version.

The output of the software is a tender text with a description of the unit/options/accessories, data sheet, layout, cooling and hydraulic scheme, price list.

### 1.1 SYSTEM REQUIREMENT

#### Windows:

- Intel Pentium 4 or AMD Athlon 64 processor
- Microsoft Windows 7 with Service Pack 1, Windows 8, Windows 8.1, or Windows 10
- 4 GB of RAM
- 500MB of available hard-disk space for installation;
- 1366x768 display with 32-bit video card (**With setting of small font of letters**)
- Internet connection and registration are necessary to require the software activation, validation of subscriptions and access to online services.

**Mac OS:**

- Not available

**Linux-Unix:**

- Not available

**1.2 LEVEL OF USERS**

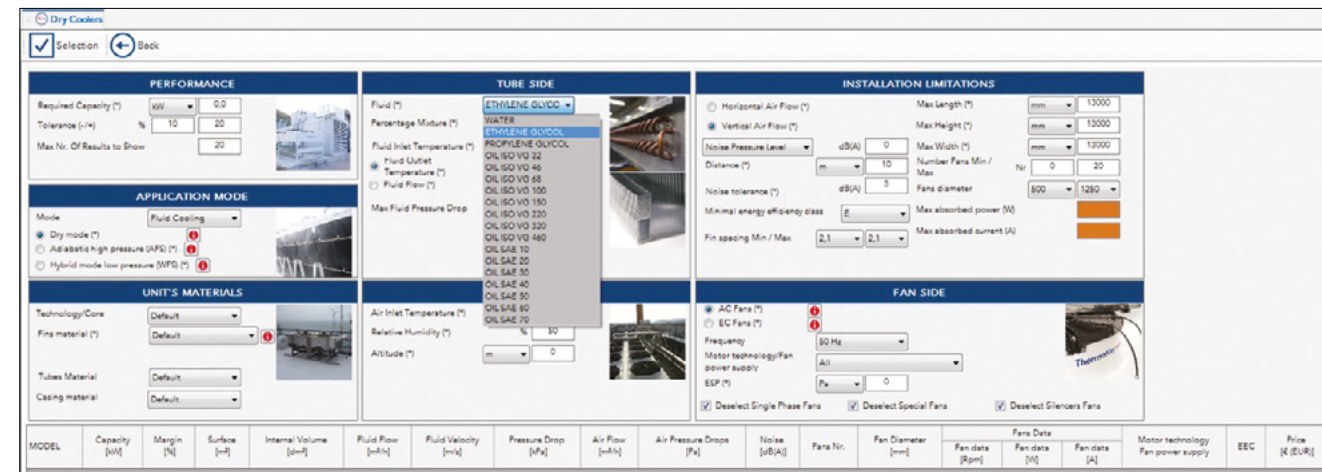
Software is configured in level of users. Level of users are defined by ThermoKey in function of type of customer, agent... etc. Each Level has different functions, fluids, units, accessories available.

Actual classification is

- **USER 1 : P1**  
NO prices, double circ, NO heat pump, NO Access of P5&P6, NO HighTmp, NO High drops, NO Adiab\_but
- **USER 2 : P2**  
Prices, double circ, NO heat pump, NO Access of P5&P6, NO HighTmp, NO High drops, NO Adiab\_but
- **USER 3-4 : P3-P4**  
Prices, double circ, heat pump, NO Access of P5&P6, NO HighTmp, NO High drops, Adiab\_but
- **USER 5 : P5**  
NO prices, double circ, heat pump, NO Access of P6, NO HighTmp, NO High drops, Adiab\_but
- **USER 6 : P6**  
Prices, double circ, heat pump, ALL Access of , HighTmp, High drops, Adiab\_but

**1.3 LIBRARY**

All data of fluid mixture, refrigerants and oils are in accordance with the last revision of Refprop. Fluid and refrigerant available on selections are the only selectable from the list. For special demands it is necessary to ask our Application office.



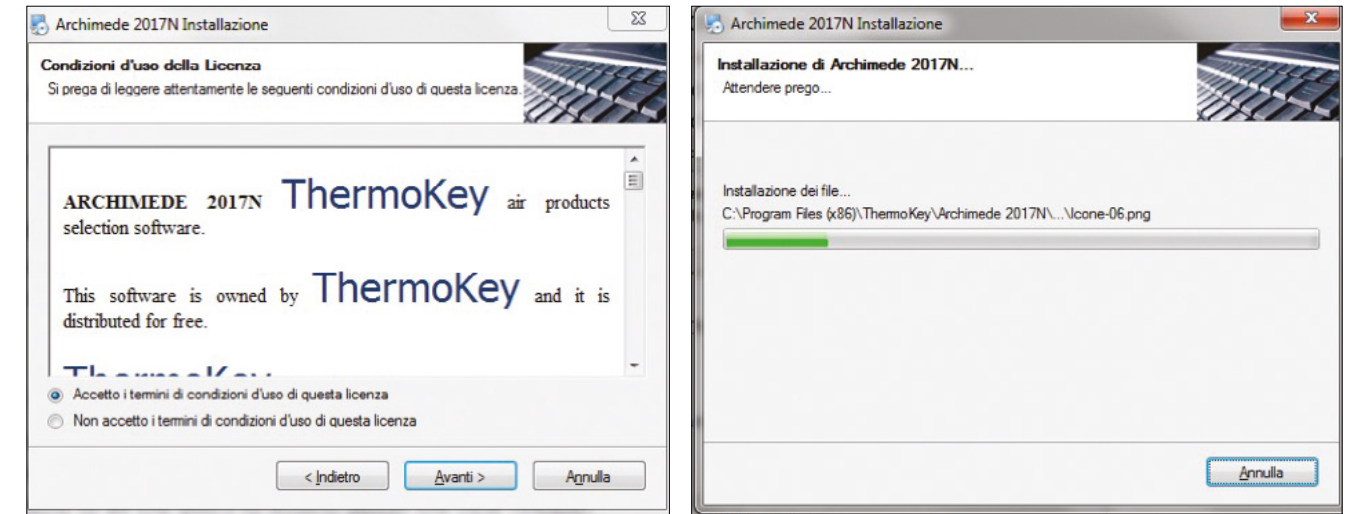
## 2. Software Installation

### 2.1 SOFTWARE DOWNLOAD

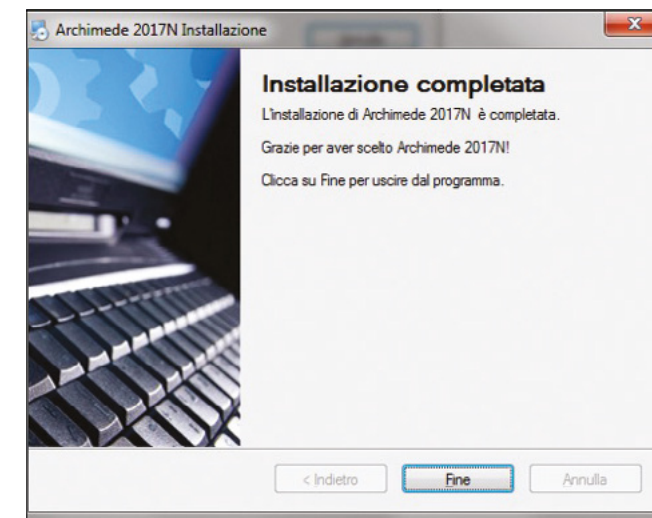
Tk-Archimede is available on [www.thermokey.com](http://www.thermokey.com) on Software section. On the website the last release of software is always available. A newsletter will be sent to all users regarding new releases.

### 2.2 SOFTWARE INSTALLATION

Open the folder where you have downloaded the file and unzip the file. An executable file is created. Double click on the file and follow the procedure. Term of use and conditions must be accepted before proceeding.

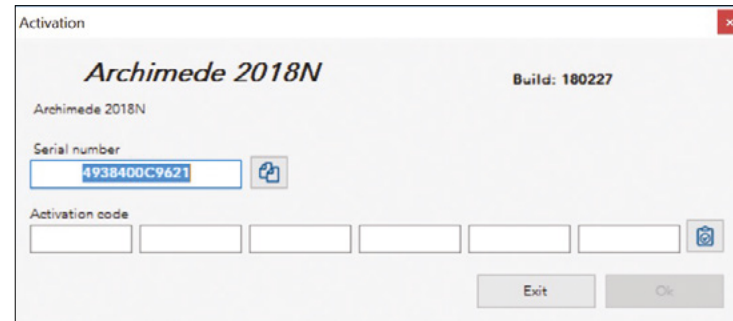


During installation databases and files are installed until the procedure is finished. The installation is completed when procedure arrives to the end button.



### 2.3 ACTIVATION OF LICENCE OF USE

At the first start-up of the software, if no previous versions of Archimede were installed, the following window with your personal Serial Number will appear.



The activation code is provided by ThermoKey S.p.A. In order to obtain the Activation Code it is necessary to send an email to archimede@thermokey.it In the email please specify:

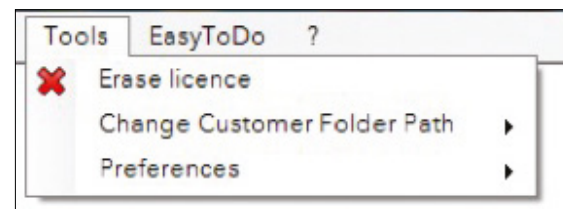
- Serial number
- Name and Surname
- Company's name
- Email for the answer (if different)

By clicking the first button on the right of the serial number, it is possible to copy the serial number.

The received activation code must be inserted into the lower fields by entering it or, after you have copied the activation code, by clicking the paste button on the right of the form. If the code is correct, all boxes become green and the button "OK" is enabled. Click on the "OK" button to start Tk-Archimede.

### 2.4 ERASE LICENSE

On the main page of Tk-Archimede select the menu "it is possible to "Erase licence". After clicking on "Erase licence" and shutting down the software, the license is erased. Once the license has been successfully removed: in order to use Tk-Archimede it will be necessary to ask for a new license.



### 2.5 RELEASE AND EULA

On the main page of Tk-Archimede select the menu "it is possible to check the release used and EULA by clicking on

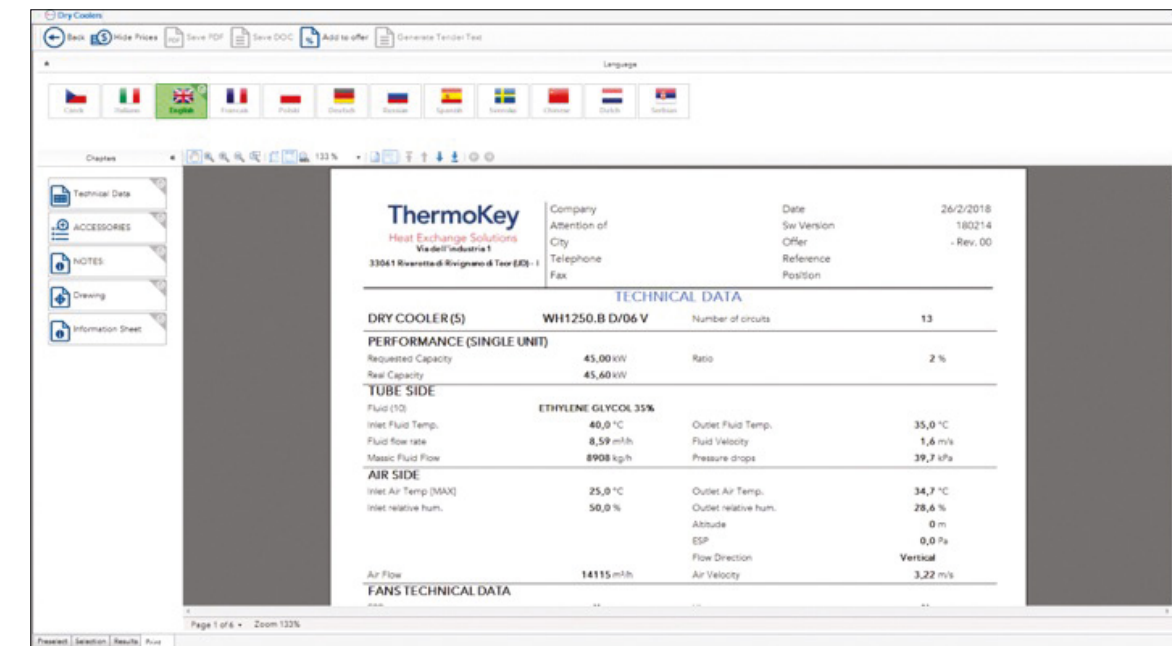


## 3. First use of software

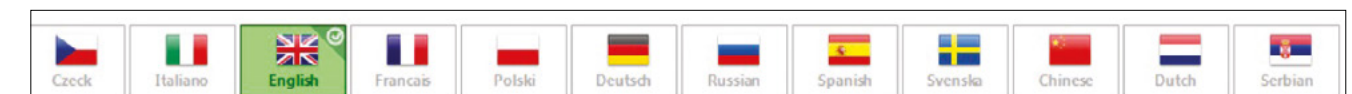
### 3.1 LANGUAGE OF SOFTWARE AND MEASURE SYSTEM

#### 3.1.1 Language Configuration

Tk-Archimede is available in different languages, on the masks of software, on warnings and on print-out data sheets. It is possible to change the language of the software from the main page. When printing it is possible to choose a different language for the output without changing the software language.



Single click to enable/disable language in exported file.

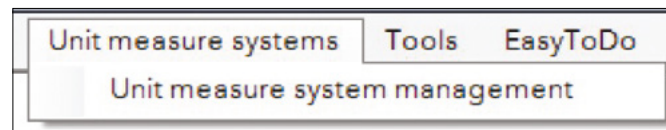
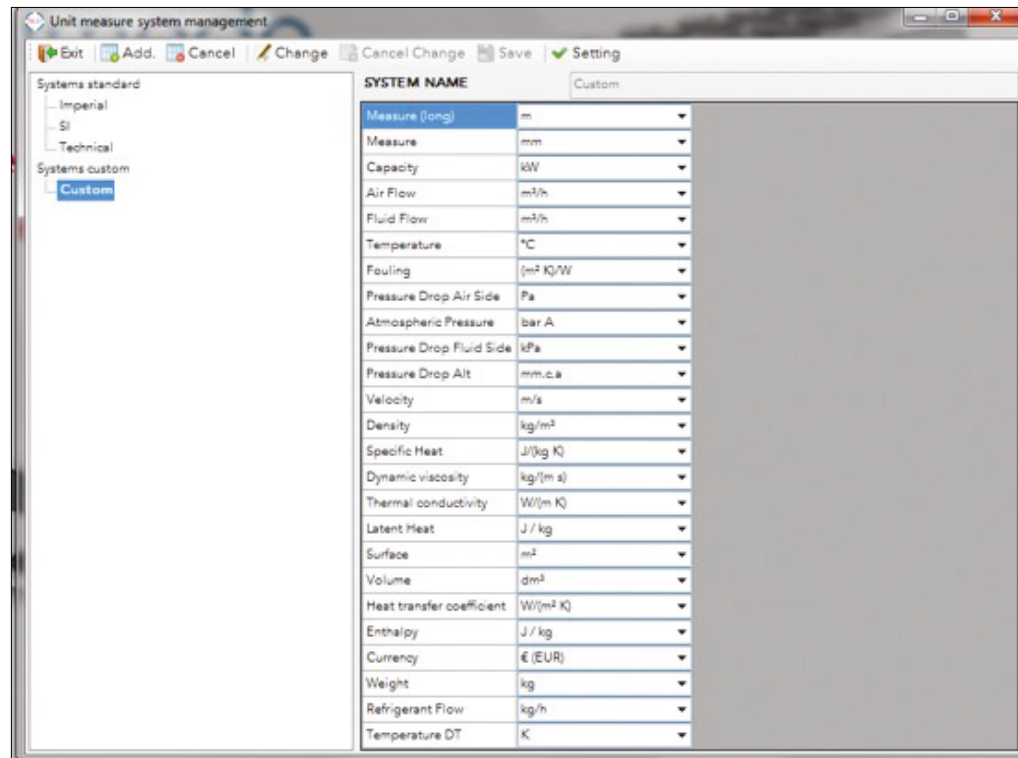


To change the language, on the main page, select "Language", then select the preferred Language (this is valid for software and for exported files).

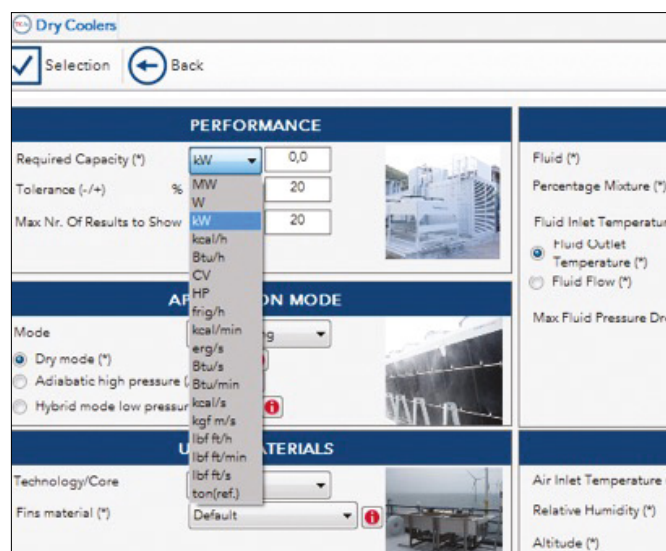
### 3.1.2 Unit measure system configuration

It is possible to choose between several Unit measure systems:

- Standard system: SI, Imperial or Technical
- Custom set by ThermoKey



To change it, in the main page, select “Unit measure systems”.



This configuration can be changed from the main menu, however it is possible to change some measures every time during selection and the option chosen works as a converter of the number written in the field.

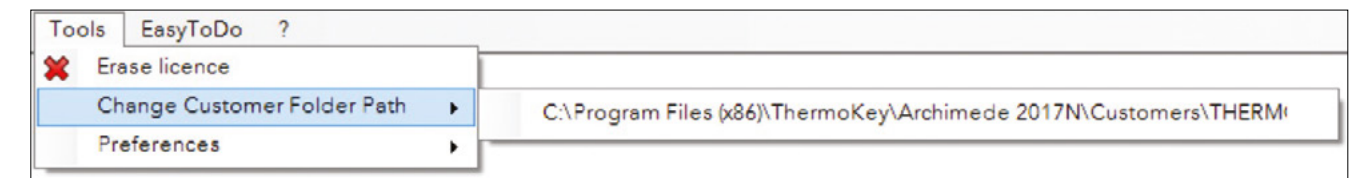
### 3.2 SOFTWARE TOOLS

Several tools are available on the main page by selecting “Tools”.

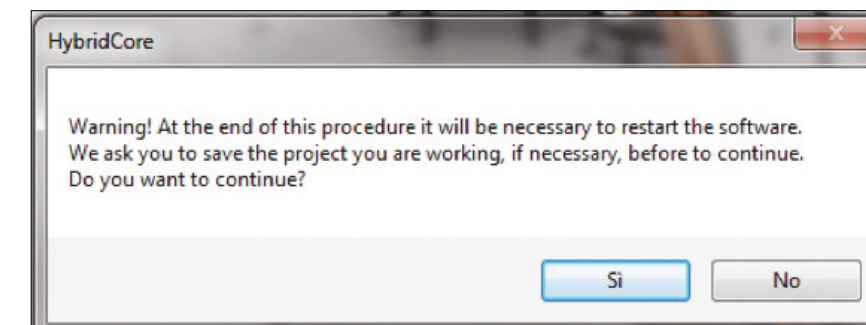


#### 3.2.1 Configuration of Customer Folder Path

It is possible to configure a different path for the software.

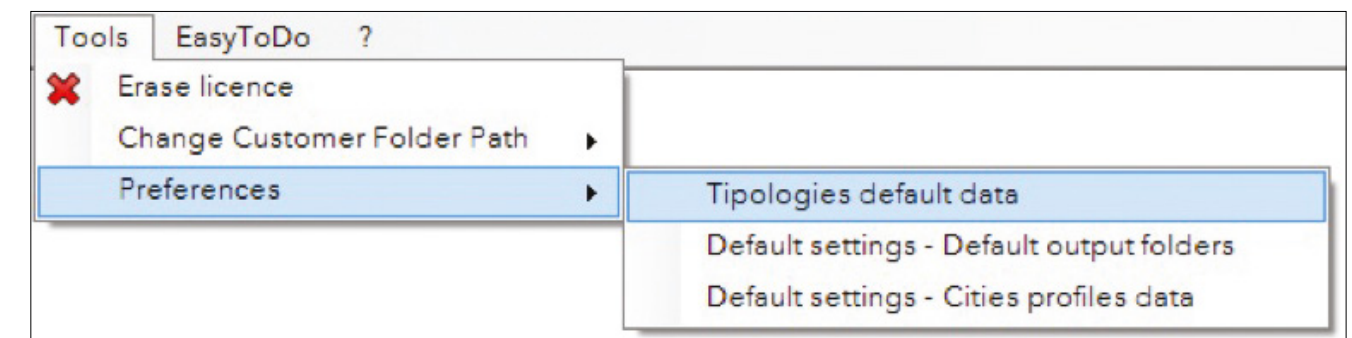


This operation is not suggested: for this reason an operation warning is necessary.

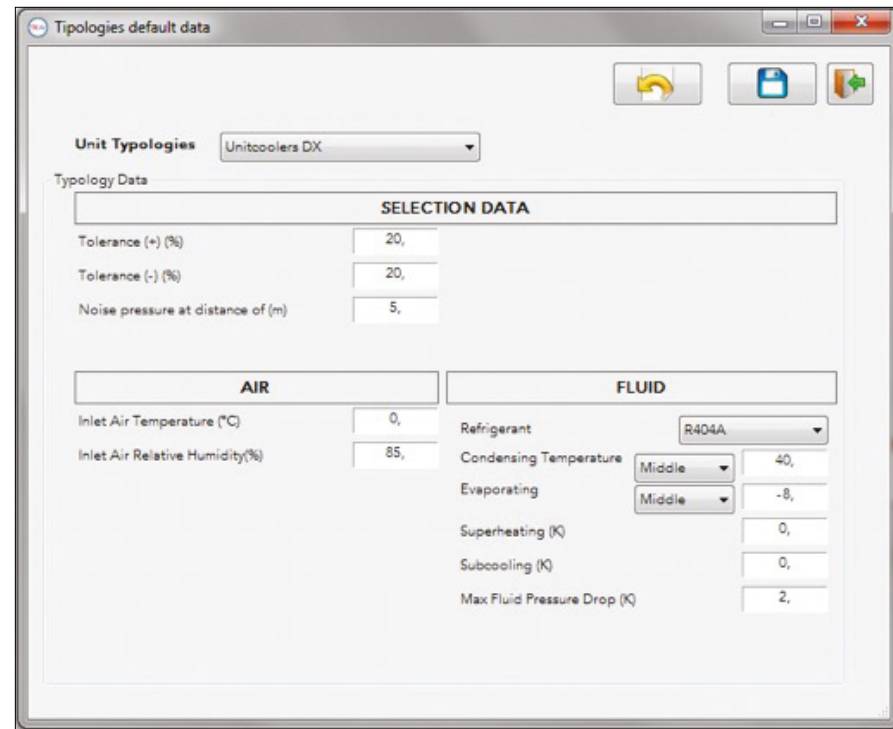





#### 3.2.2 Configuration of Typology default data

It is possible to set Default data for different applications by clicking on path Preferences.



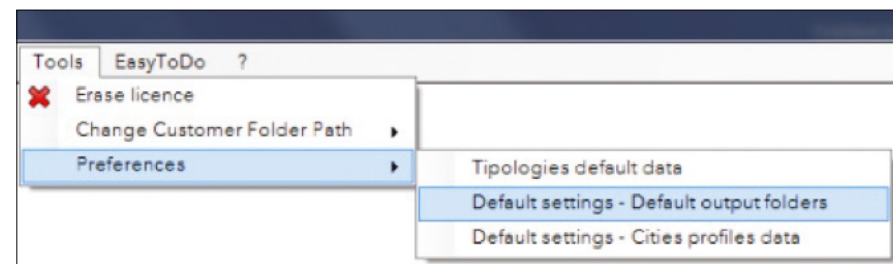
It is possible to select for each typology air, fluid and customized selection data.



