STULZ

CLIMATE. CUSTOMIZED.

X-SHARK v.161214

Introduction Guide

Cooling performance for your critical application

Kind reader,

This publication is intended as a tool to help the user during the use of STULZ selection software.

The STULZ chillers are the result of decades of research and design studies, with a fine search of materials and technologies to obtain an high quality chiller.

The CE mark guarantees that STULZ products satisfy the requirements of the European Machinery Directive for safety.

The level of quality is constantly checked at every stage, from design to production, making STULZ products synonymous of SAFETY, QUALITY and RELIABILITY.

STULZ Staff

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1. Activation

STULZ X-Shark is a selecting software made by Stulz S.p.A. in order to help the customer to find the correct chiller in our range:

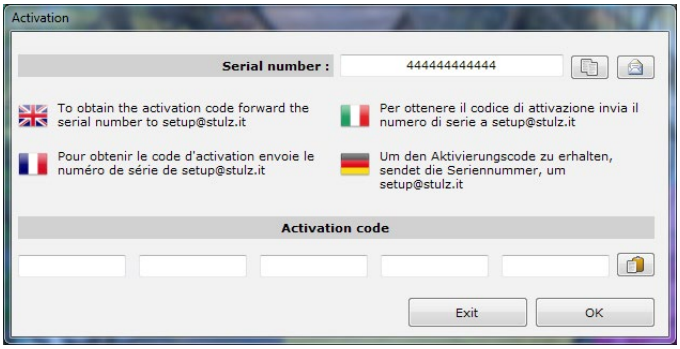
- WPA Explorer: air condensed multi-scroll chillers for water (from 160 to 560 kW)
- WSA Explorer: air condensed screw chillers for water (from 370 to 1260 kW)
- WSW Explorer: water condensed screw chillers for water (from 230 to 1550 kW)
- RAW High density: water cooled inrow

1.1 Download the software

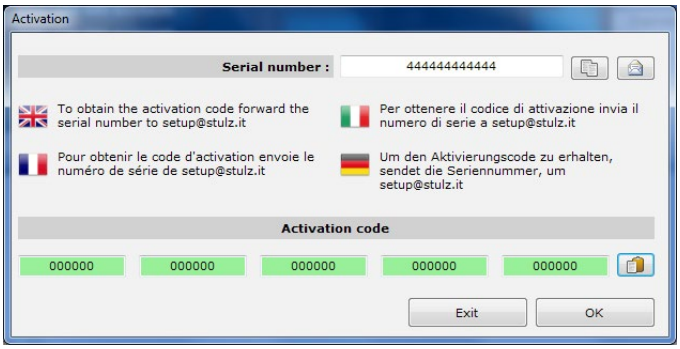
STULZ X-Shark is available on www.stulz.it on Company/Media section. To download the software please follow this link:

1.2 Activation code

https://www.stulz.it/it/azienda/media/x-shark/
At the first use STULZ X-Shark requires an Activation Code, which should be provided by Stulz. In order to obtain the Activation Code please send an email to setup@stulz.it.



In the email please specify:
- Serial number
- Name and Surname
- Company and position
- email for the answer (if different from that of the sending)



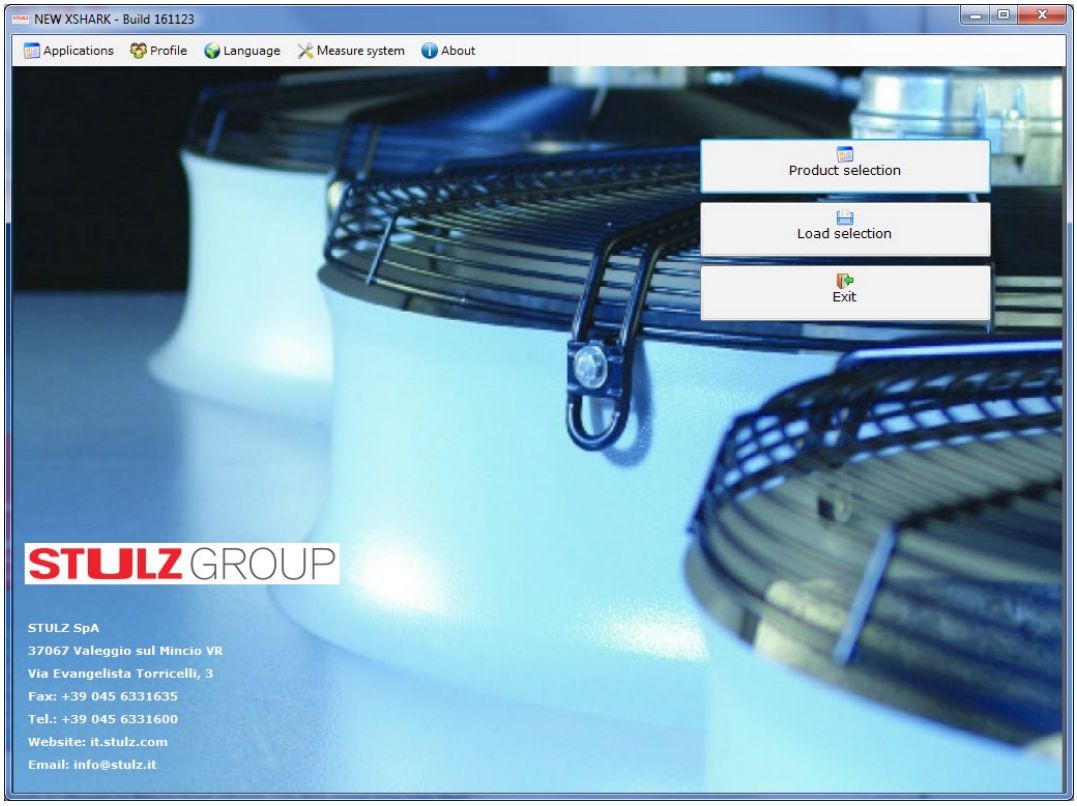
You can copy the Serial Number using the specific button on its right.
Otherwise is possible to create a new email, by clicking the second button on the right of the serial number. This will open the default software set for the email in the computer.