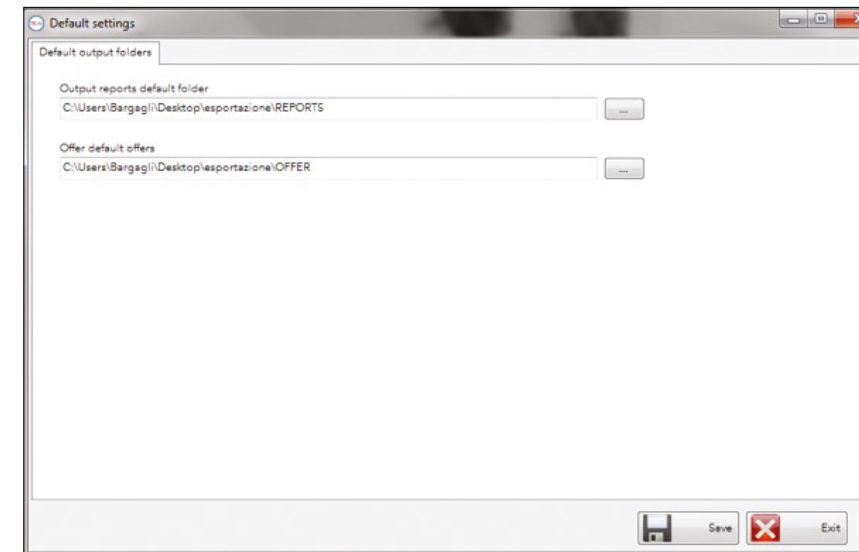
-  By clicking on the first button on the right, it is possible to go back to the application default values.
-  By clicking on the second button on the right, it is possible to save the application latest values.
-  By clicking on the third button on the right, it is possible to go back without saving.

### 3.2.3. Configuration of Destination of files of selections

It is possible to set Default folders of destination for the software's documents.

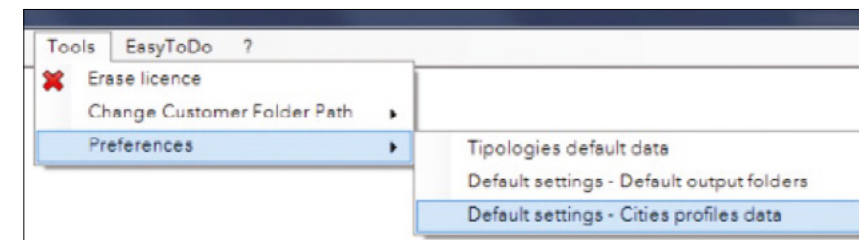


It is possible to select for each typology air, fluid and customized selection data. Destination folder of all reports (documents in pdf and word formats of each project) and destination folder of files of offers (files that include all information regarding offers).

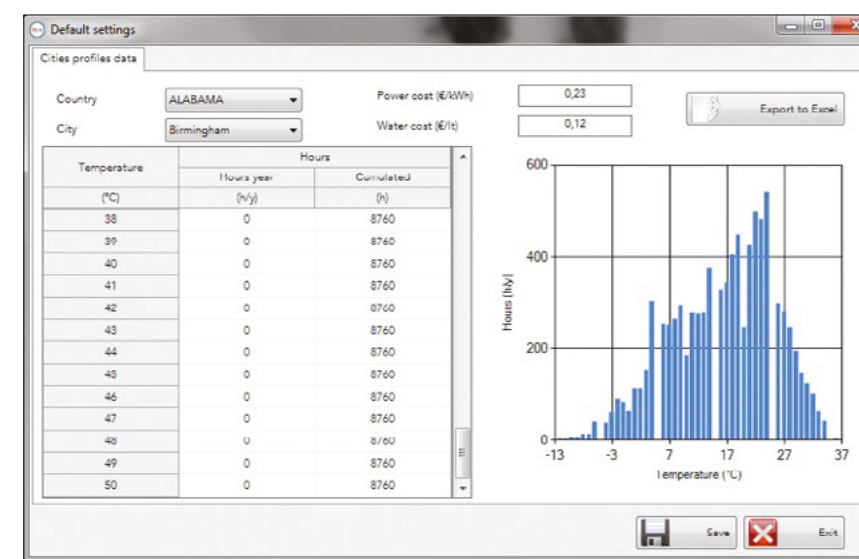


### 3.2.4. Configuration of data of temperature/hours and operative costs cities

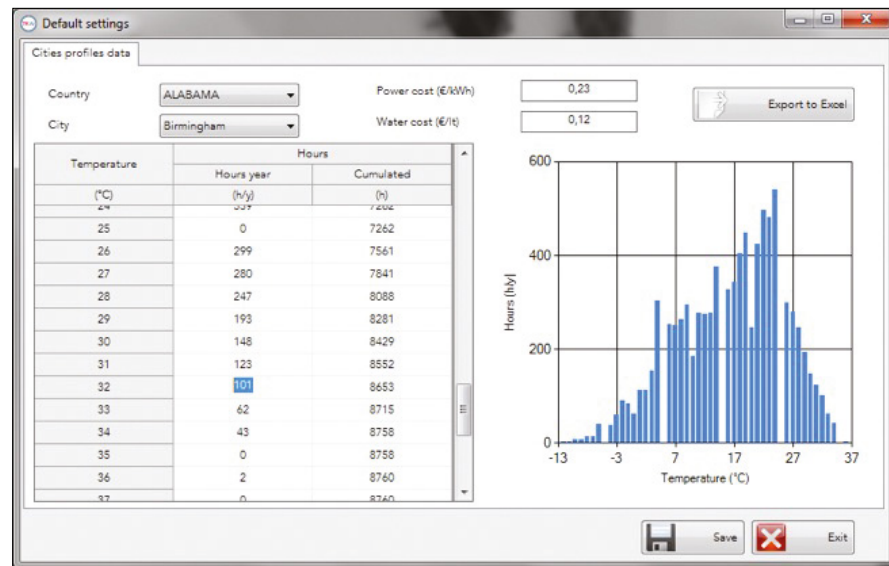
It is possible to check and modify data of cities saved on Archimede database.



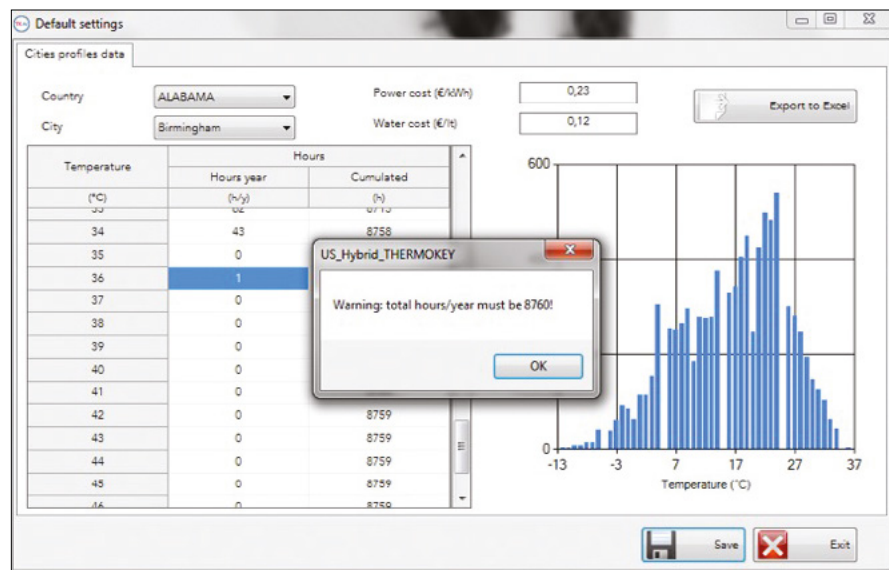
The window of data of cities shows the list of cities classified by country and city for each country.



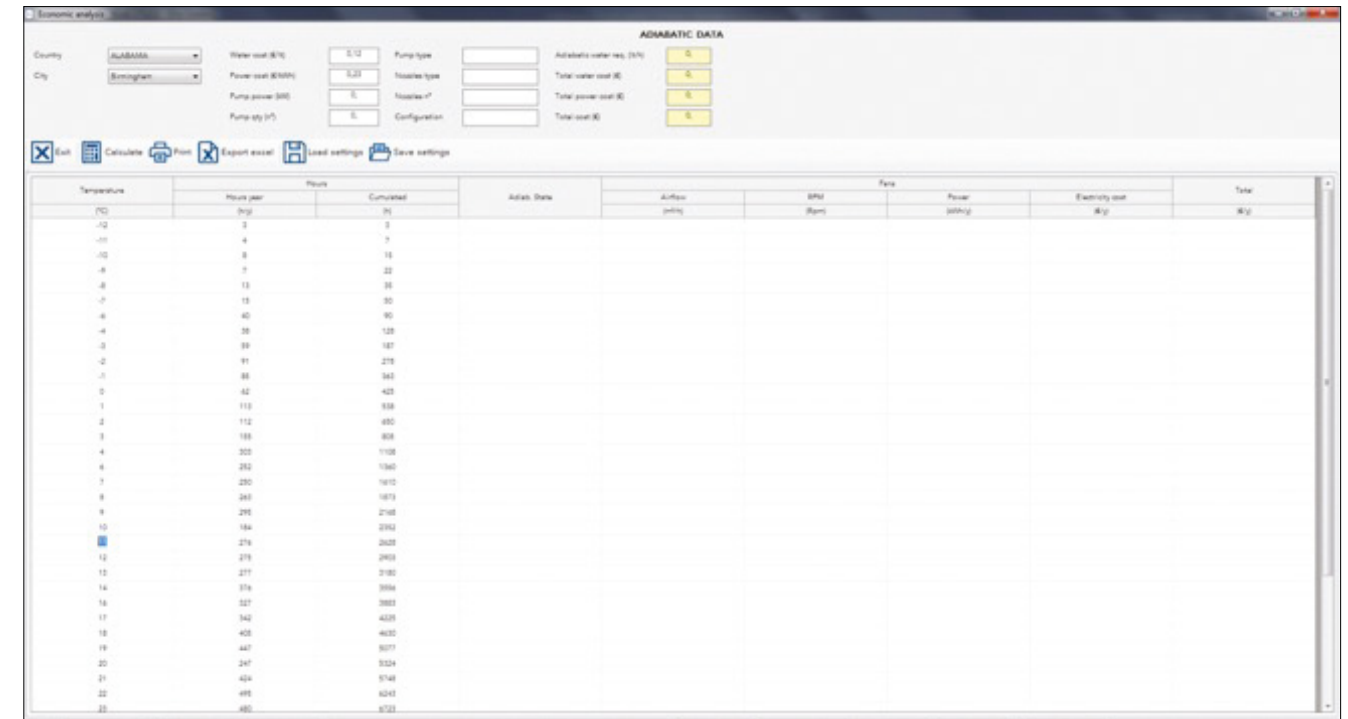
It is possible to modify Power cost and water costs and save the data.  
 It is possible to modify hours/y for each temperature (for all cities the range is from -40°C to +50°C and total accumulated hours in one year must always be 8760h).



- When a user is modifying it, he must pay attention whether:
- data will imply a modification of graph evidence
  - the value of accumulated total will overcome 8760h: the spectrum of hours for the country is over the max hours in one year
  - the value of accumulated total will be deeply lower than 8760h: the spectrum of hours for the country is deeply lower than the total hours of one year. In this case a warning will appear after saving



The data set will be available for the economic analysis tool.  
 During economic analysis it is possible to also modify temperature range by clicking on a single temperature.



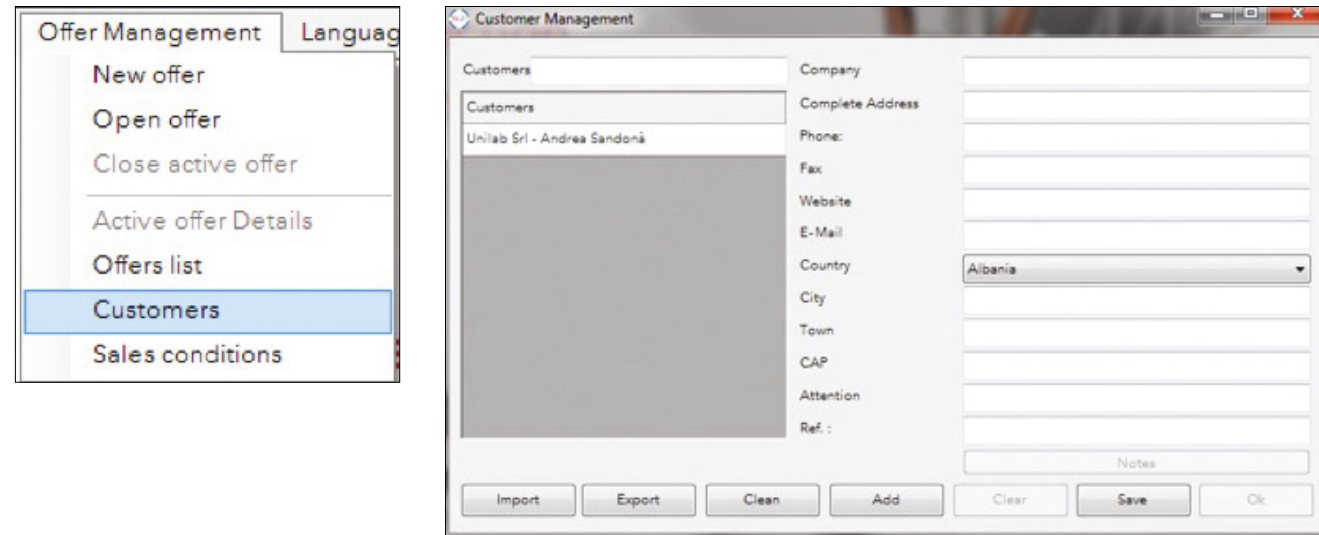
### 3.3 COMMERCIAL PREFERENCES IN OFFERS

Some options can be set by the user at the beginning or during the offer process in the "Offer Management" section.

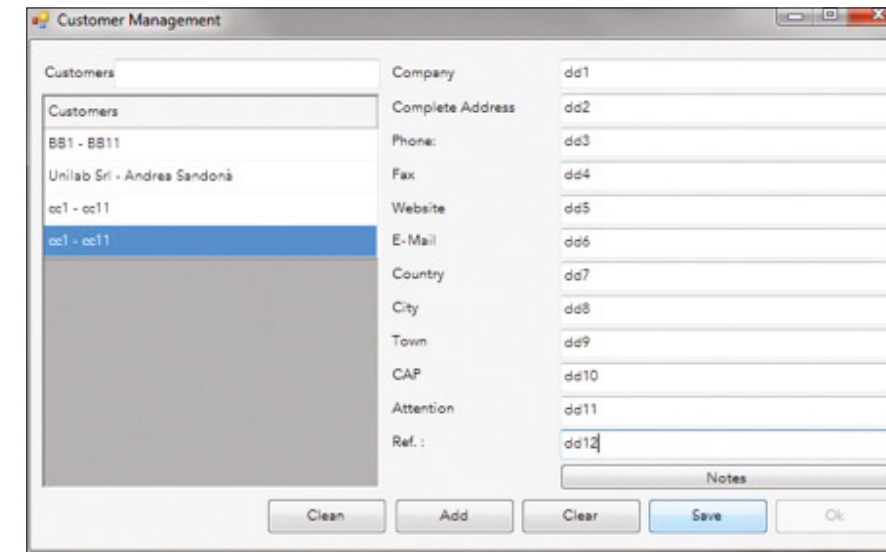
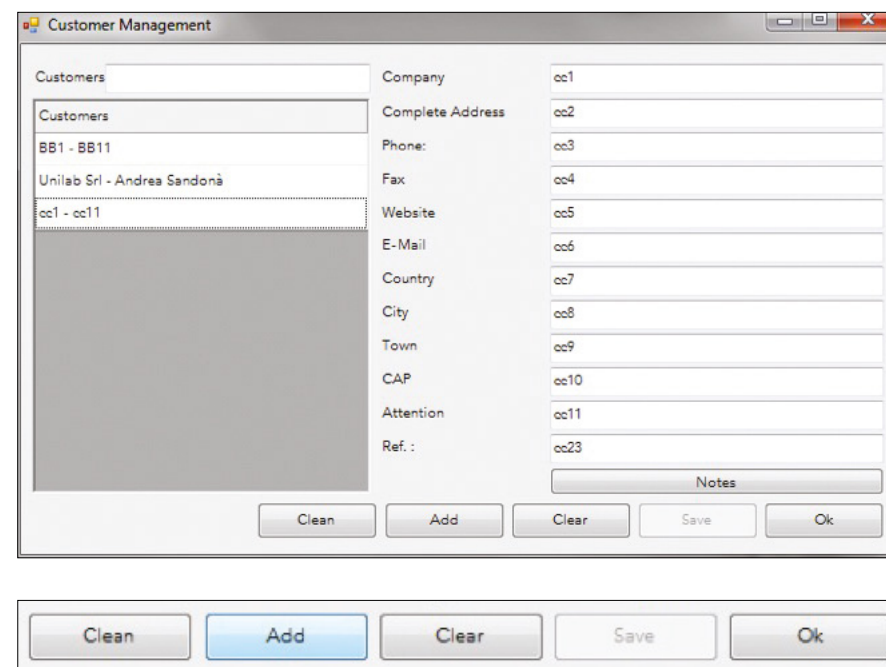


### 3.3.1. Configuration of Header of documents: Customer information

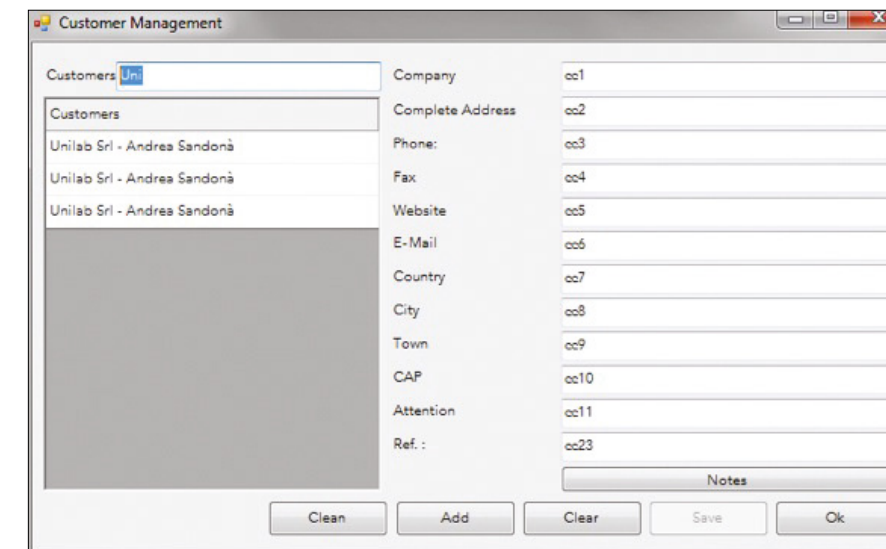
It is possible to set customers information in the “Customers” section.



1. If you want to import or export list of customers in xls format it is sufficient to click on the button *Import or Export*.
2. If you want to eliminate one customer line it is sufficient to underline it and click on the button *Clean*.
3. If you want to add one customer line it is sufficient to
  - Select the most similar customer line, duplicate it by clicking on the *Add* button, Fill in all information and *Save in the new created line*
  - Don't Select the most similar customer line, click on the *Add* button, Fill in all information and *Save in the new created line*



4. If you want to search for a customer from the list: it is sufficient to start entering the *Customer's name* in the field and automatically a list of customers will be filtered according to the letters entered.



1. If you want to eliminate fields of one customer just saved: it is sufficient to select a customer and click on the button *Clear*.



1. Customer list can be used during offer definition by clicking on the button.



 Via dell'industria 1 33061 Rivarotta di Rivignano di Teor (UD) - I	Company	dd1	Date	15/1/2018	
	Attention of	dd11	Sw Version	171222	
	City	dd8	Offer	18000055 - Rev. 00	
	Telephone	dd3	Reference	Dakart	
	Fax	dd4	Position	001	
	<b>DRY COOLER (5)</b>		<b>WH1363.B 4 W3EEp(EC)S/08 H</b>		
	<b>TECHNICAL DATA (SINGLE UNIT)</b>				
Real Capacity	134,50 kW	Pressure drops	632,5 kPa		
Fluid (10)	ETHYLENE GLYCOL 35%				
Fluid flow rate	25,30 m³/h	Altitude	0 m		
Inlet Fluid Temp.	40,0 °C	Outlet Fluid Temp.	35,0 °C		
Inlet Air Temp.	25,0 °C	Outlet Air Temp.	36,1 °C		

Customer data will appear on header of project.

		 Via dell'industria 1 33061 Rivarotta di Rivignano di Teor (UD) - ITALY Tel.: +39/0432772300 Fax.: +39/0432779734	
<b>OFFER</b>	<b>18000055</b>	Enquiry	18000055
UNIT NUMBER OF	00	Job	Dakart
DATE	15/01/2018	Company	dd1
FORMATTED	60days	Attention of	dd11
		City	dd8
		Telephone	dd3
		Fax	dd4

SUBJECT:  
Further to your request, we are pleased to submit our best offer:

ID	POSITION	Q.TY	CODE / MODEL	DESCRIPTION	GROSS UNIT PRICE EACH
001	001	1	WH1363.B 4 W3EEp(EC)S/08 H	Dry Coolers	5344,00
			<i>Accessories installed:</i>		
			IMB	Packing	188,00
			DIAMCOLL_SP	Diametro collettori speciale	200,00
			VENT_EC_S1	Fan EC 01 (EC)	2715,00
			CBLW3E	Wiring 'W3E'	1452,00
			RGEP	Fan speed controller Ec Plus 'Ep'	870,00
				<b>Total accessories each unit (€)</b>	<b>5425,00</b>
				<b>Total unit + accessories each unit (€)</b>	<b>10769,00</b>
				Quantity (n°)	1
				<b>Total unit price (€)</b>	<b>10769,00</b>
				Discount (%)	0,00
				<b>Total Unit Net Price (€)</b>	<b>10769,00</b>
				<b>TOTAL NET PRICE LIST PROJECT (€)</b>	<b>10769,00</b>
				<b>FINAL OVER DISCOUNT PROJECT (%)</b>	<b>0,00</b>
				<b>TOTAL NET FINAL PRICE LIST PROJECT (€)</b>	<b>10769,00</b>

Technical features according to the attached pages.

<b>SALES CONDITIONS</b>	
Validity	60days
Goods rendered	as usual
Port	as usual
Warranty	as usual
Payment	as usual
Bank	as usual
Transport	as usual
Shipping Address	as usual
Delivery	as usual
Packing	as usual
Shipping mark	as usual
<b>Notes</b>	



# 4. Offer

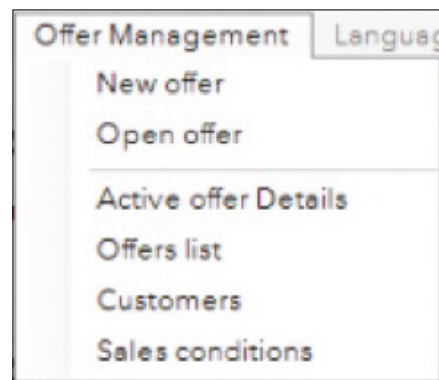
## 4.1 LANGUAGE OF SOFTWARE AND MEASURE SYSTEM

It is possible to create an offer number at first step of selection.

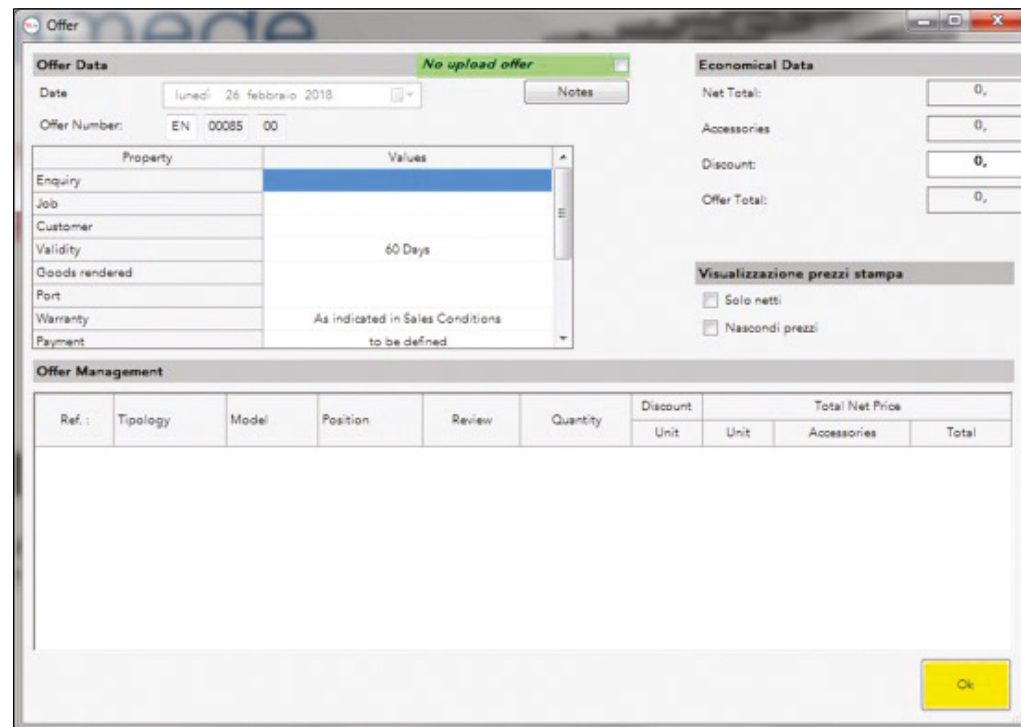


### 4.1.1 Creation of offer project

It is sufficient to select in the menu “Offer Management”, option New offer.



It is sufficient to select in the menu “Offer Management”, option New offer.



**Date:** it cannot be modified and it is the date of the offer.

**Offer Number:** it is composed by

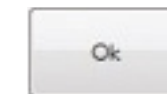
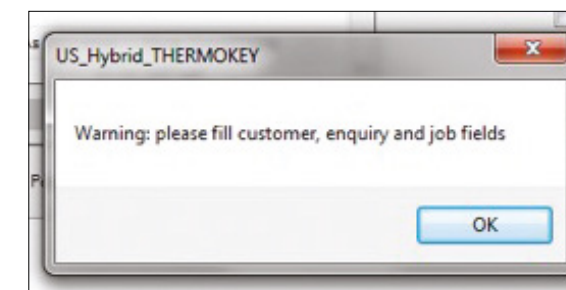
- 2 letters “EN= enquiry”
- A progressive number (it is created automatically by software)
- Revision “00” is default revision for a new progressive number

**Enquiry:** it is free: generally could be a classification of offer (es 18000055).

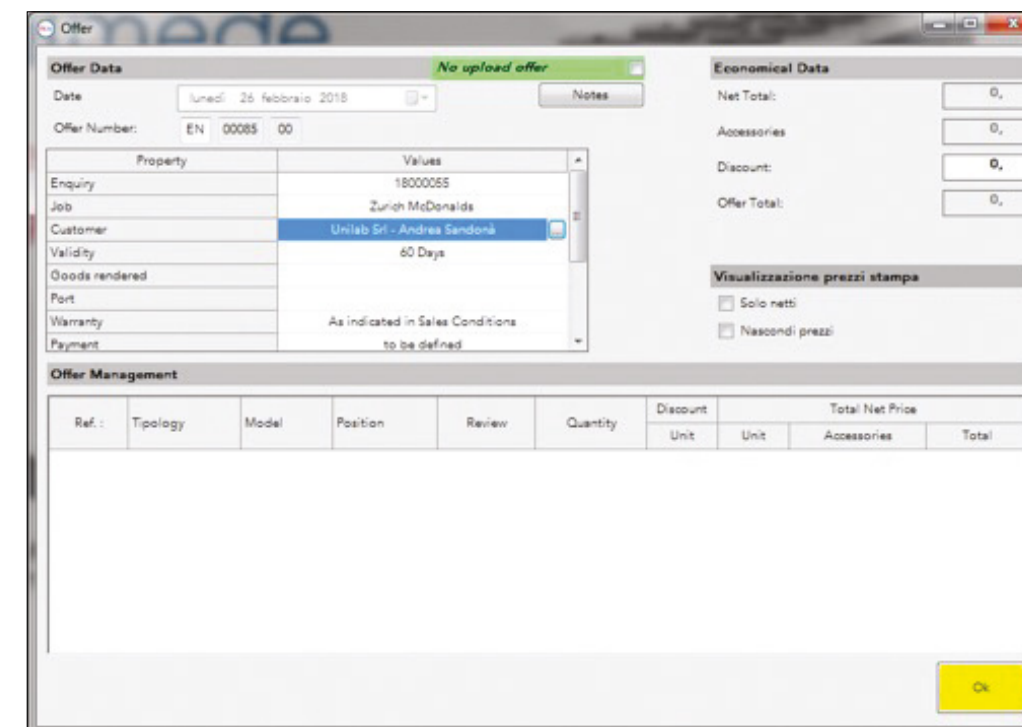
**Job:** it is free: generally could be a reference for the project (e.g. Zurich Mc Donalds).

**Customer:** it is free: see explanation in previous chapter 3.3.1.

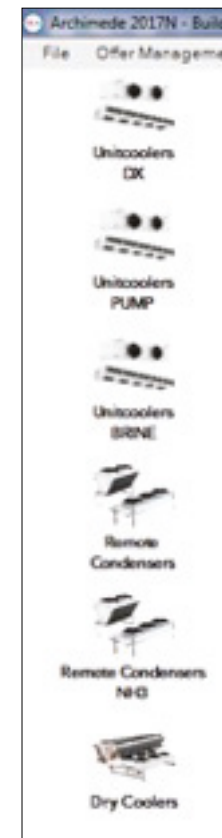
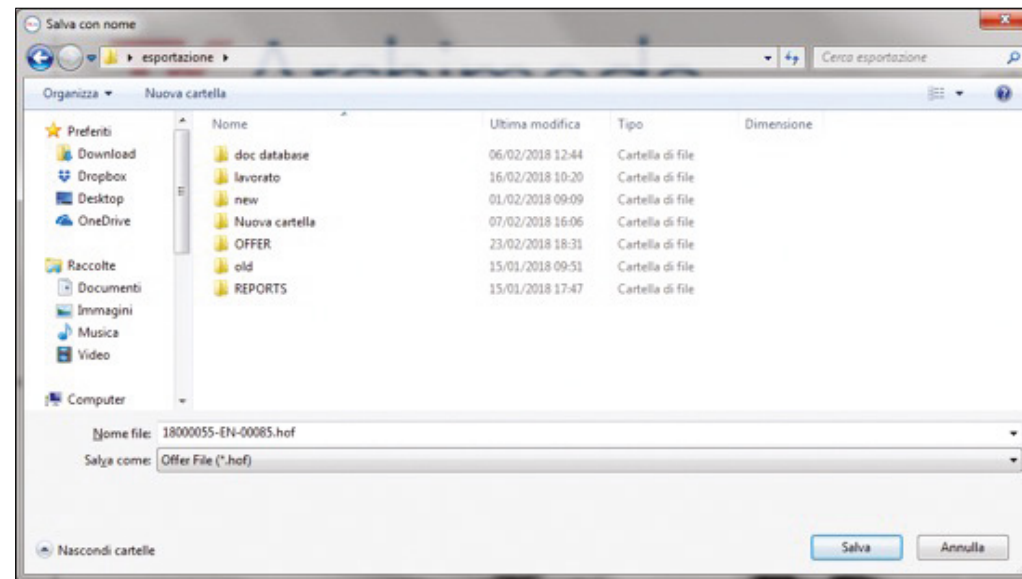
If one of these data is not inserted a warning will appear.



All other fields are set in commercial conditions: see explanation in previous chapter 3.3.2. At the end of this project it is necessary to click on the OK button (the only enabled one at this stage).



Offer procedure is finished when "project file".hof is saved.  
 One the bottom part of window of software it is indicated which offer is active.

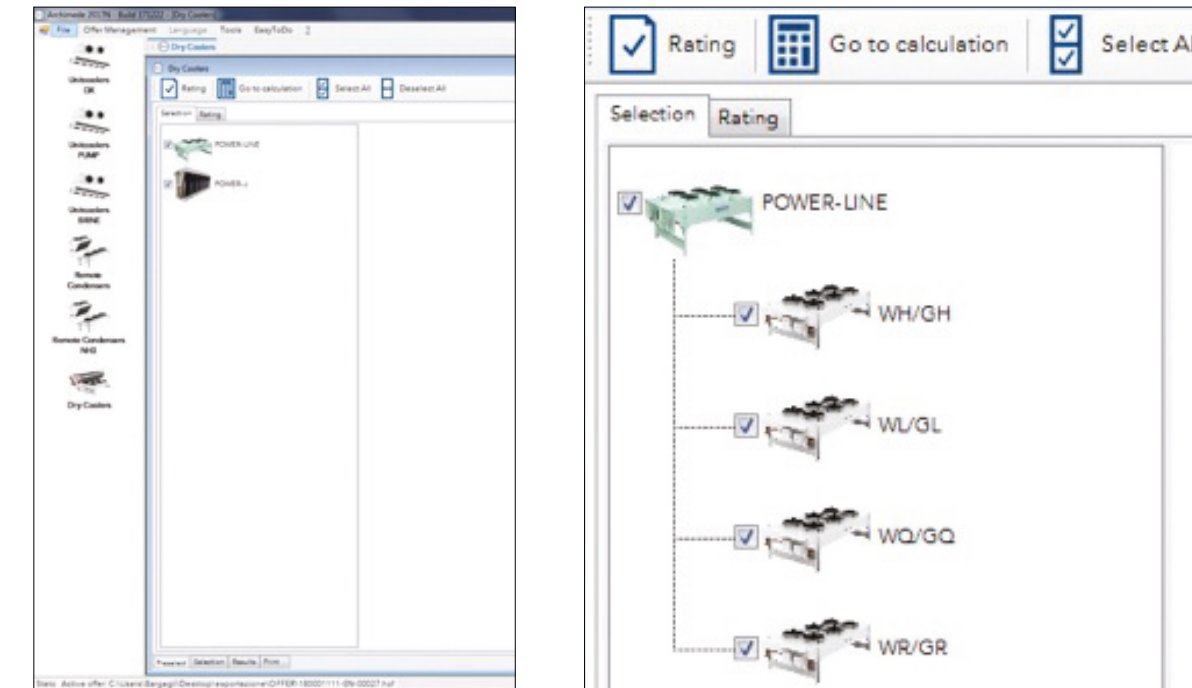


**4.1.2. Unit Selection**

It is necessary to select unit Family by clicking on the corresponded button.



It is necessary to select unit series by selecting or deselecting single series.  
 It is possible to  
 a. expand each series in single sub-series by clicking twice on the drawings



b. it is possible to select all units of a series by clicking on Select all



c. it is possible to deselect all units of series by clicking on Deselect all



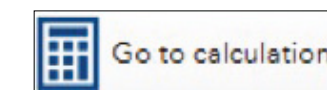
To run the application, please consider the following:

1. two kinds of calculation are available:

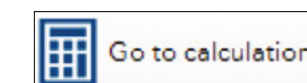
a. **Rating unit:** the program gives you the performance of the selected unit

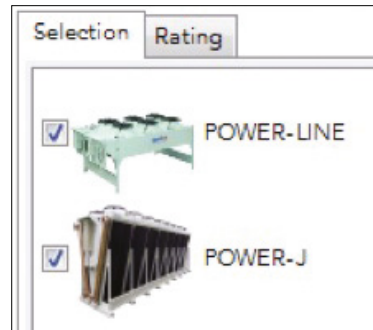


b. **Select unit:** the program selects the best units for the entered operating conditions



4. In **Select calculation** you can access after clicking.

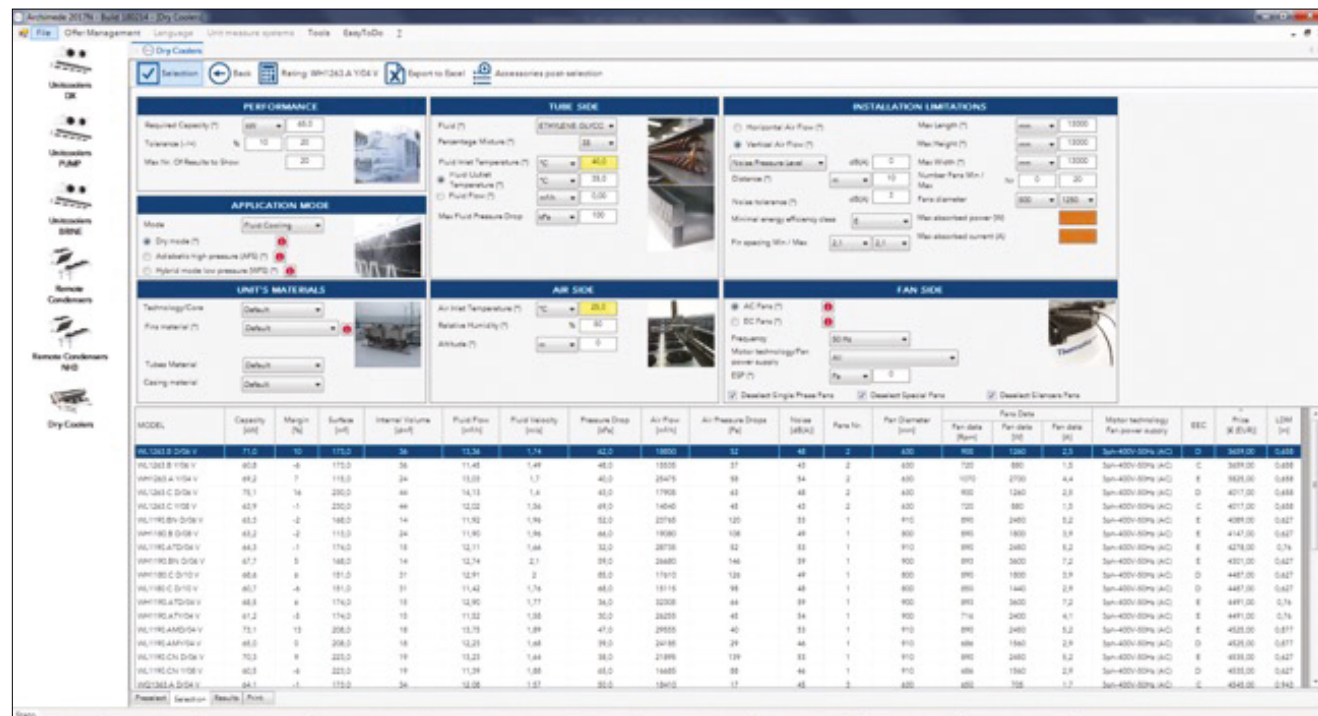




Option to shift from Selection to Rating is evident.  
 4a. all minimum necessary data are indicated with (\*)  
 4b. in case of doubts for each field it is possible to access more information by clicking on “?”

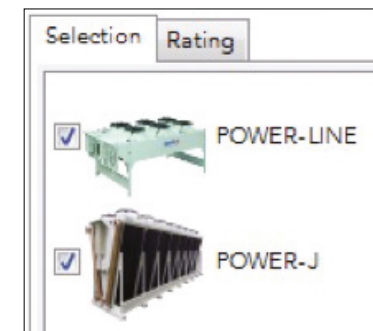


4c. in order to reduce time of calculation it is advisable to select one fan type from the list or filter by fan number or diameter according to the expectations and set tolerance of capacity and noise which best fit your application  
 4d. Selection results can be sorted per increasing capacity, Margin..etc (default priority is price)

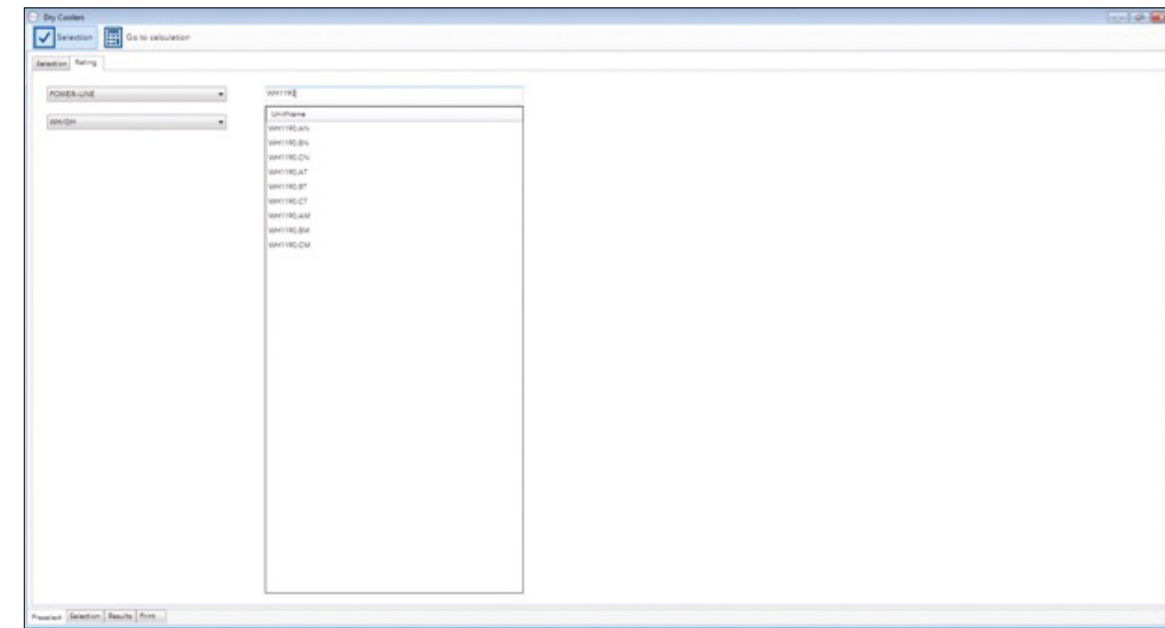



- Note from 2018 release** in order to permit to select range according to your needs, it is possible to:
- Select tolerance up and down regarding capacity (Default +/- 20%)
  - Select tolerance up and down regarding Noise(Defaul +/- 3dB(A))
  - Fix number of results (Default 20 items)
  - Filter according to unit dimensions for all dimensions (Default Max height, Length and Width 13 m)
  - Filter min and max fan spacing (Default depends on unit selected)
  - Filter min and max fan number (Default from 0 to 20 fans)
  - Filter min and max fan diameter (Default depends on unit selected)
  - Filter Max W absorbed and max A absorbed
  - Select a very wide range of fans with different options
  - Have info button for some items

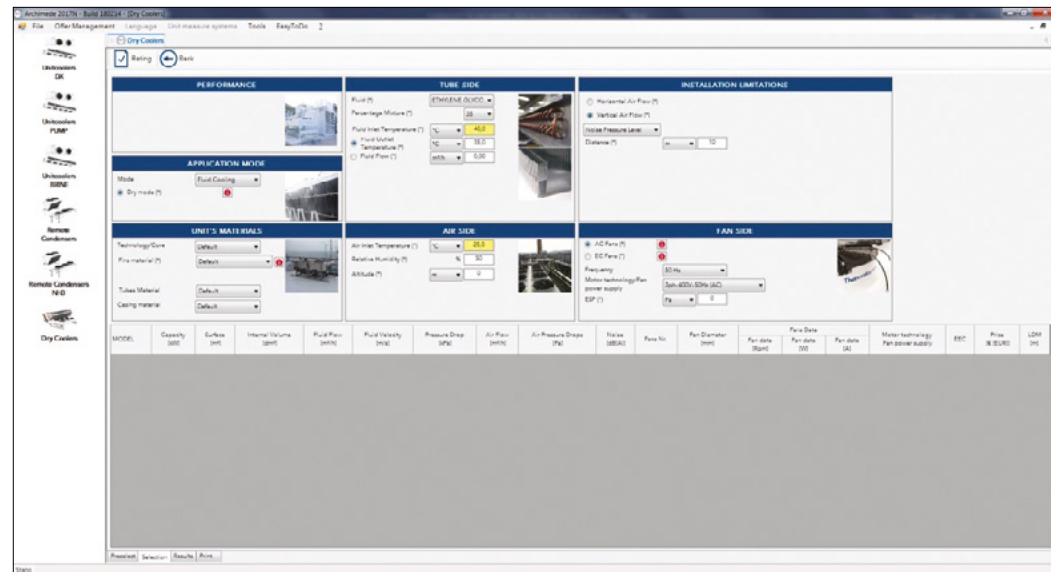
5. In **Rating mode**, you can access after clicking on



Option to shift from Selection to Rating is evident.  
 The list of units must be selected following series and sub-series.  
 It is possible to select and filter all list of series and sub-series by selecting the field and clicking on **Go to calculation**.

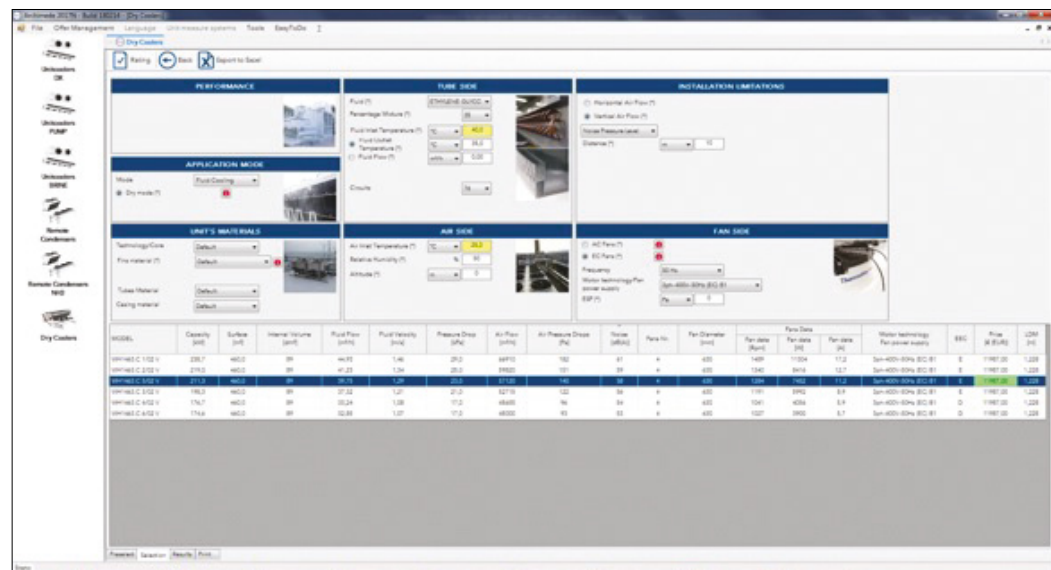


- 5a. all minimum necessary data are indicated with (\*)
- 5b. in case of doubts for each field it is possible to access to more information by clicking on “?” 
- 5c. in order to reduce time of calculation it is advisable to select one fan type
- 5d. Selection results can be sorted per increasing capacity, Margin..etc (default priority is Price)



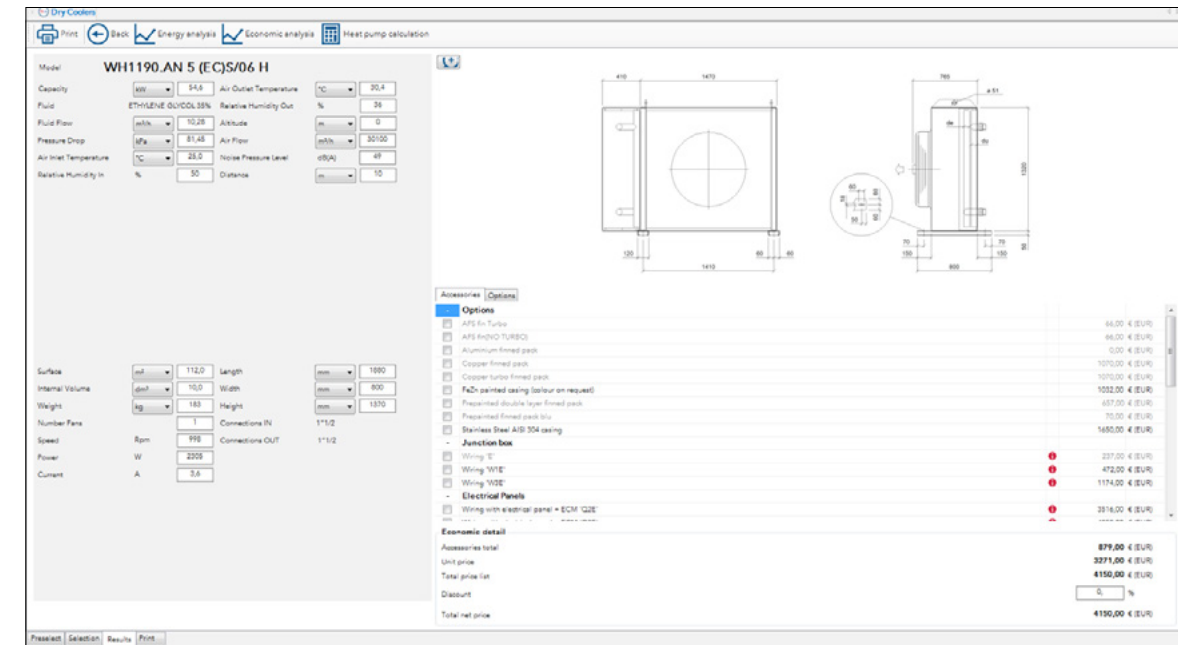
**Note from 2018 release**, in order to permit to select range according to your needs, it is possible to:

- Filter unit names
- Have an identical window both for rating and verification
- Select a very wide range of fans with different options
- Have info button for some items

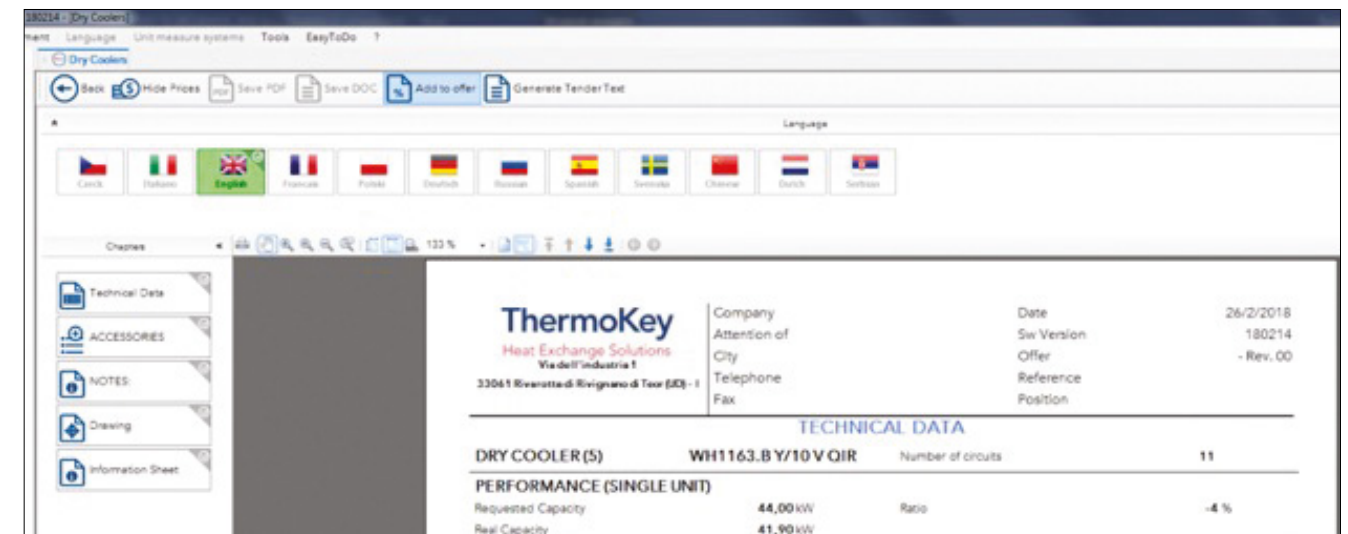


### 4.1.3. Single unit print out

You only have to double click on your favorite unit and it is possible to access accessories list.