The activation code will be sent as soon as possible.
There could be some delays during the holidays or on STULZ closures days.

The received activation code must be insert into the lower boxes by digiting or, after have copied the activation code, by clicking the paste button at the right of the form.
If the code is correct, all the boxes become green and the button OK will be enabled.

Press **OK** button to open STULZ X-Shark.

2. Home page

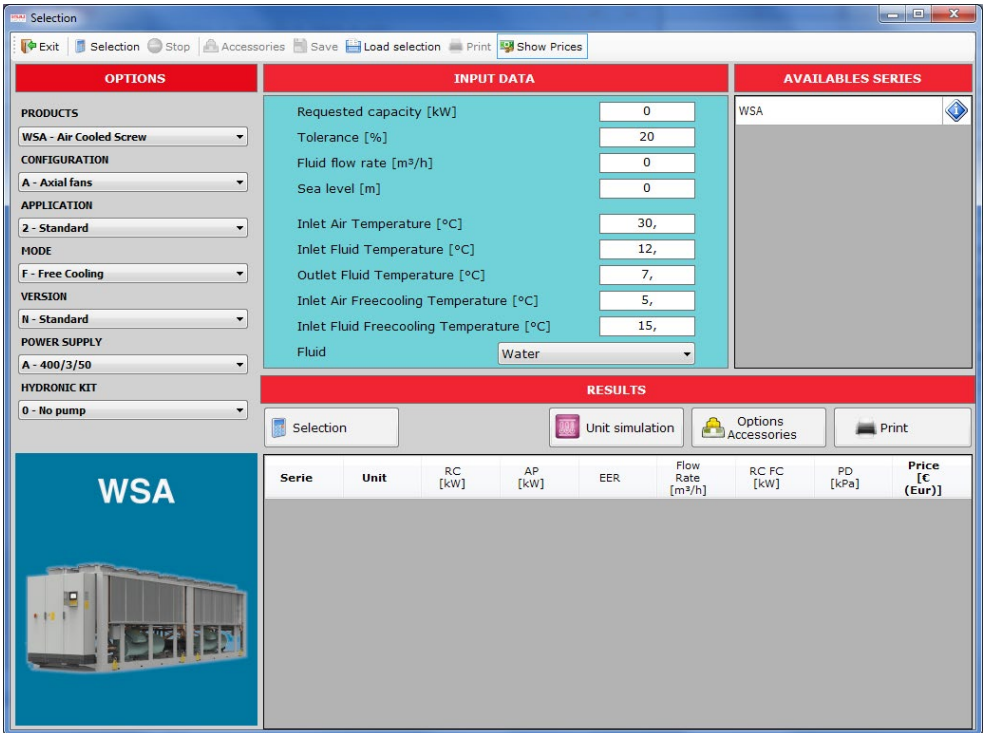


The home page of STULZ X-Shark is shown in the picture above. On this page you can find:

- STULZ **Logo** with address and contacts of STULZ S.p.A.
- Top menu bar:
  - **Application**: to start a new selection or close X-Shark
  - **Profile**: depends on the kind of activation received. It could be Technical (without prices) or Sales (with gross price). Sales activation allow to selects also Technical operating, without prices.
  - **Language**: for the selection of the interface language. The available languages are: English, Italian, French, German
  - **Measure system,** to choose the metric system of measurement: SI or Imperial
  - **About**: information about X-Shark.
- Buttons:
  - **Product selection:** starts a new selection
  - **Load selection:** loads the values of a previously saved selection
  - **Exit:** close X-Shark

3. Selection

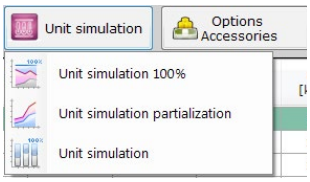
In the Home page press the button Product Selection to start a new chiller selection.