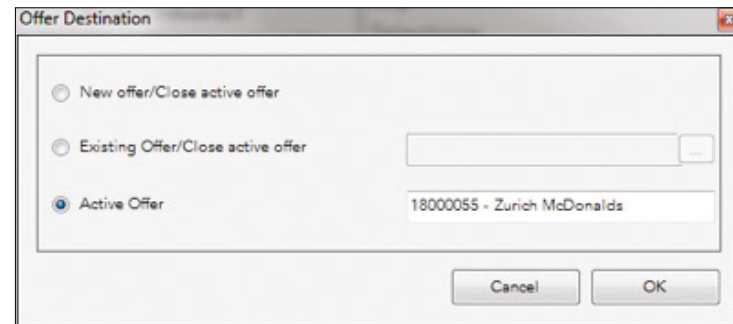


Add accessories and options and click on print out.

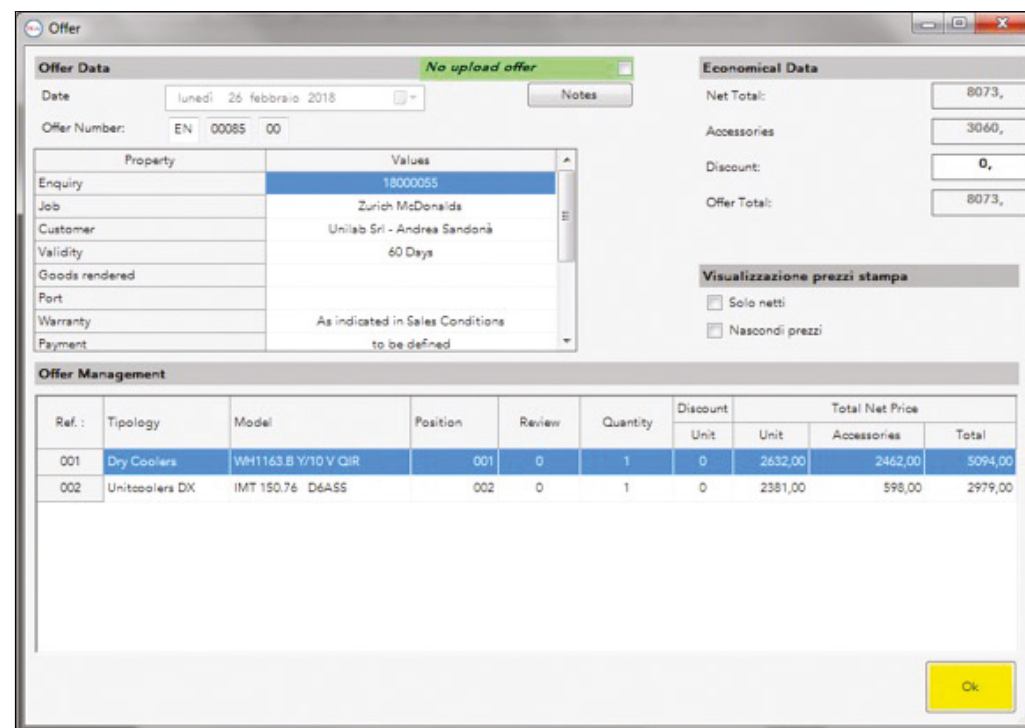


At this step

- It is possible to Hide Prices
- It is possible to save pdf and doc formats only after you have added the offer

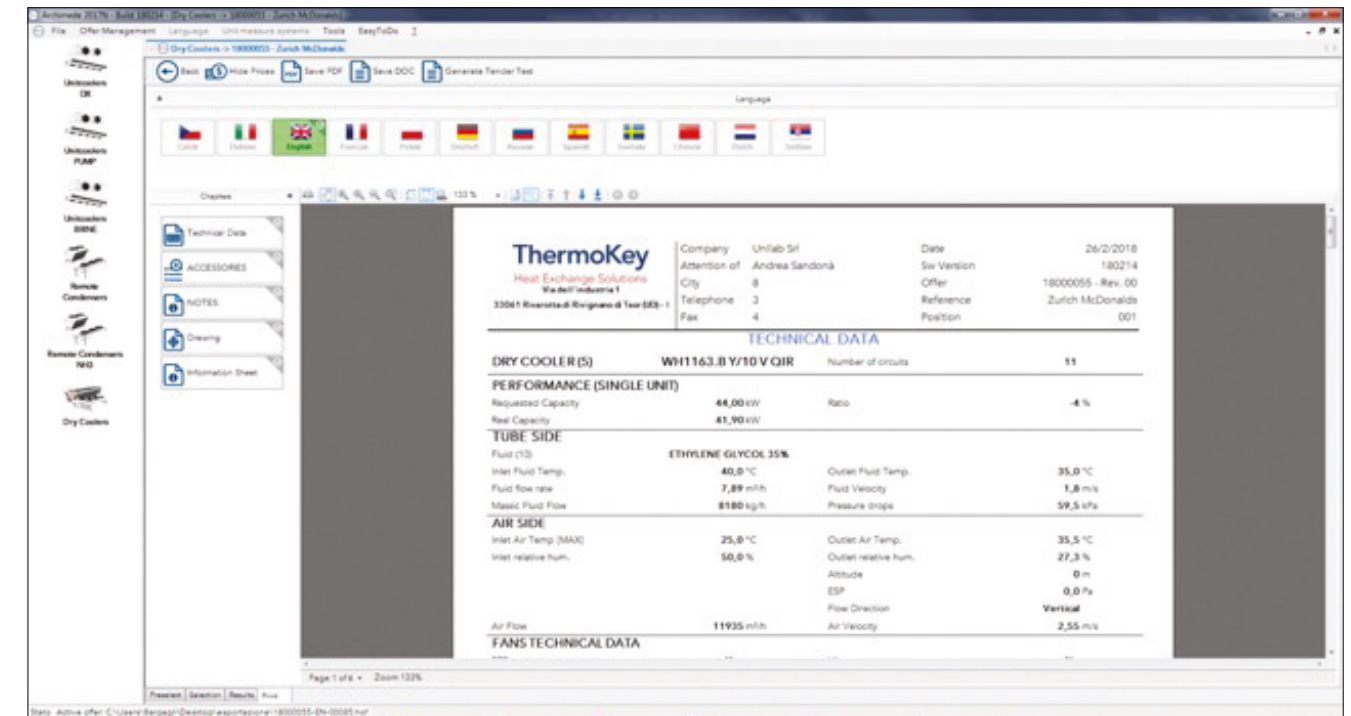


Only if the offer has just been created there is an active offer. The other 2 options force to close any active offer. For existing offers and new offers, the procedure will be explained in the next chapter.



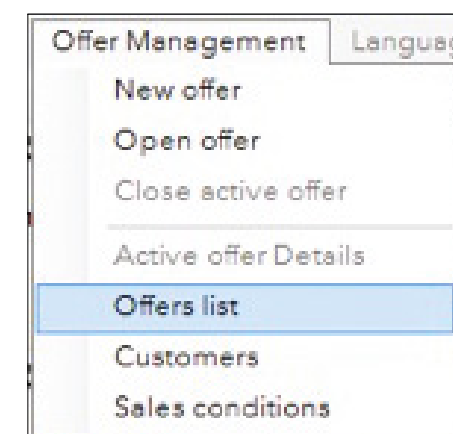
At this step

- It is possible to define position of model on offer (example customer chamber or reference),
- It is possible to define quantity of units,
- It is possible to define discount for unit (sum of unit and accessories),
- It is possible to define extra discount for the entire project
- It is possible to define whether to print with gross prices or only with net prices.
- It is possible to Generate Tender Text
- It is possible to change languages
- It is not possible to divided Technical Data page, Notes Page, Accessories pages, Drawing, Information sheet



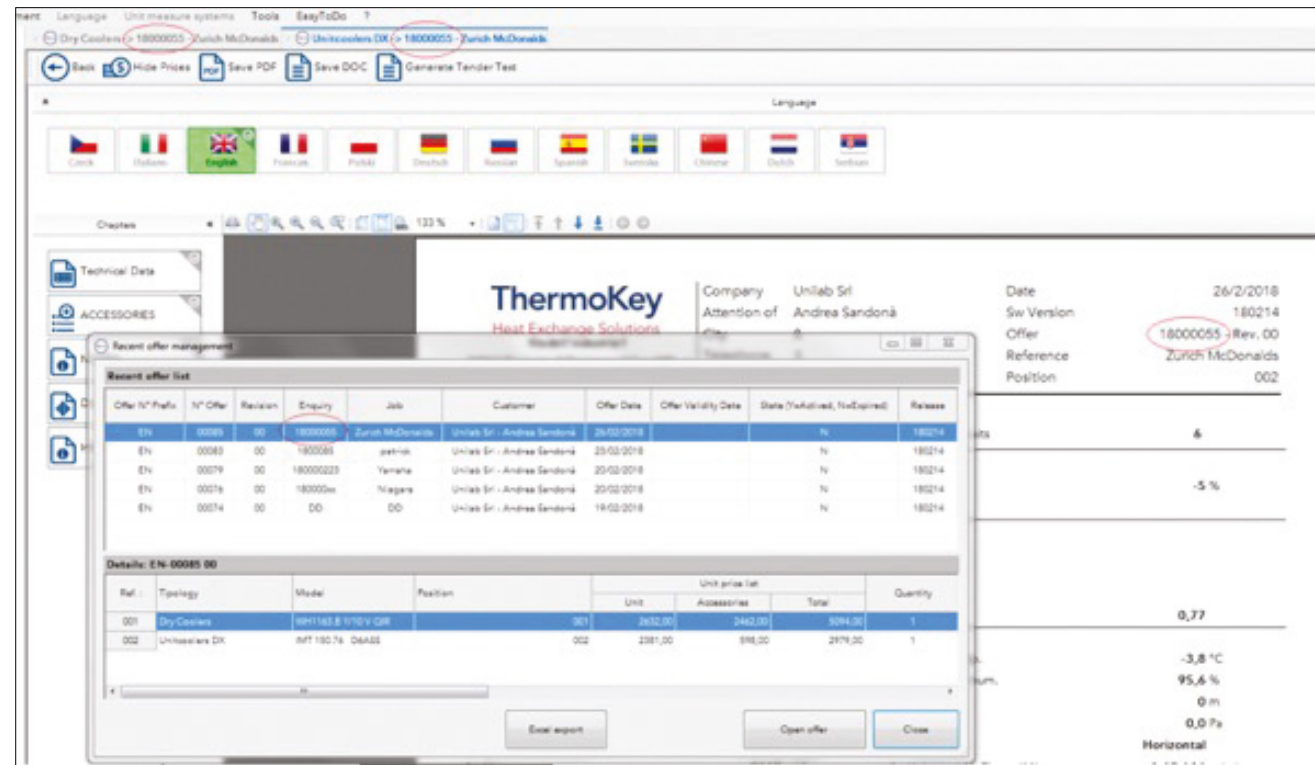
#### 4.1.4. Project print out

You only have to access offer Management “Offer List”.



If one offer is active

- a. it is underlined and on the first line of the list
- b. it is indicated on the top on dedicated windows for each selection just added to the offer
- c. it is indicated on the top of the data-sheet print out



**4.2 PRODUCT SELECTION AND SAVED OFFERS**

It is possible to select one unit and saved the offer.

SELECTION OF PRODUCT → SAVE SINGLE UNIT ON A NEW OFFER → GENERATION N° OF OFFER

Suggested for projects with a single item.

**4.2.1. Unit selection**

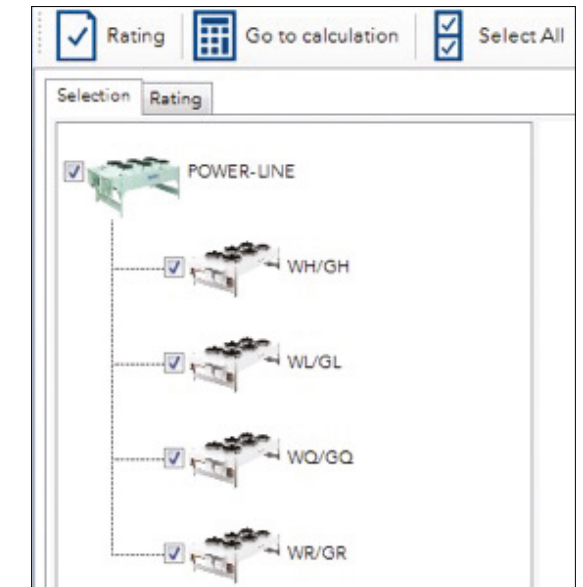
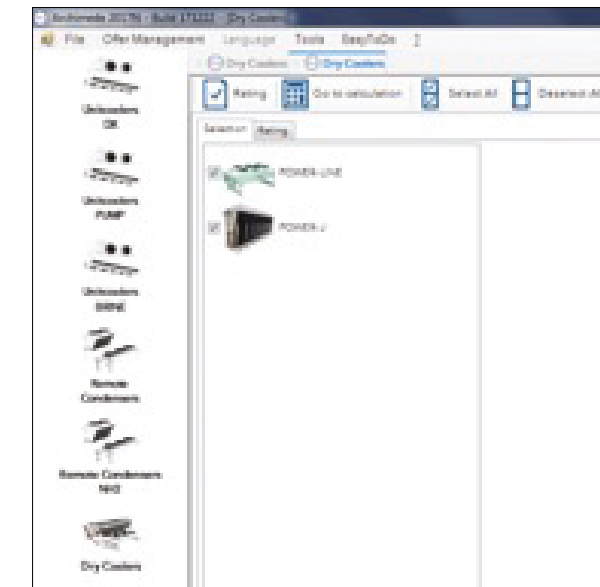
It is necessary to select the Family unit by clicking on the corresponded button.



It is necessary to select the unit series by selecting or deselecting the single series.

It is possible to

- a. expand each series in single sub-series by clicking twice on the drawing



- b. it is possible to select all units of a series by clicking on Select all



- c. it is possible to deselect all units of series by clicking on Deselect all



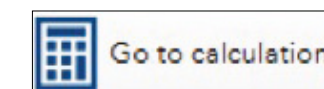
To run the application, please consider the following:

- 1. two kinds of calculation are available:

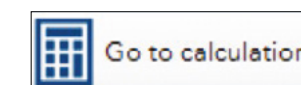
- a. **Rating unit:** the program gives you the performance of the selected unit



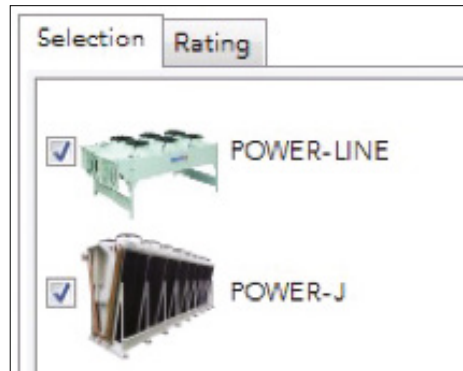
- b. **Select unit:** the program selects the best units for the entered operating conditions



- 4. In **Select calculation** you can access after clicking



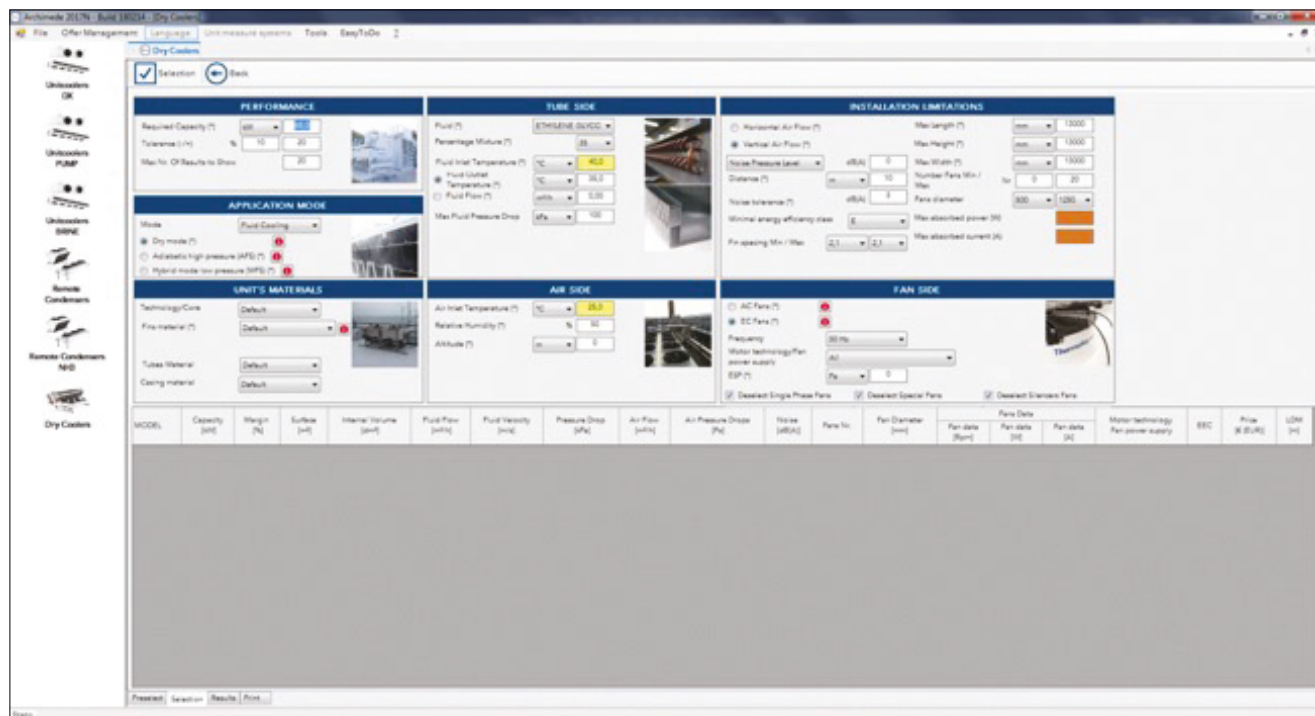




Option to shift from Selection to Rating is evident.

4a. All minimum necessary data are indicated with (\*)

4b. In case of doubts for each field it is possible to access to more information by clicking on “?”



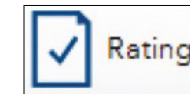
4c. In order to reduce time of calculation it is advisable to select one fan type from the list or filter by fan number or diameter according to the expectations and set tolerance of capacity and noise which best fit your application

4d. Selection results can be sorted per increasing capacity, Margin..etc (default priority is price)

**Note from 2018 release** in order to permit to select range according to your needs, it is possible to:

- Select tolerance up and down regarding capacity (Default +/- 20%)
- Select tolerance up and down regarding Noise(Default +/- 3dB(A))
- Fix number of results (Default 20 items)
- Filter according to unit dimensions for all dimensions (Default Max height, Length and Width 13 m)
- Filter min and max fan spacing (Default depends on unit selected)
- Filter min and max fan number (Default from 0 to 20 fans)
- Filter min and max fan diameter (Default depends on unit selected)
- Filter Max W absorbed and max A absorbed
- Select a very wide range of fans with different options
- Have info button for some items

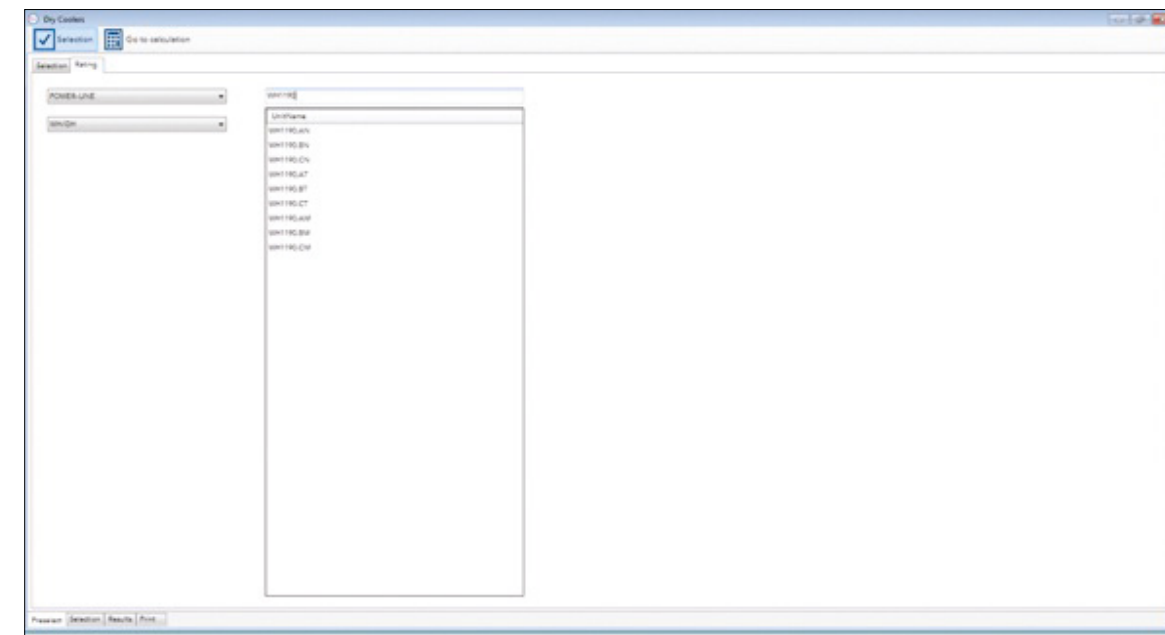
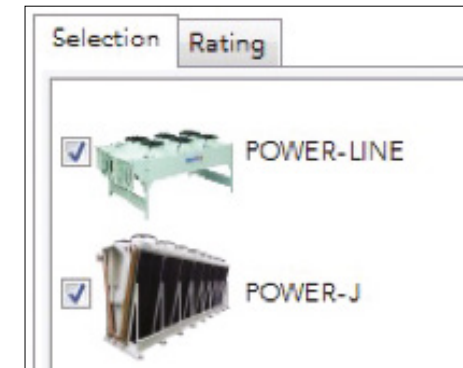
5. In **Rating mode**, you can access after clicking on



Option to shift from Selection to Rating is evident.

The list of units must be selected according to series and sub-series.

It is possible to select and filter all list of series and sub-series by clicking on field of filter and clicking Go to calculation.

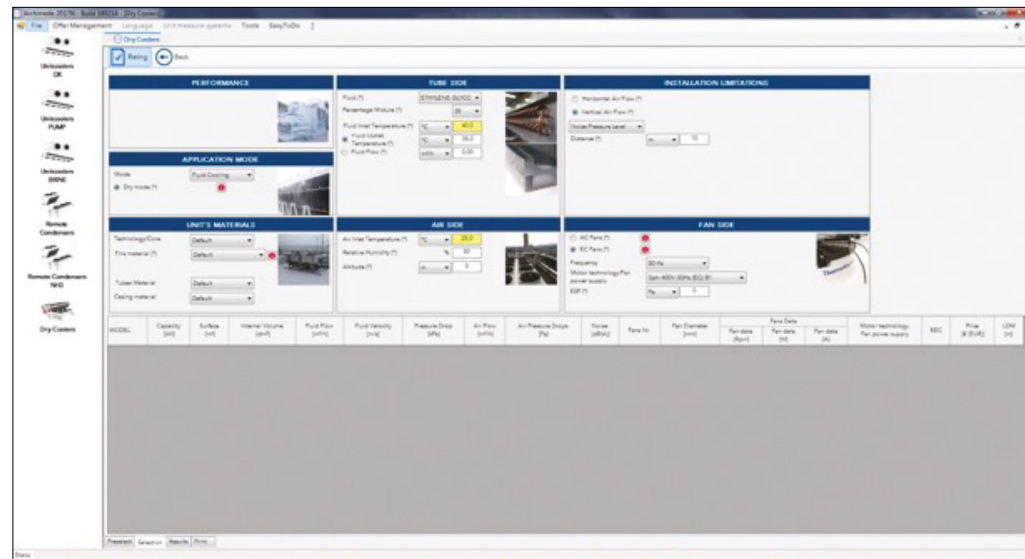


5a All minimum necessary data are indicated with (\*)

5b In case of doubts for each field it is possible to access to more information by clicking on “?”

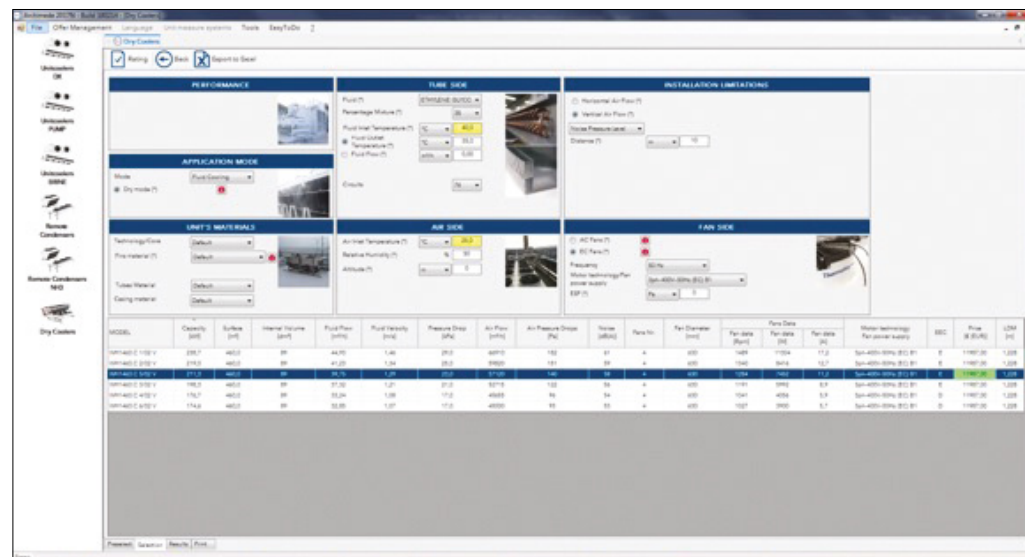
5c In order to reduce time of calculation it is advisable to select one fan type

5d Selection results can be sorted per increasing capacity, Margin..etc (default priority is Price)



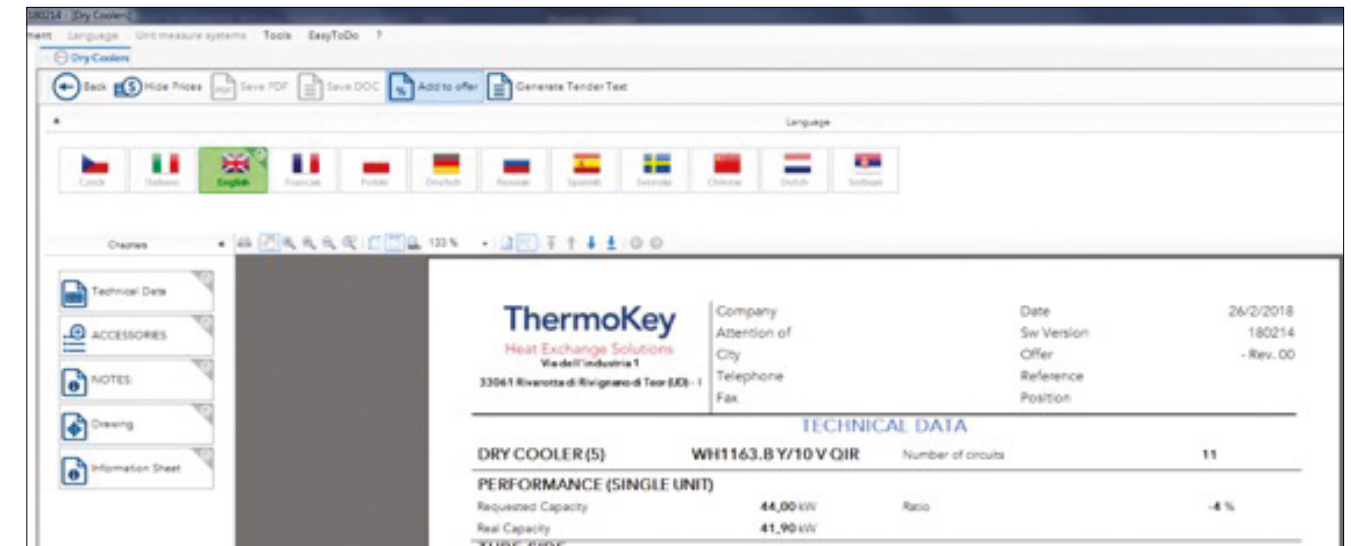
Note from 2018 release in order to permit to select range according to your needs, it is possible to:

- Filter name of units
- Have an identical window rating and verification
- Select a very wide range of fans with different options
- Have info button for some items



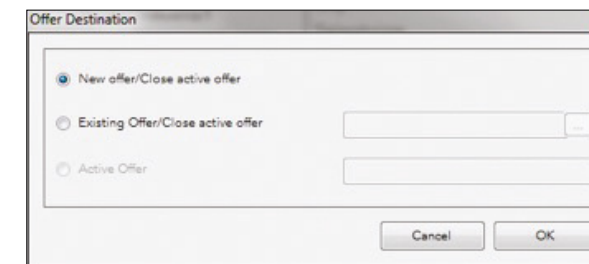
4.2.2. Single unit print out

Add all accessories and options needed and click on print out.

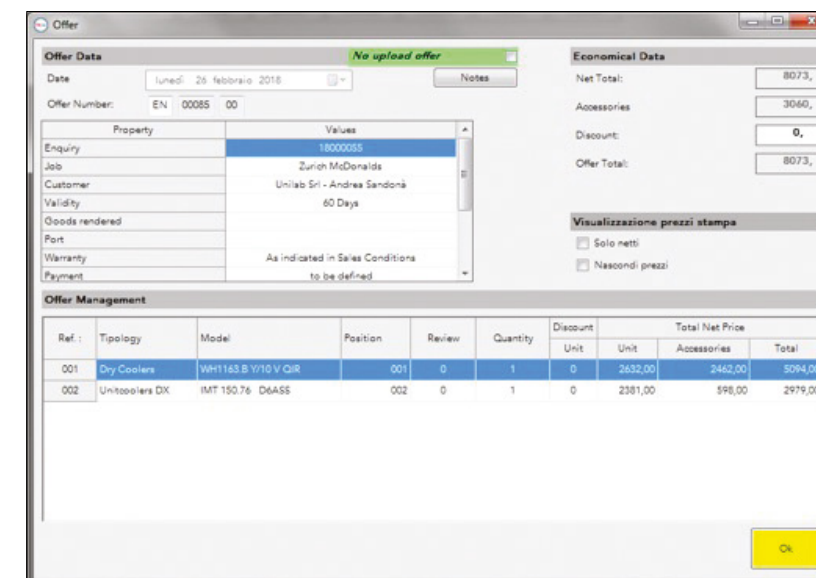


At this step

- It is possible to hide prices
- It is possible to save pdf and doc formats only after you have added the offer

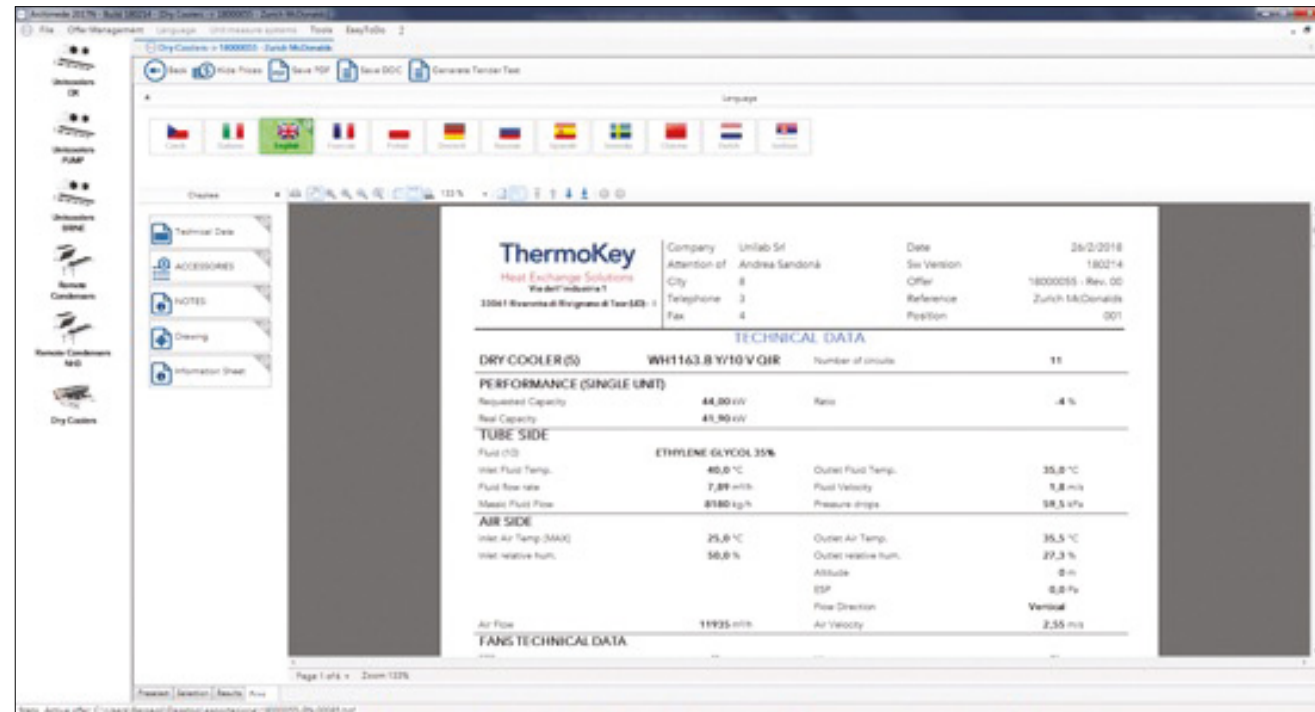


Only if the offer has just been created there is an active offer. The other 2 options force to close any active offers. For existing and new offers, the procedure will be explained in the next chapter.



At this step

- It is possible to define position of model in the offer (example customer chamber or reference)
- It is possible to define quantity of units
- It is possible to define discount for unit (sum of unit and accessories),
- It is possible to define extra discount for the entire project
- It is possible to define whether to print with gross or only net prices



- It is possible to Generate Tender Text
- It is possible to change language
- It is not possible to divide Technical Data page, Notes Page, Accessories pages, Drawing, Information sheet

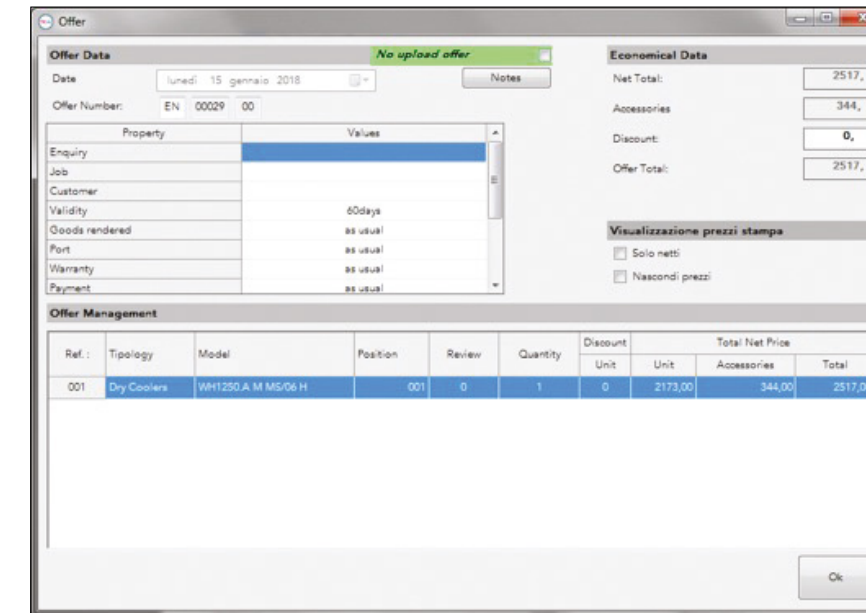
Offer is not created at first step: there is not an active offer.

On 4.2.3 It is explained how to create an offer.

For existing new offers, the procedure will be explained in the next chapter.

### 4.2.3. Offer project creation

The window opens after the selection of the first unit.



**Date:** it cannot be modified and it is the date of the offer.

**Offer Number:** it is composed by

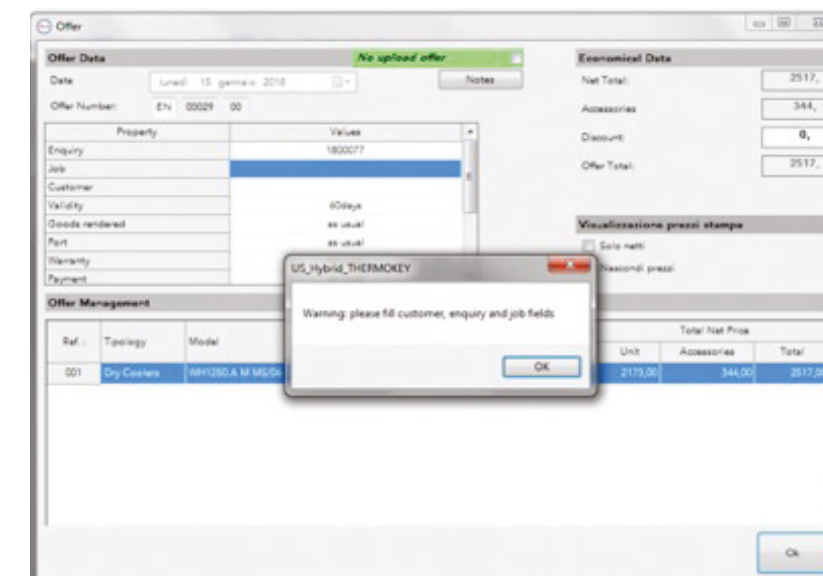
- 2 letters "EN= enquiry"
- A progressive number (created automatically by the software)
- Revision "00" is default revision for a new progressive number

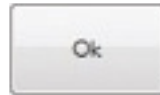
**Enquiry:** it is free: generally could be a classification of the offer (es 18000055).

**Job:** it is free: generally could be a reference for the project (e.g. Zurich Mc Donalds).

**Customer:** it is free: see explanation in previous chapter 3.3.1.

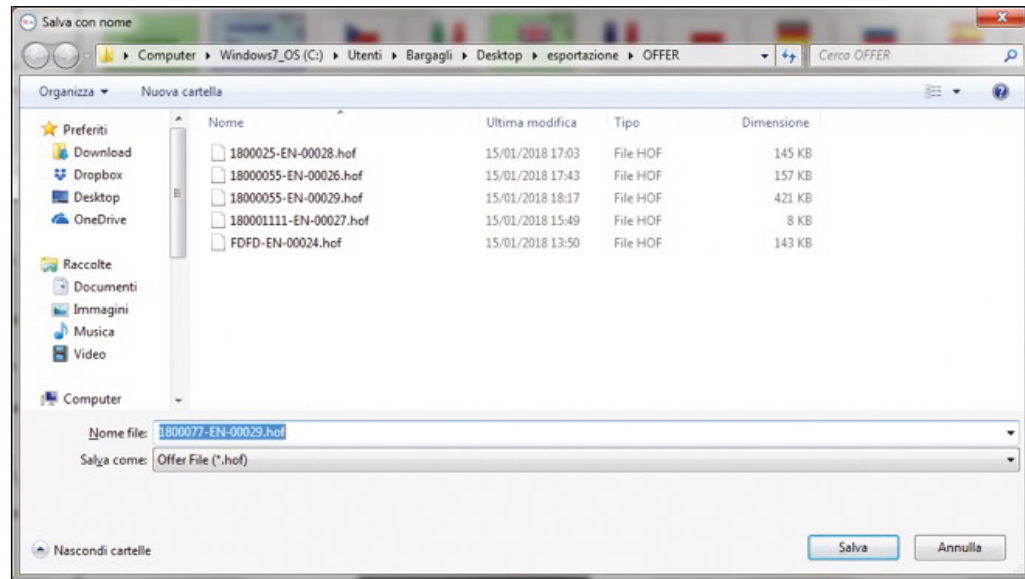
If one of these data is not inserted a warning will appear.



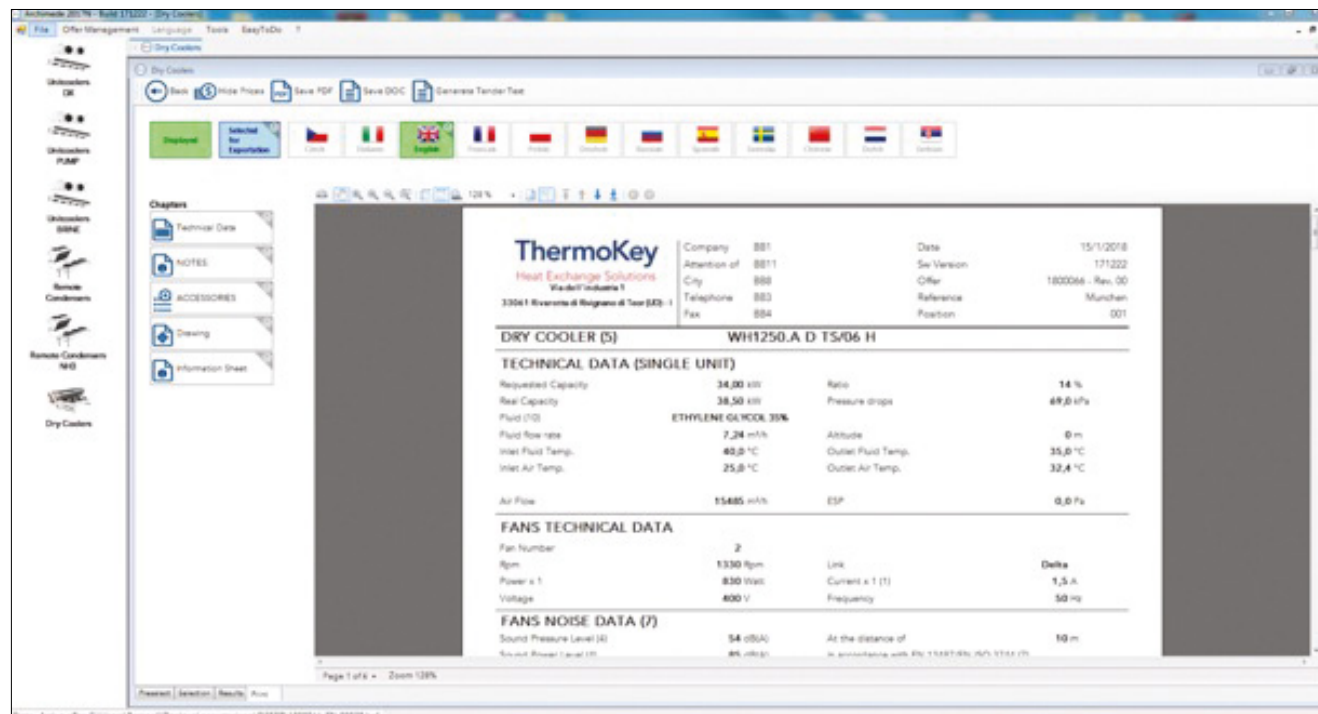


All other fields are set in commercial conditions: see explanation in previous chapter 3.3.2. At the end of this project it is necessary to click on the button.

Offer procedure is finished when “project file”. Hof is saved.

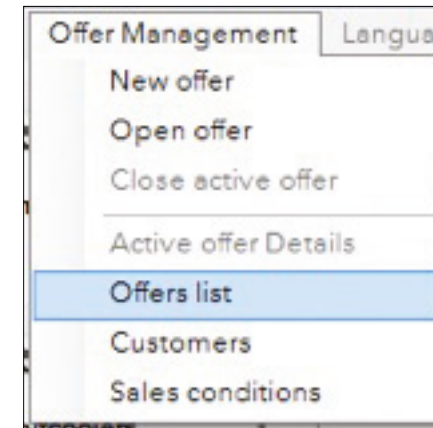


At the bottom of the software window, the active offers are indicated.



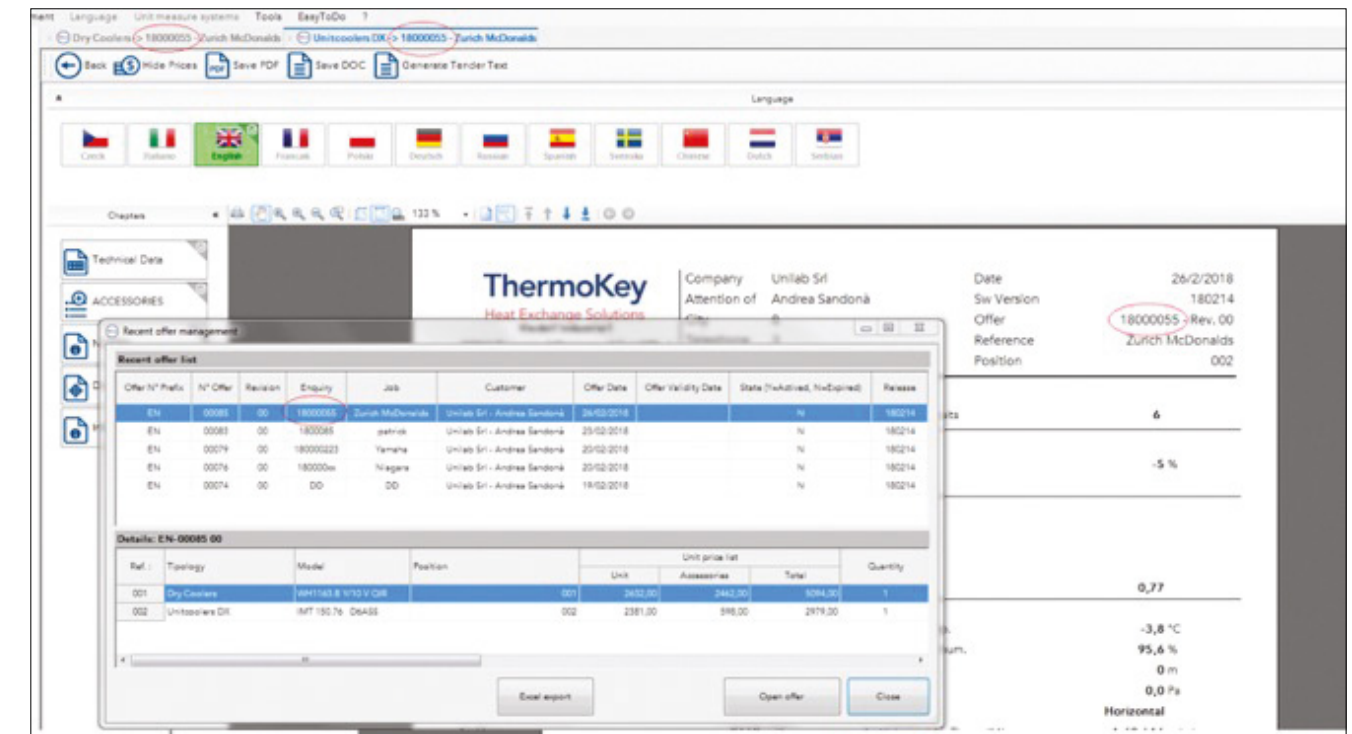
#### 4.2.4. Project print out

You only have to access offer Management in “Offer List”.

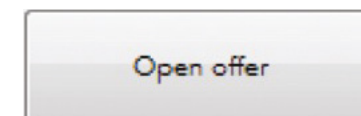


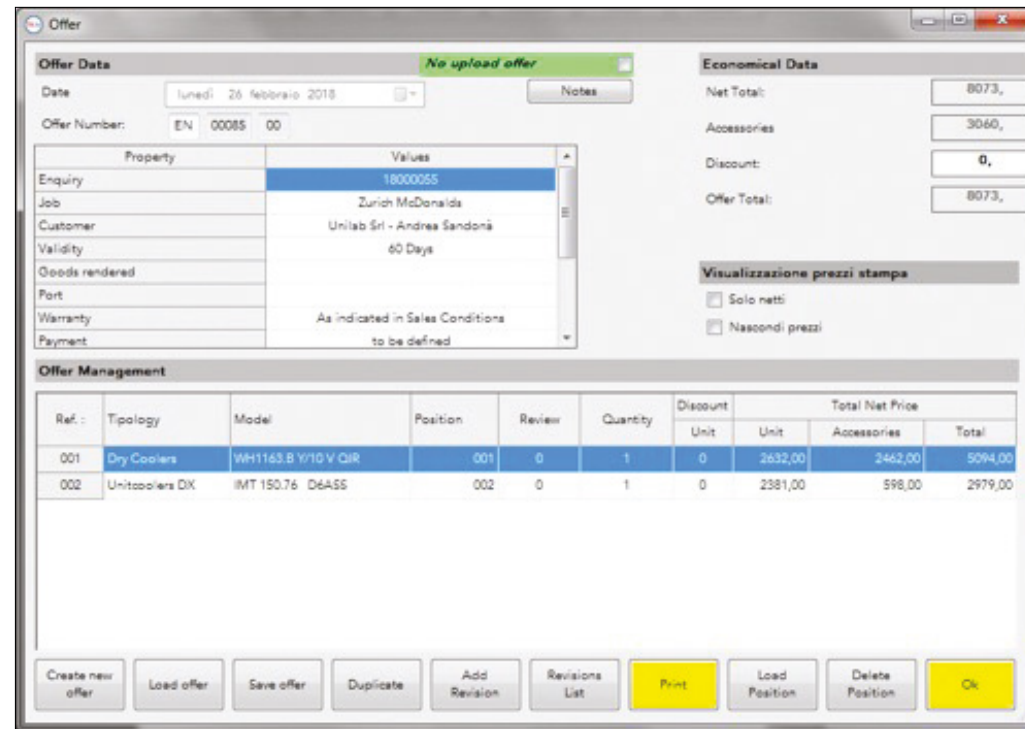
If one offer is active

- It is underlined and on the first line of the list
- It is indicated on the top in a dedicated window for each selection just added to the offer
- It is indicated on the top of print out of data-sheet



If you click on open offer it is possible to access print out.

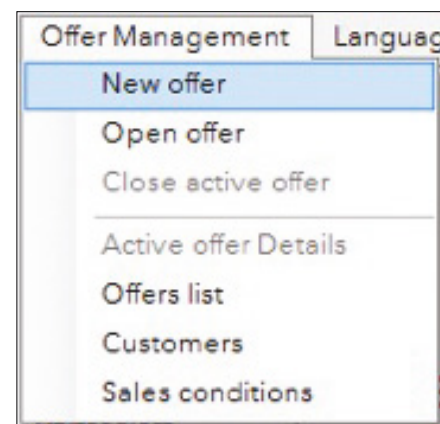




### 4.3 OFFER MANAGEMENT

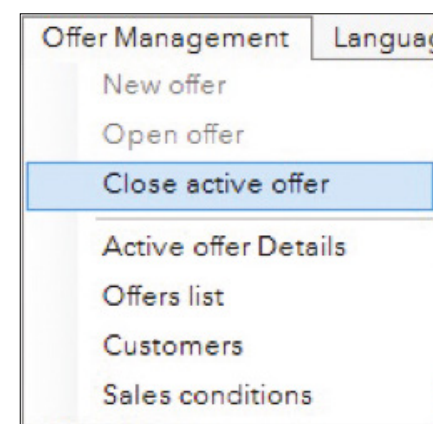
In this chapter Offer Management is explained more in detail.

#### 4.3.1 New Offer



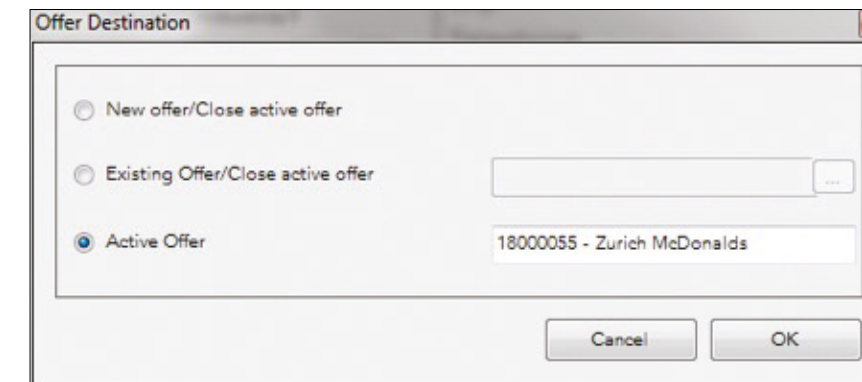
A new offer can be opened only if no other offer is active.

#### 4.3.2. Close active offers



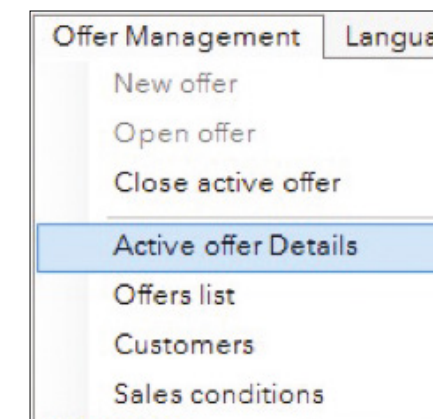
It is possible to close an offer only if it is active.

The same procedure of closing an offer can be done by adding a selection to a new offer in print out.



#### 4.3.3. Active offer Detail

All minimum necessary data are described in previous chapters.



A new offer can be open only if no other offer is active.

The fields are identical of Offer list but they refer only to active offers (see state on lower Bar).

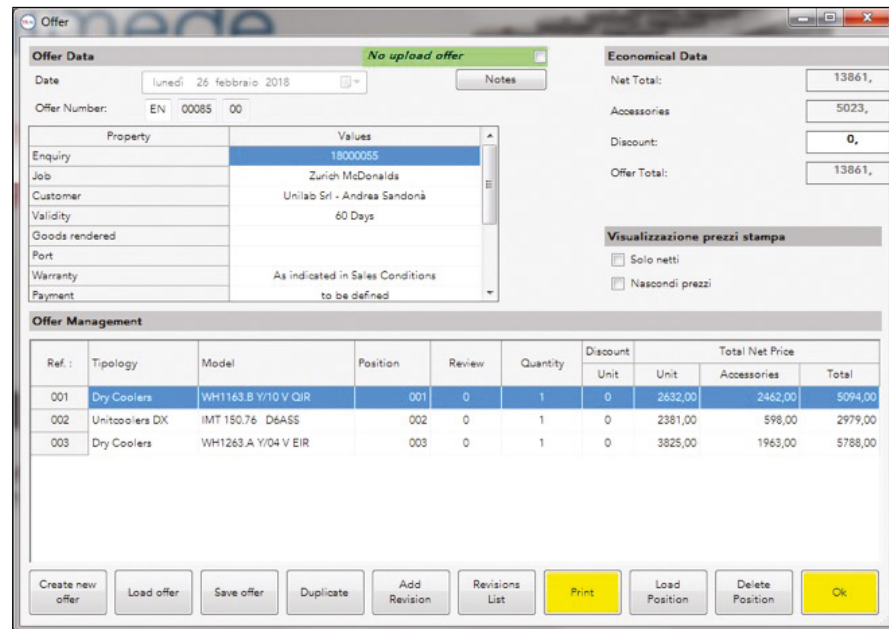
Here the function of other buttons is described:

**Create a new offer:** it is necessary to create an offer with a higher number of latest EN XXXX.

**Load an offer:** it is necessary when I want to import a file.hog project.

**Save an offer:** it is necessary when I want to export a file.hog project.

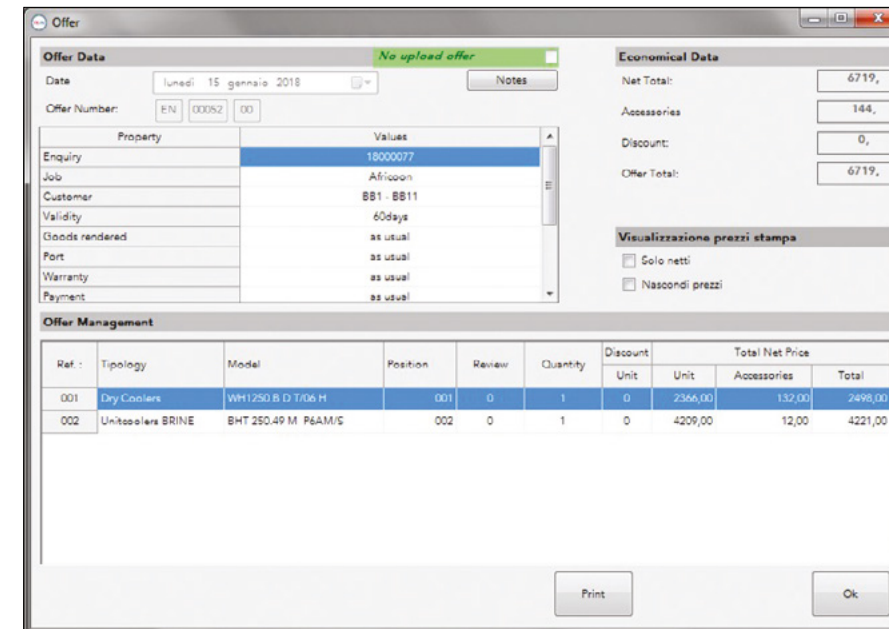
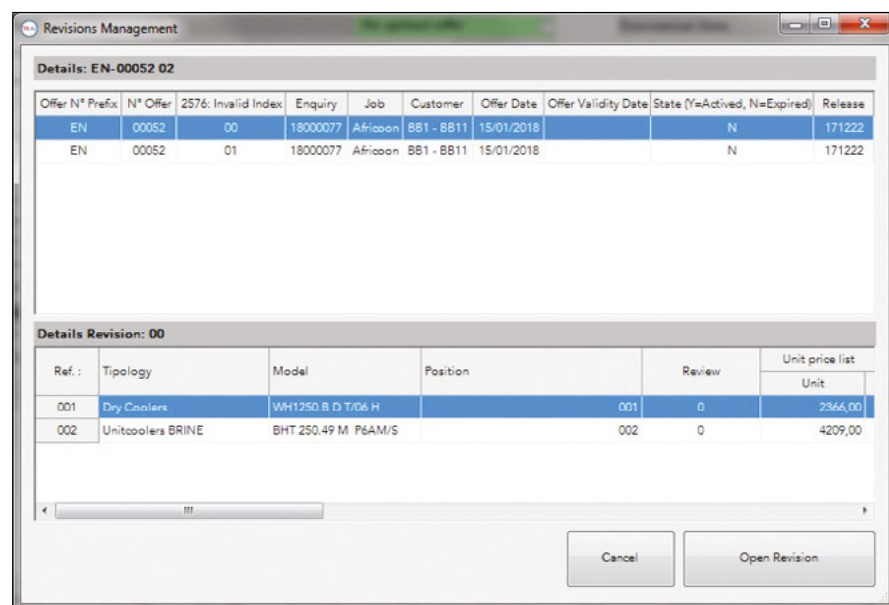
**Duplicate:** it is possible to copy an offer in the first EN xxxxx available (all positions are copied in a new EN XXXXX REV00).



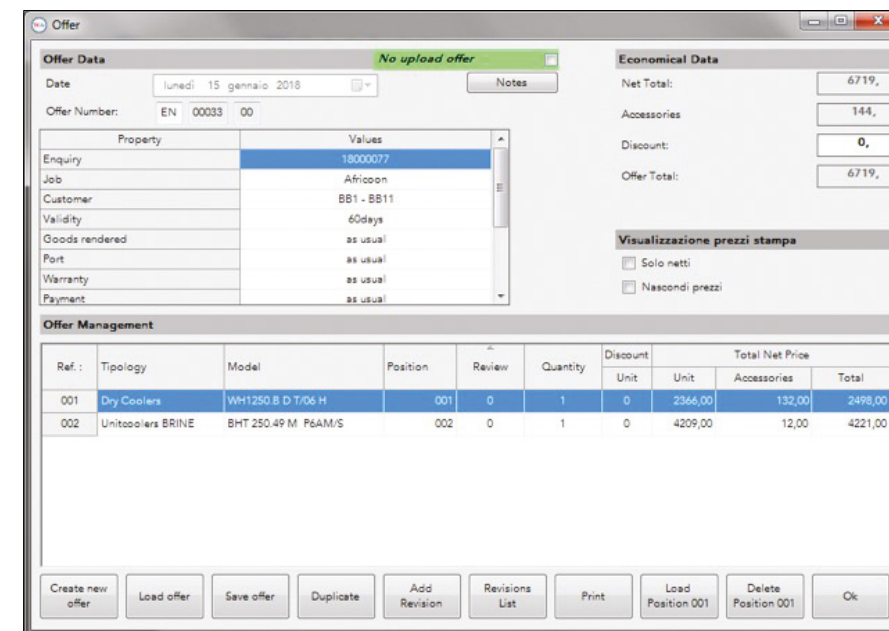
**Add Revision:** it is possible to copy an offer with a new revision (all positions are copied in the same EN XXXXX but REV00 → REV01).



**Revision List:** it is possible to check all revisions. For example if latest revision is revision 02: this revision can be modified and printed. By clicking on Revision List it is possible to open all previous revisions (00 and 01) and only print them.

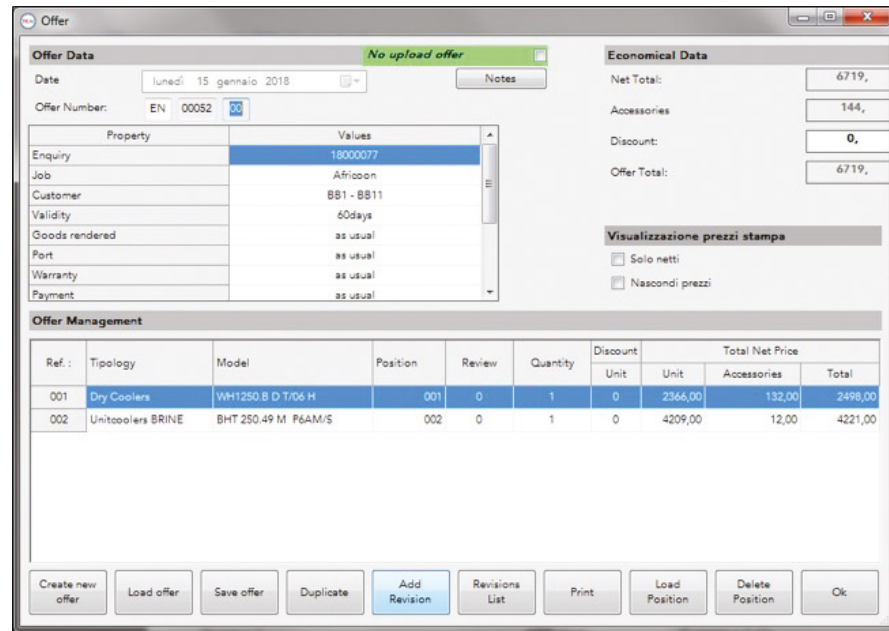


**Load Position 01:** it is possible to Load a single calculation.  
**Delete Position 01:** it is possible to delete a single calculation. For example if latest revision is revision 02: this revision can be modified and printed. By clicking on Revision List it is possible to open all previous revisions (00 and 01) and only print them.

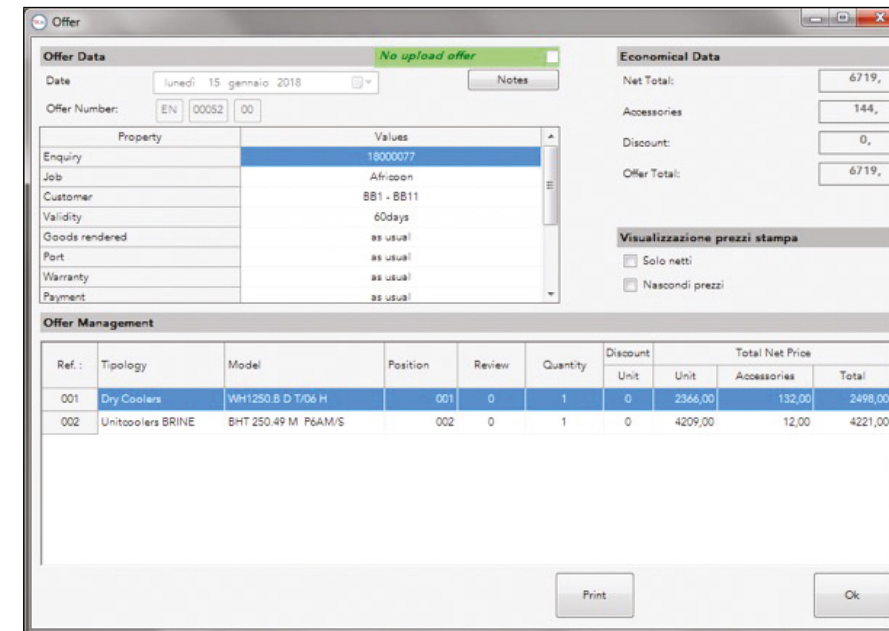
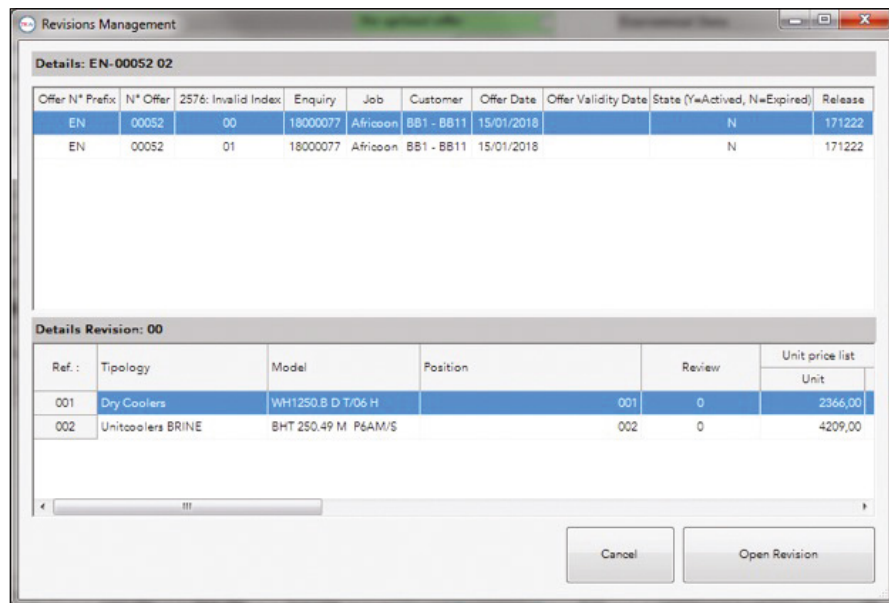




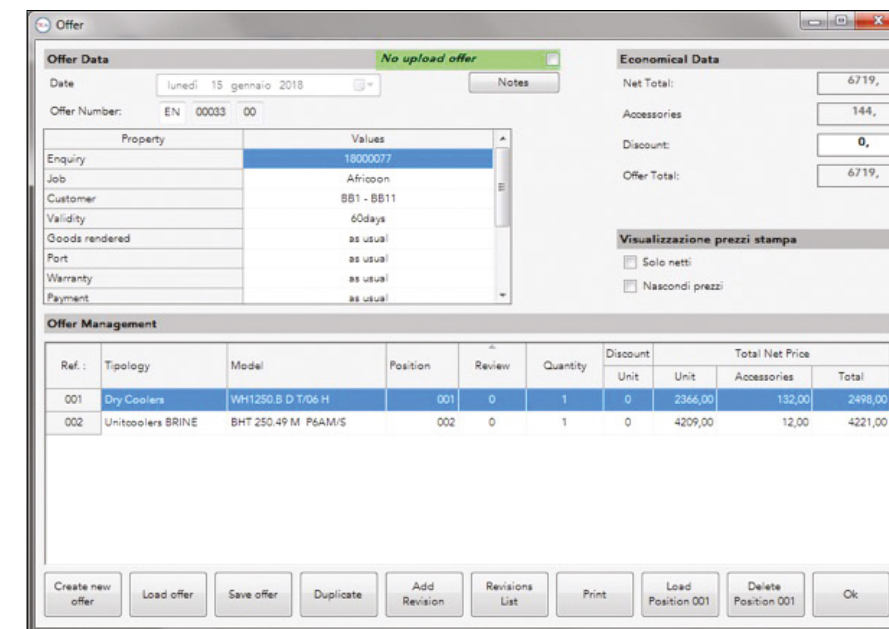
**Add Revision:** it is possible to copy an offer in the new revision (all positions are copied in the same EN XXXXX but REV00 → REV01).



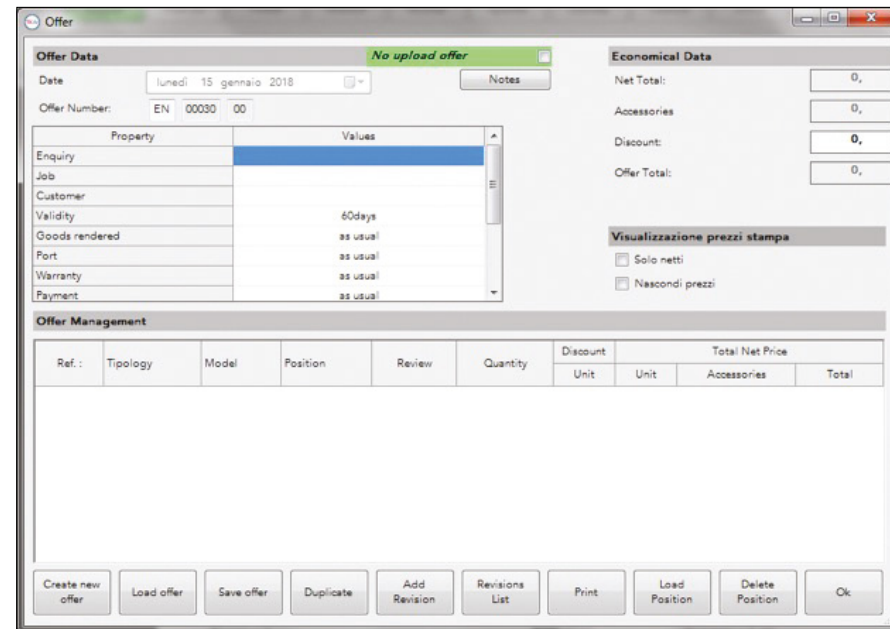
**Revision List:** it is possible to check all revisions. For example if latest revision is revision 02: this revision can be modified and printed. By clicking on Revision List it is possible to open all previous revisions (00 and 01) and only print them.



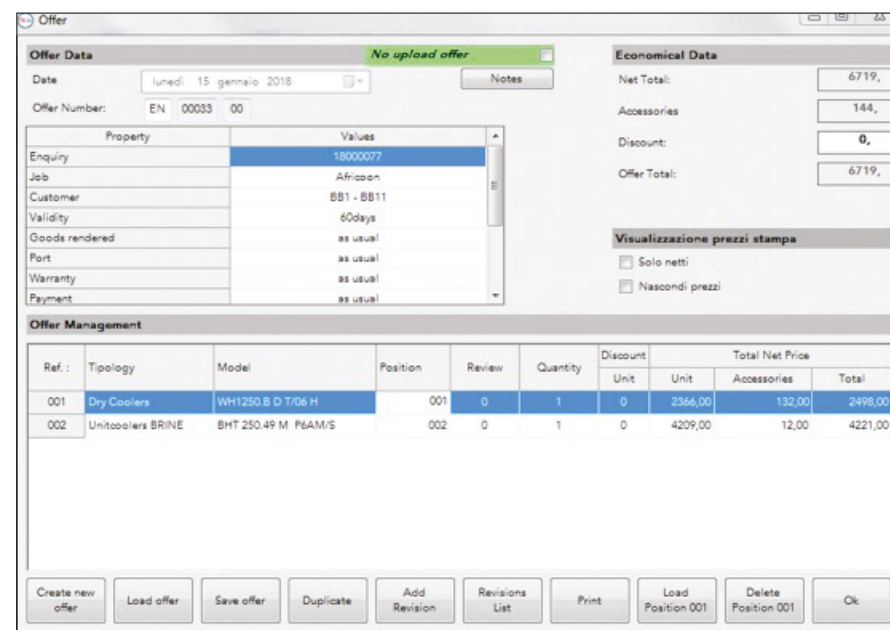
**Load Position 01:** it is possible to Load a single calculation. **Delete Position 01:** it is possible to delete a single calculation. For example if latest revision is revision 02: this revision can be modified and printed. By clicking on Revision List it is possible to open all previous revisions (00 and 01) and only print them.







For example on latest offer Management it is possible to modify POSITION, Review Quantity and discount. All other fields are locked.



**4.3.5. Open Offer**

It is possible to open a project.hog.

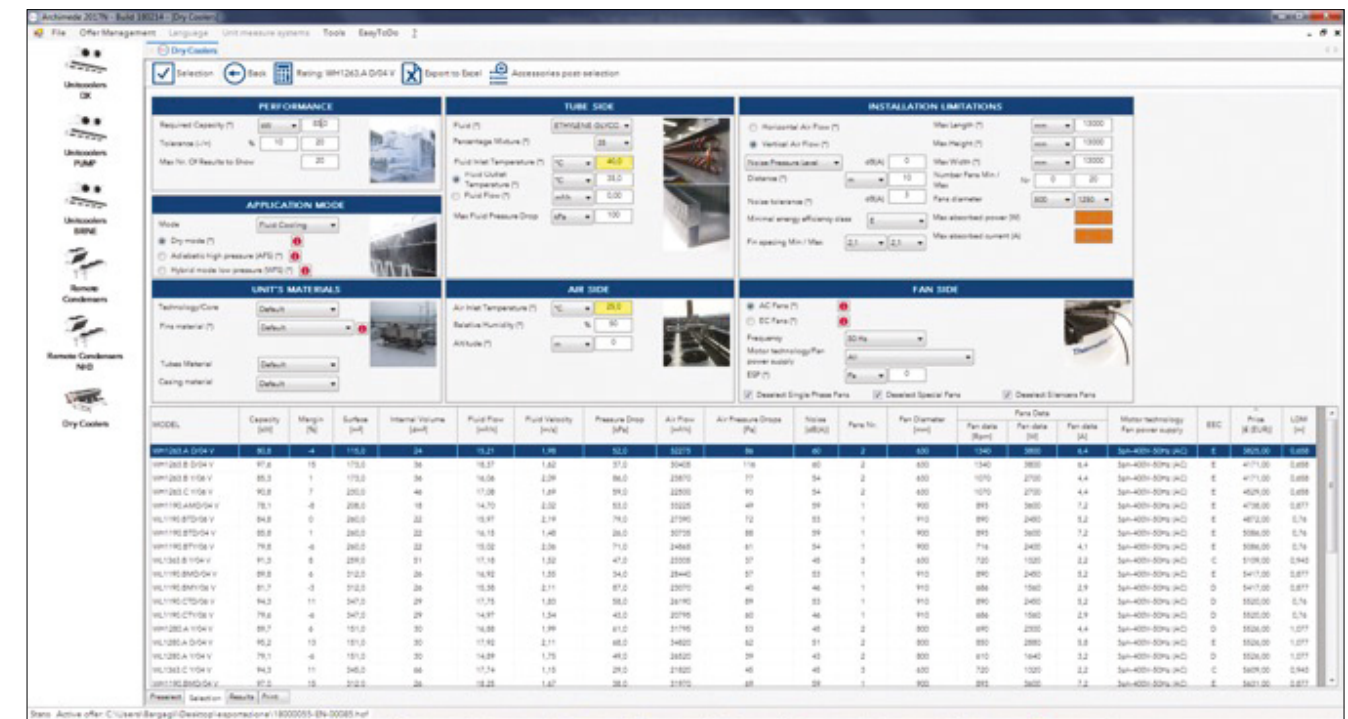
# 5. Accessories and options

Accessories are all variations from standard product or all options of unit equipment.

## 5.1 ACCESSORIES ARE A MUST HAVE: POST SELECTION OF ACCESSORIES

In some cases, accessories are options that the customer MUST HAVE.

The procedure of selection of the unit is the same of chapter 4, up to a list of units that all respect the given inputs, sorted out according to unit price (sum of unit price + extra-price of fans).



However sometimes it is necessary to sort out including prices: it is possible to sort the obtained list according to a list of accessories that the project MUST HAVE by clicking on "Accessories post-selection".



Without any option selected sorting out follows previous selection.





This option forces the use of coated fins and the use of only some el. Options.

**Note from 2018 release**, info button can explain different adiabatic systems.

**UNITS MATERIAL**

**Fin material option:** characteristics of material effect the efficiency of the heat exchanger.

**Fin thickness option:** characteristics of material effect the efficiency of the heat exchanger.

**Fin spacing option:** characteristics of material effect the efficiency of the heat exchanger.

**Note from 2018 release**, calculation of special fin spacing, fin thickness or fin material will modify the price and weight of the unit

**Note from 2018 release**, info button can suggest customer the best configuration following the characteristic of the ambient of installation.

**TUBE MODE INPUTS**

**Fluid selection → special tubes:** for some fluids (explosive fluids, fluids with high Pressure design(ex R410A),oil) special tubes or collectors are used. For oil coolers the fin material needs to be special.

**Fluid inlet selection → special tubes and special fin material:** for industrial application (T fluid in>60°C)special tubes or collectors are used. Fin material needs to be special.

This option forces the use of smooth fins and the use of special cables and special fans suitable to high temperatures.

**Fluid flow/rate selection → special collectors:** in the case of selection of some flows/rates that are not compatible with standard circuits/diameter of manifolds: a special collector is added.

**Note from 2018 release**, pressure drops consider also connections.

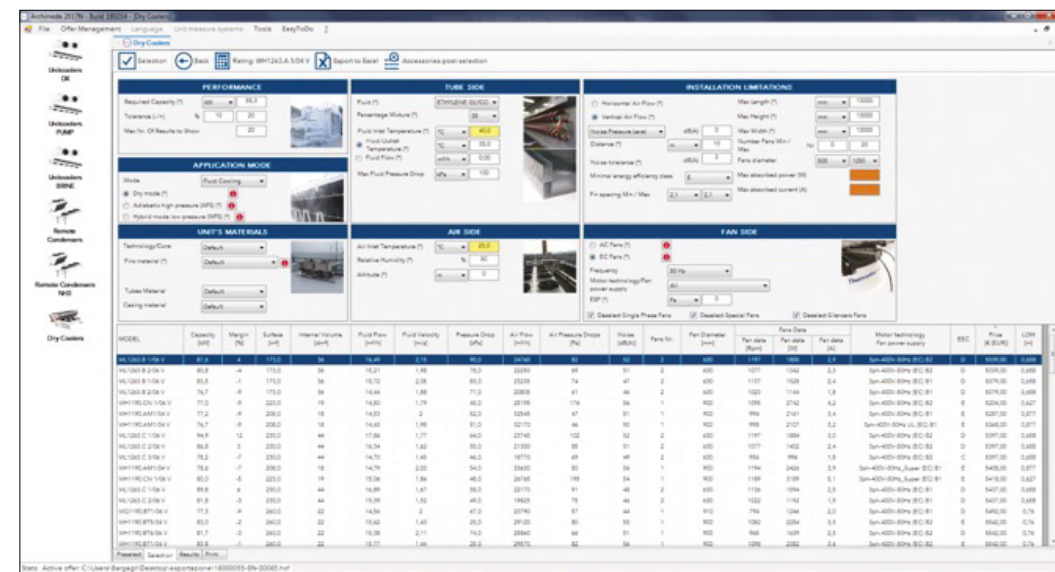
**Note from 2018 release**, the calculation of special fin spacing, fin thickness or fin material or special tubes will modify the price and weight of the unit.

**FAN SIDE**

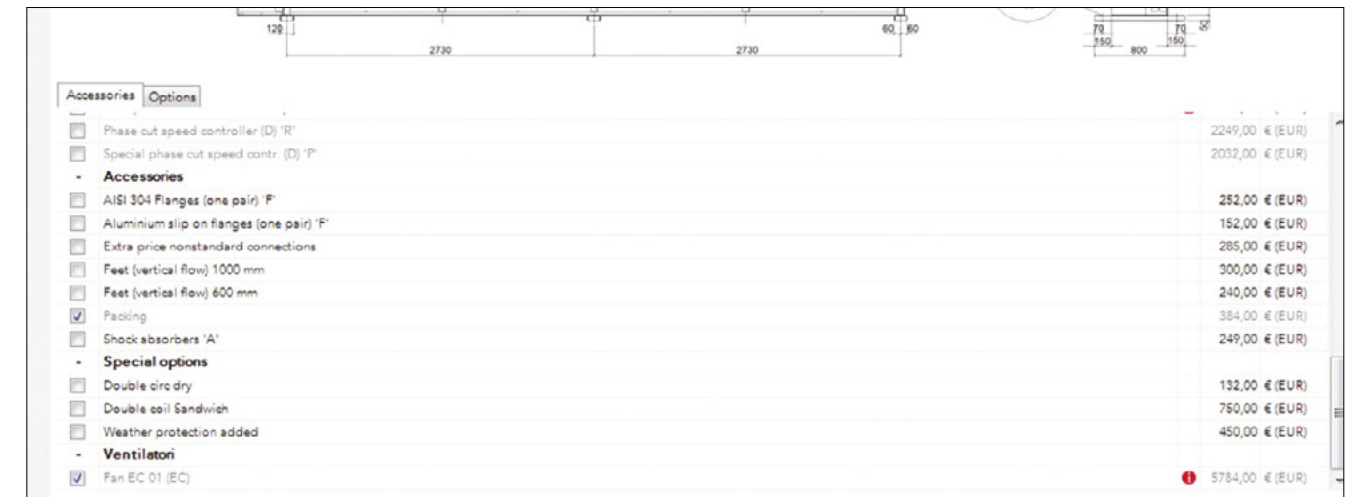
**Fan option:** fan curves are available with their own curve of noise, pressure, noise at variation of airflow.

**Note from 2018 release**, fan range has been extended with the possibility to calculate more brands of fans and fans with silencers.

**Note from 2018 release**, info button can explain differences between different fan types.



All these accessories are available on the list of accessories without the possibility to remove them from selection.



**5.3.2. Selectable accessories after the definition of the unit**

Some accessories are available on the list after the definition of the unit.

In this family we can consider:

**OPTIONS**

**Fin material or thickness:** not selectable at this stage.

**Connection position:** only for cubic evaporator.

**Drip-tray insulation:** only for evaporators.

**Loose air throw cowls:** only for evaporators.

**Casing material:** generally in stainless steel or special RAL.

In some cases RAL painted casing is a standard without the possibility of removing it from the list.

**ELECTRICAL ACCESSORIES**

**Cowling heating element:** only for evaporators.

**Heater element on drain elements:** only for evaporators.

**Pre-wiring:** only for evaporators.

In some cases pre-wiring is a standard without the possibility of removing it from the list.

**DEFROST**

**Defrost:** only for evaporators.

Sometime standard defrosting is not necessarily air defrosting without the possibility of removing it from the list.

Please check info button for the description for each defrosting and the nomenclature of the unit.

**JUNCTION BOX**

**List of AC junction box:** wiring, mounting and junction box AC fans without regulation.

**List of EC junction box:** wiring, mounting and junction box EC fans without regulation.

In some cases with some options selected, some junction boxes cannot be selected.

In some cases with some controllers, some junction boxes cannot be selected.

**EL.PANELS**

**List of AC el.panel without controller:** wiring, mounting and el. box AC fans without regulation.

**List of EC el.panel without controller:** wiring, mounting and el. box EC fans without regulation.

In some cases with some options selected, some junction boxes cannot be selected.

In some cases with some controllers, some junction boxes cannot be selected.

**List of AC el.panel with inside controller:** wiring, mounting and el. box AC fans with regulation.

**List of EC el.panel with inside controller:** wiring, mounting and el. box EC fans with regulation.

In some cases with some options selected, some junction boxes cannot be selected.

In some cases with some controllers, some junction boxes cannot be selected.

**REPAIR SWITCHES**

**List of switches:** wiring, mounting and switches.

In some cases with some options selected, some repair switches cannot be selected.

**CONTROLLERS**

**List of AC controllers:** wiring, mounting and controller AC fans without junction box.

**List of EC controllers:** wiring, mounting and controller EC fans without junction box.

In some cases with some options selected, some junction boxes cannot be selected.

In some cases with some el.box, some junction boxes cannot be selected.

**ACCESSORIES**

**Packing:** not selectable at this stage.

**Antivibrations:** only for remote units.

**Connections:** special connections, flanges.

**Feet:** special feet dimension (only for vertical flow).

**SPECIAL OPTIONS**

**Options for industrial applications:** only for internal use.

**Customized options:** only for internal use.

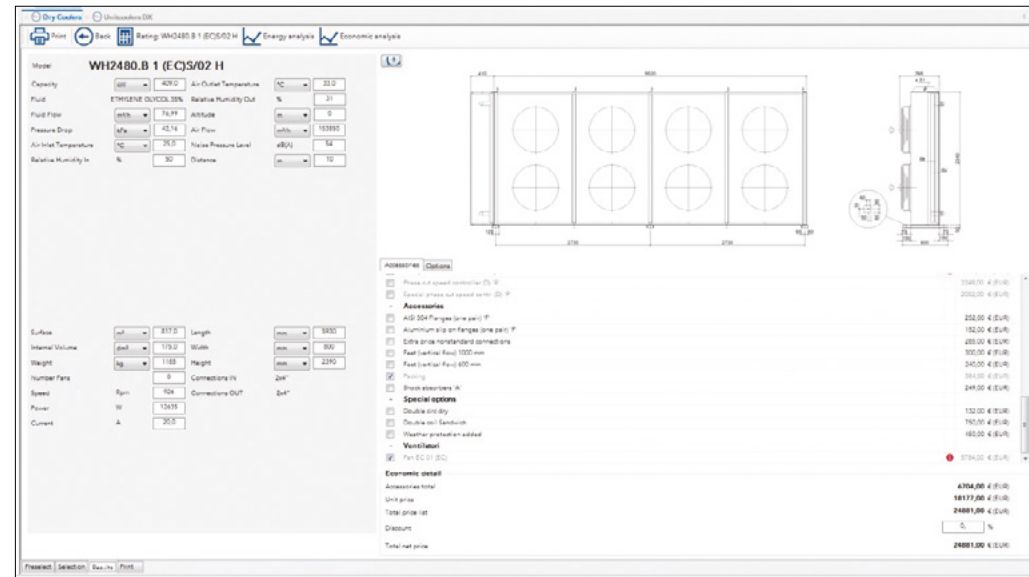
**FANS**

**Fan option:** not selectable at this stage.

Accessories		Options	
<input type="checkbox"/>	Phase cut speed controller (D) 'R'	2249,00	€ (EUR)
<input type="checkbox"/>	Special phase cut speed contr. (D) 'P'	2032,00	€ (EUR)
<b>- Accessories</b>			
<input type="checkbox"/>	AISI 304 Flanges (one pair) 'F'	252,00	€ (EUR)
<input type="checkbox"/>	Aluminium slip on flanges (one pair) 'F'	152,00	€ (EUR)
<input type="checkbox"/>	Extra price nonstandard connections	285,00	€ (EUR)
<input type="checkbox"/>	Feet (vertical flow) 1000 mm	300,00	€ (EUR)
<input type="checkbox"/>	Feet (vertical flow) 600 mm	240,00	€ (EUR)
<input checked="" type="checkbox"/>	Packing	384,00	€ (EUR)
<input type="checkbox"/>	Shock absorbers 'A'	249,00	€ (EUR)
<b>- Special options</b>			
<input type="checkbox"/>	Double circ dry	132,00	€ (EUR)
<input type="checkbox"/>	Double coil Sandwich	750,00	€ (EUR)
<input type="checkbox"/>	Weather protection added	450,00	€ (EUR)
<b>- Ventilatori</b>			
<input checked="" type="checkbox"/>	Fan EC 01 (EC)	5784,00	€ (EUR)

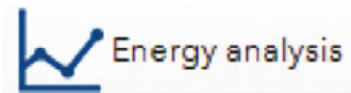
# 6. Special features

Some special features are available after the definition of the unit.  
 Energy Analysis, Economic Analysis and Heat pump are selectable before printing.  
 Tender Text and Technical Text are selectable during print out after the offer has been saved.



## 6.1 ENERGY ANALYSIS

This feature is available after clicking on the button “Energy Analysis”.



It is possible to select the unit with different ambient temperatures in order to estimate the variation of capacity or noise in a range of chosen ambient temperatures.

This analysis is suitable to calculate units in night operation or in freecooling when ambient temperature changes.

Warning:

- If some rows are empty capacity cannot be reached
- If some rows are orange max operative temperature of fan is lower than outlet temperature of coil
- If some rows are blue minimum operative temperature of fan is higher than outlet temperature of coils
- With very low rpm noise, kW, A of fan builder are often not available

### 6.1.1. Variable capacity with fixed airflow in a range of ambient temperatures

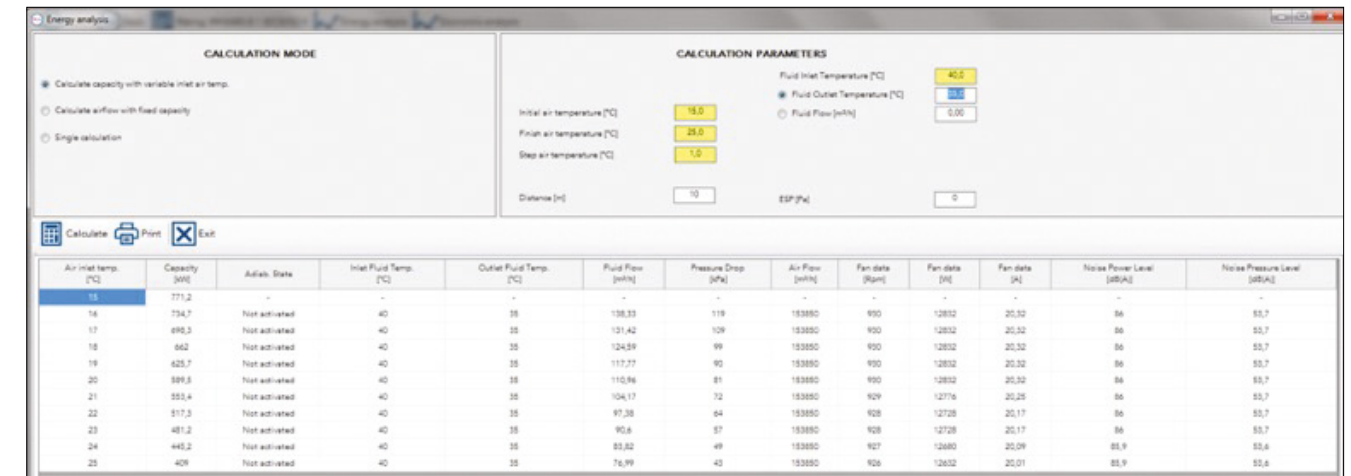
Fixed airflow, fan speed and sound pressure → list of variation of capacity in function of ambient temperature variation (fan speed is the same of the selected unit).

**Note:** Used in case of use of Drycoolers with Chillers with variable capacity of drycoolers.

**Note:** Pressure drops and diameter connections of the unit are configured according to the worst condition available.

**Note from 2018 release**

- Drycooler calculation → added column of inlet, outlet fluid, pressure drops and power noise
- Condenser calculation → added column of condensing temp, temp drops and power noise
- Brinecooler calculation → added column of inlet, outlet fluid, pressure drops and power noise
- Dx evaporator calculation → added column of evap temp, temp drops and power noise



### 6.1.2. Fixed capacity with variable airflow in a range of ambient temperatures

Some accessories are available in the list after the definition of the unit.

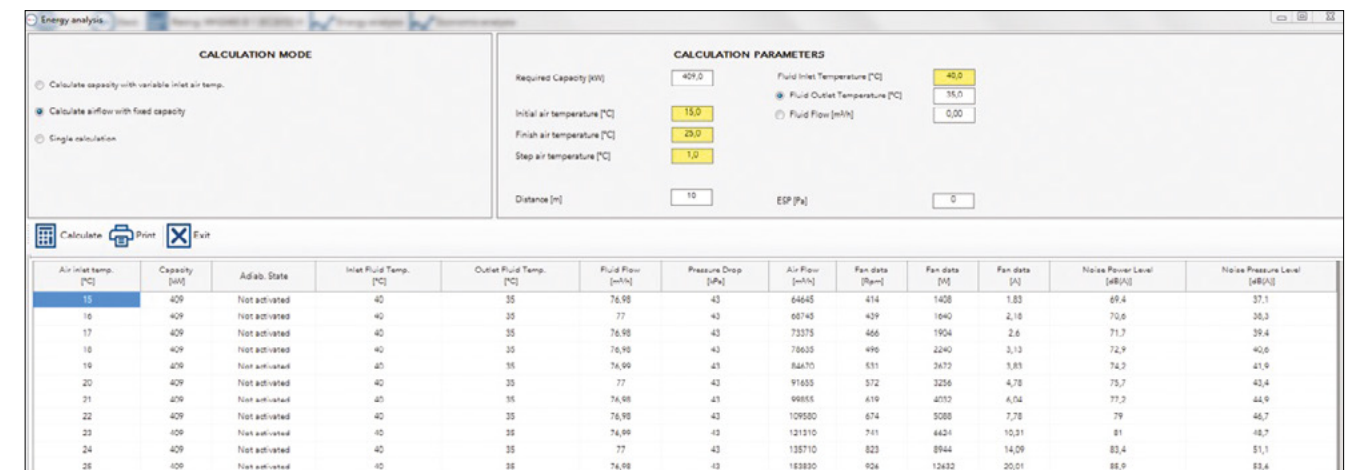
Fixed capacity → list of variation of airflow, fan speed noise following ambient temperature variation (**default capacity is the same of previous calculation**).

**Note:** Used in case of use of Drycoolers with consumption optimization.

**Note:** Pressure drops and diameter connections of the unit are configured according to the worst condition available.

**Note from 2018 release**

- Drycooler calculation → added column of inlet, outlet fluid, pressure drops and power noise
- Condenser calculation → added column of condensing temp, temp drops and power noise
- Brinecooler calculation → added column of inlet, outlet fluid, pressure drops and power noise
- Dx evaporator calculation → added column of evap temp, temp drops and power noise



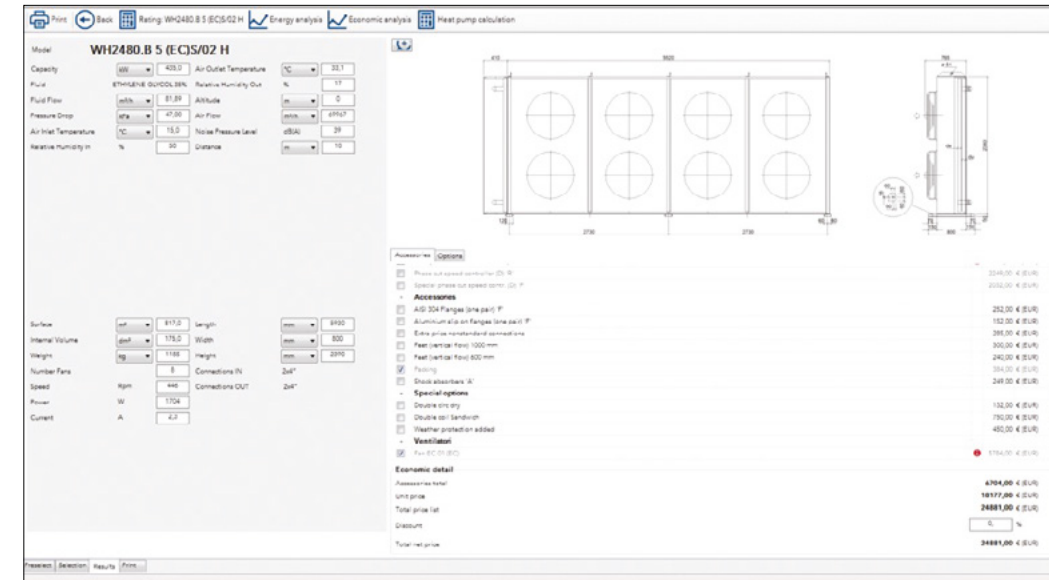
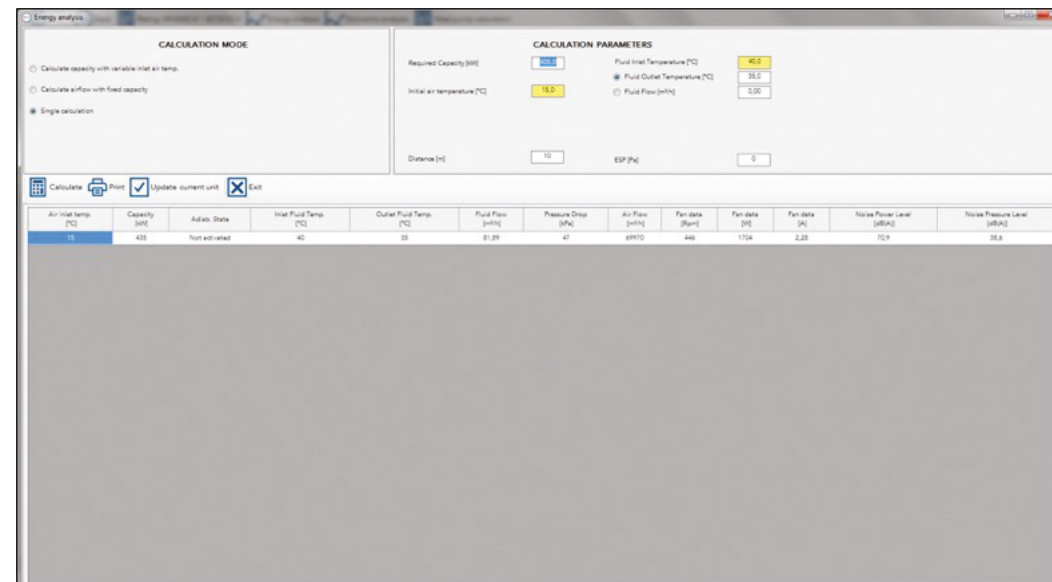
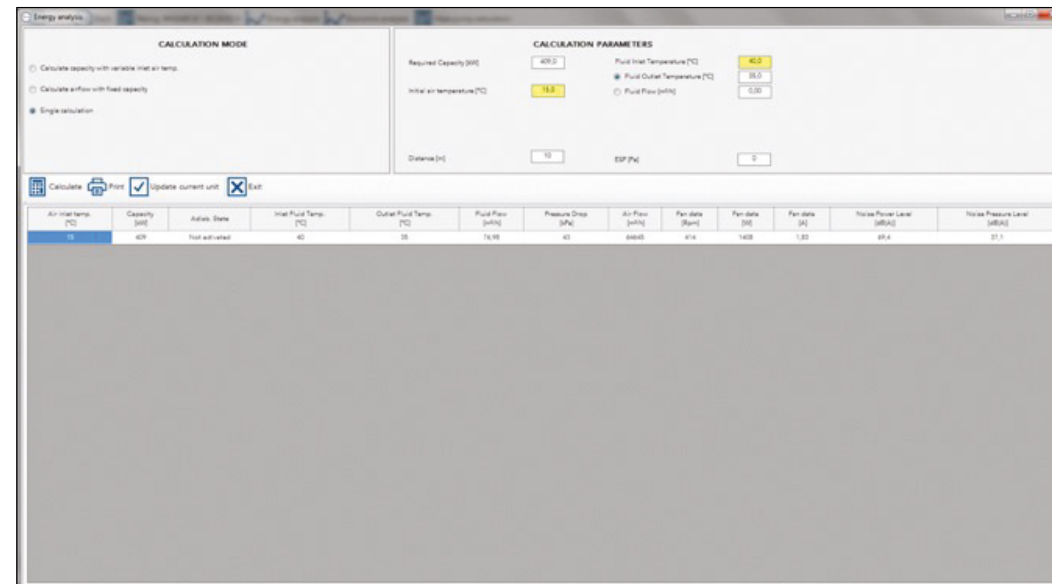
**6.1.3. Fixed capacity with variable airflow with a fixed ambient temperature**

Fixed capacity → used to recalculate a single point

Note: Pressure drops and diameter connection of unit are configured according to the worst condition available.

**Note from 2018 release**

- Drycooler calculation → added column of inlet, outlet fluid, pressure drops and power noise
- Condenser calculation → added column of condensing temp, temp drops and power noise
- Brinecooler calculation → added column of inlet, outlet fluid, pressure drops and power noise
- Dx evaporator calculation → added column of evap temp, temp drops and power noise



**6.2 ECONOMIC ANALYSIS**

This feature is available after clicking the button “Economic Analysis”



It is available only for drycoolers and condenser units.

It is possible to select the unit with different ambient temperatures in order to estimate operative costs of the unit during the year for a selected city.

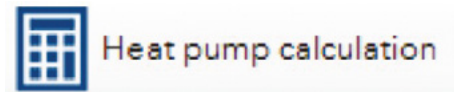
**Warning:**

- If some rows are empty capacity cannot be reached
- For very low rpm noise, kW, A of fan builder are often not available

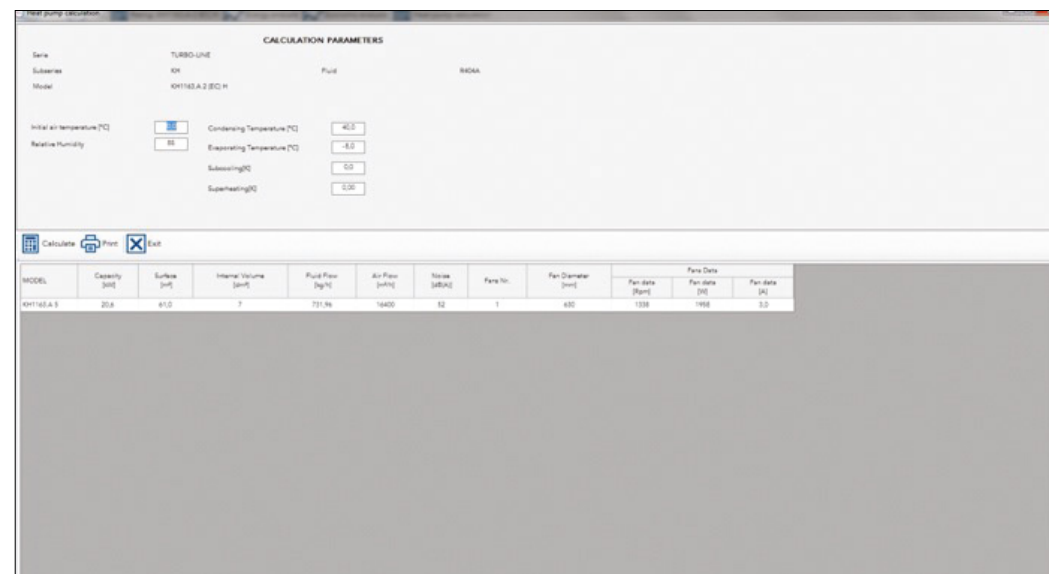
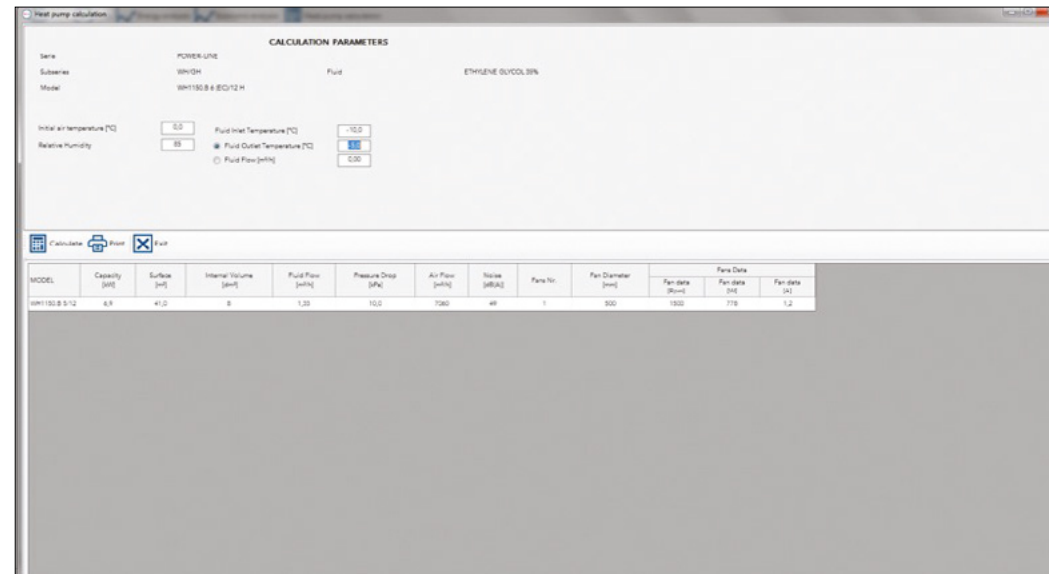
Temperature (°C)	Capacity (kW)	Pressure Drop (kPa)	Power (kW)	Electricity cost (€)	Total
-11	3	3	2395	196	0
-8	4	7	2495	201	0
-5	8	18	2525	204	0
-2	7	22	2595	212	0
1	19	36	2645	218	0
4	42	60	2745	224	0
7	58	108	3000	245	0
10	89	160	3095	250	0.03
13	91	270	3195	251	0.23
16	92	340	3205	251	0.23
19	92	420	3415	279	0.23
22	113	538	3540	290	0.46
25	113	600	3670	300	0.46
28	166	808	3805	311	0.96
31	323	1108	3955	323	1.94
34	353	1340	4085	330	3.07
37	290	1610	4485	360	4.3
40	245	1870	4885	390	5.53
43	305	2140	4885	398	5.45
46	388	2392	5125	419	6.39
49	276	2628	5415	440	6.37
52	276	2860	5475	444	6.34
55	277	3100	5900	469	5.79
58	276	3354	6325	517	6.43
61	327	3595	7145	574	11.34
64	342	4000	7475	607	16.18
67	425	4630	8240	673	22.31
70	467	5277	8895	727	31.28

### 6.3 HEAT PUMP

This feature is available after clicking the button “Heat Pump calculation”.



It is available only for drycoolers and condenser units.



**Note from 2018 release**

- Window is identical to energy analysis
- Calculation has been revised

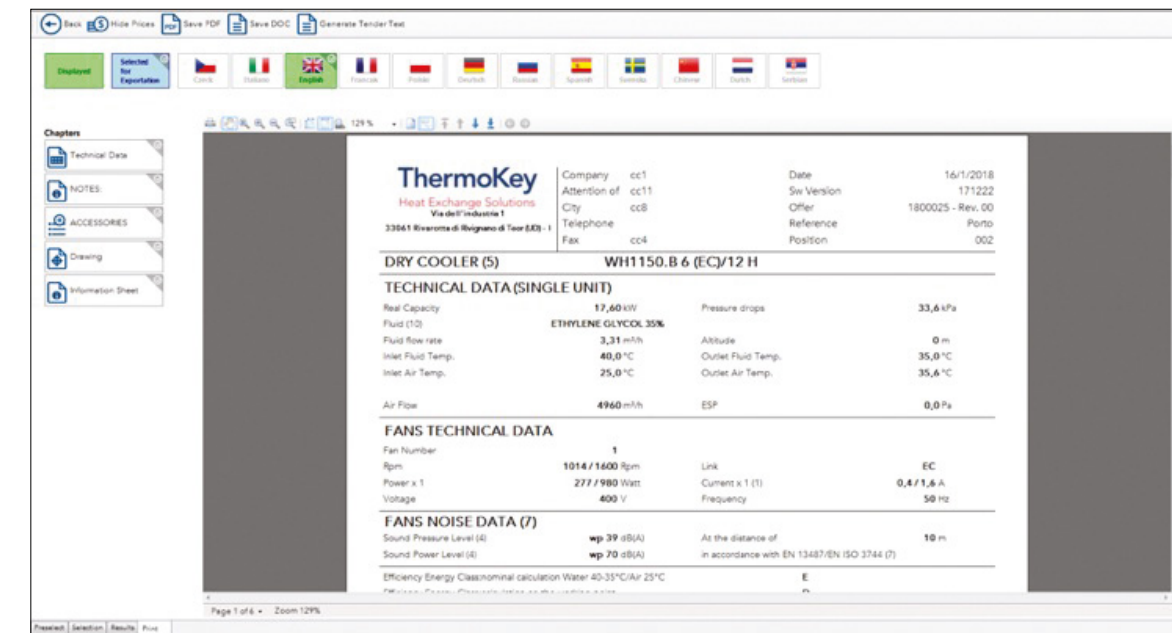
In case of calculation with higher pressure drops → it is suggested to increase circuits in drycooler.  
 In case of calculation with lower pressure drops → it is suggested to decrease circuits in drycooler.

### 6.4 SAVE PDF AND DOC

It is possible to save pdf and doc formats of the unit’s technical data-sheet after preview.

**Note from 2018 release**

- Lay outs of printout and preview have changed
- For all profile except Professional all pages must be saved and printed



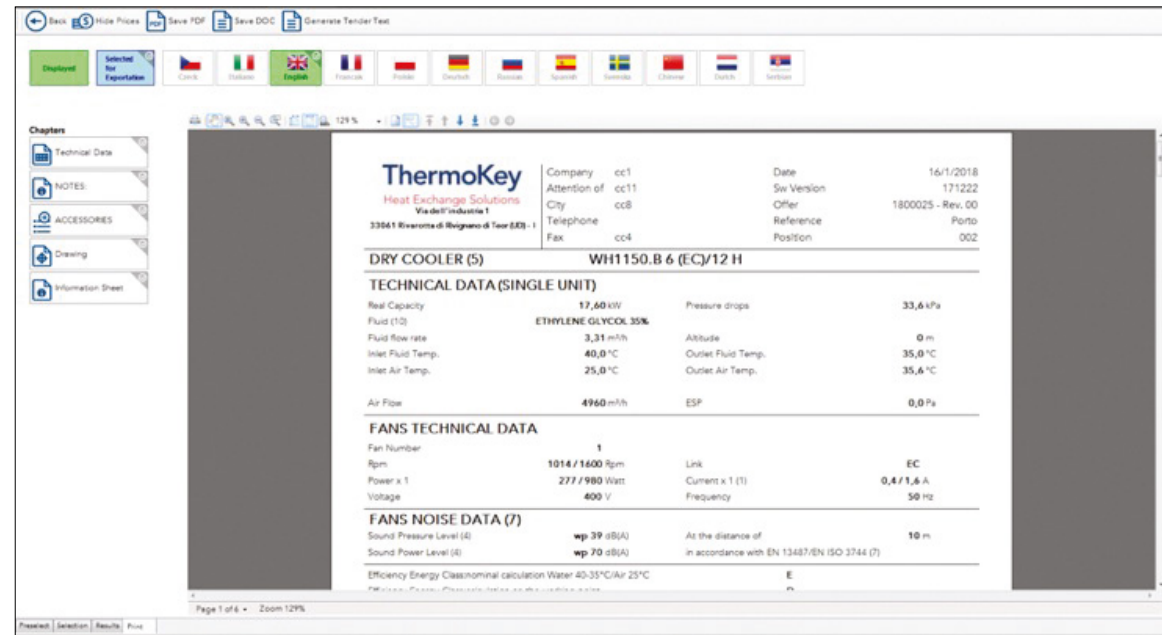


### 6.5 TECHNICAL DESCRIPTION (INFORMATION SHEET)

It is possible to save pdf and doc formats of technical information after preview.

**Note from 2018 release**

- Lay outs of printout and preview have changed
- For all profile except Professional all pages must be saved and printed



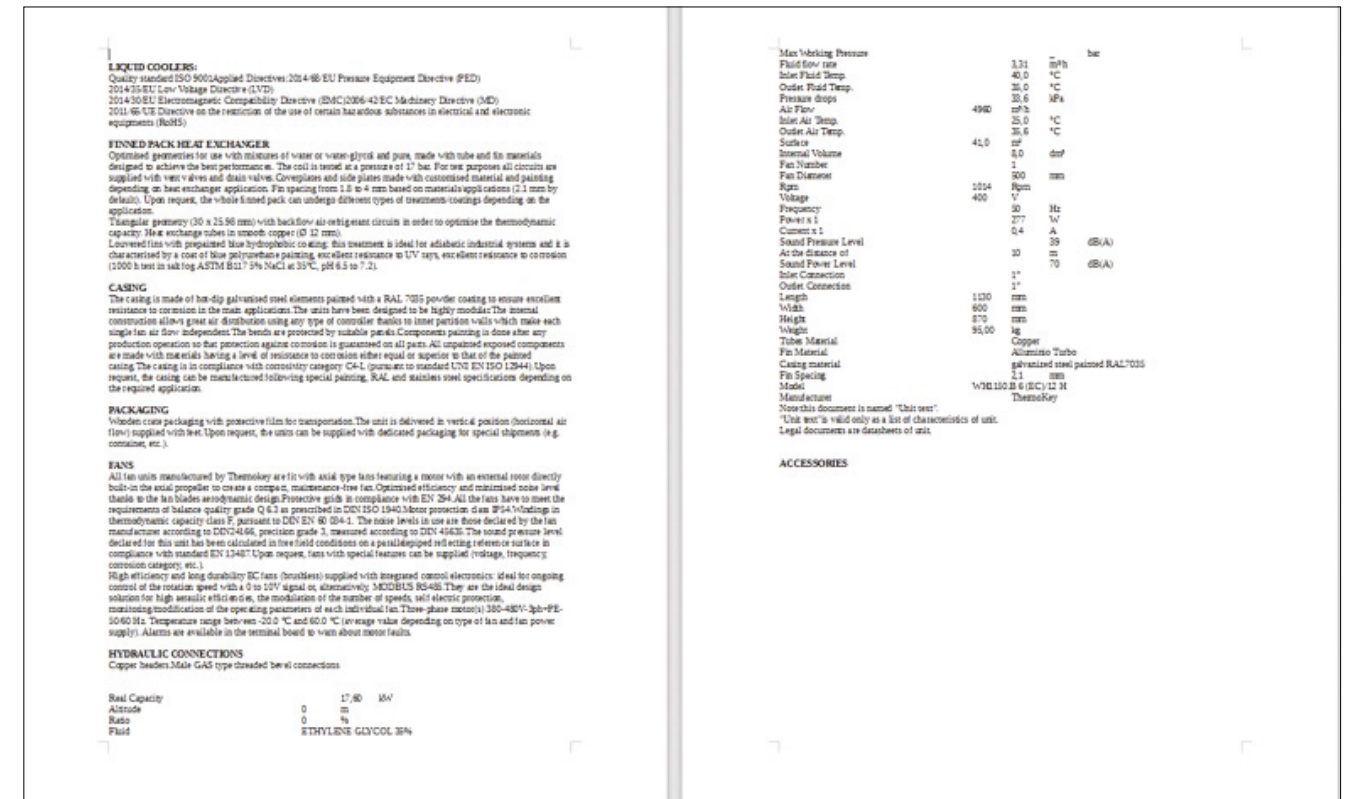
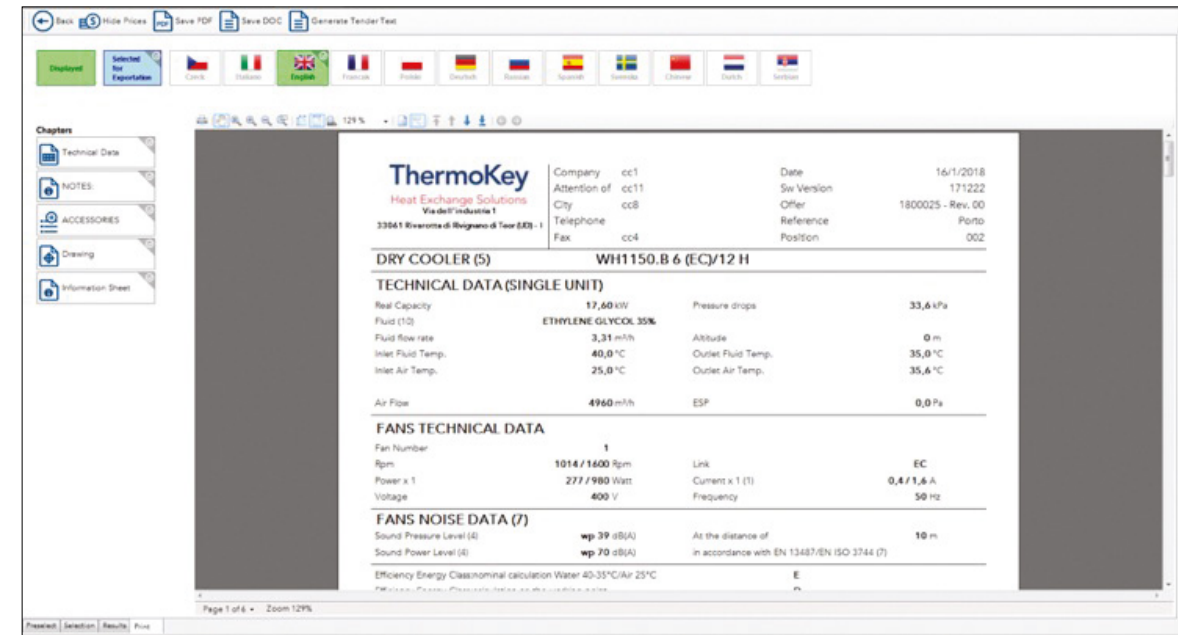
### 6.6 THERMODYNAMIC INFORMATION AND TENDER(TENDER TEXT)

It is possible to save tender text in rtf.

The tender Text is composed by technical descriptions, thermodynamic data and accessories description.

**Note from 2018 release**

- New feature



**ThermoKey®**  
Heat Exchange Solutions

**ThermoKey Spa**  
via dell'Industria, 1 - 33061  
Rivarotta di Rivignano Teor (UD) - Italy

**T.** +39 0432 772300  
**F.** +39 0432 779734  
info@thermokey.com  
www.thermokey.com

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