A new form will be opened. The selection page of STULZ X-Shark is shown in the picture above.

- Top menu bar:
  - **Exit**: return to Home Page
  - **Selection/Stop**: to start/stop the search of the chillers that comply the Options and Input Data
  - **Accessories**: selects accessories for the highlighted chiller in the Results section
  - **Save**: to save the selection in a file
  - **Print**: creates the tender text with drawing and scheme for the highlighted chiller
  - **Show Prices**: enable/disable the column Price in the Results table. It's also possible to select the profile Technician in the Home Page to hide the prices
- Section **Options**: this section changes according to the selected range of chiller. In the Products box is possible to select: **WPA** - Air cooled scroll, **WSA** - Air cooled screw, **WSW** - Water cooled screw, **RAW** - high density
- **Input Data** section: fills in the form with the data needed for the project.
- **Selection**: click the button to search the chillers that comply with all the parameters included in the sections Options and Input Data. If there are no results available an error form will be shown.
- **Results** section: shows all the chiller available. The data are calculated at the input conditions. The selected chiller will be highlighted in green
- **Unit Simulation** button: calculates the operating costs of the selected chiller (see page 7)
- **Option/Accessories** button: selects accessories for the highlighted chiller (see page 8)
- **Print** button: creates the tender text with drawing and scheme for the highlighted chiller (see page 9)

4. Simulation



There are 3 types of chiller simulation:

- **Simulation at 100%**: simulation of the annual operating cost of the chiller
- **Simulation partialization**: punctual simulation during the whole year of the chiller
- **Unit simulation**: simulation in a single point

To simulate the operating cost of the selected chiller, press the **Simulate** button in **Selection** form and select the desired simulation.

4.1 Simulation at 100%

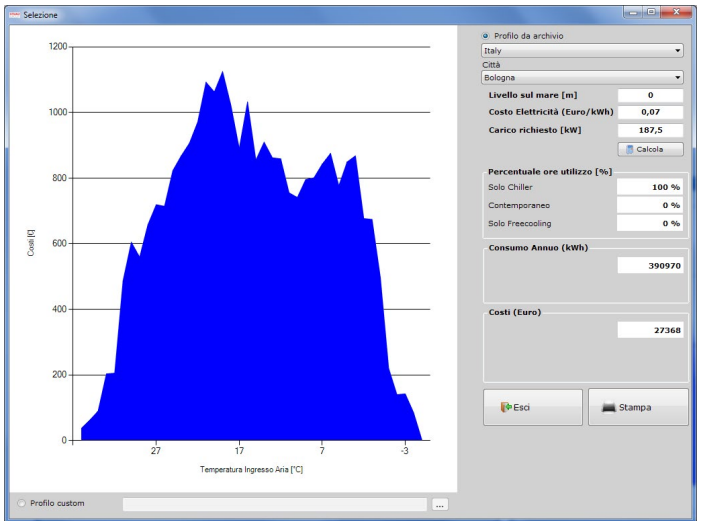


Fig. 1 - Simulation without Free Cooling

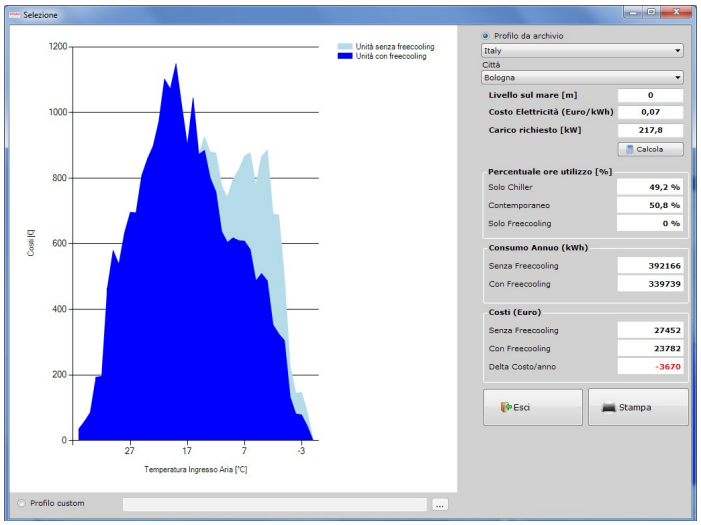


Fig. 2 - Simulation with Free Cooling

Simulation of the operating cost of the refrigerator during the year. From the side menu is possible to select:

- **Archive profile** or **Custom profile**: use the list of pre-loaded temperature profiles or upload a customized temperature profile (.xls) to simulate the unit.
- **Sea level**: height above sea level of the installation site.
- **Electricity cost**: cost of electricity in the installation site
- **Load required**: thermal load applied to the chiller

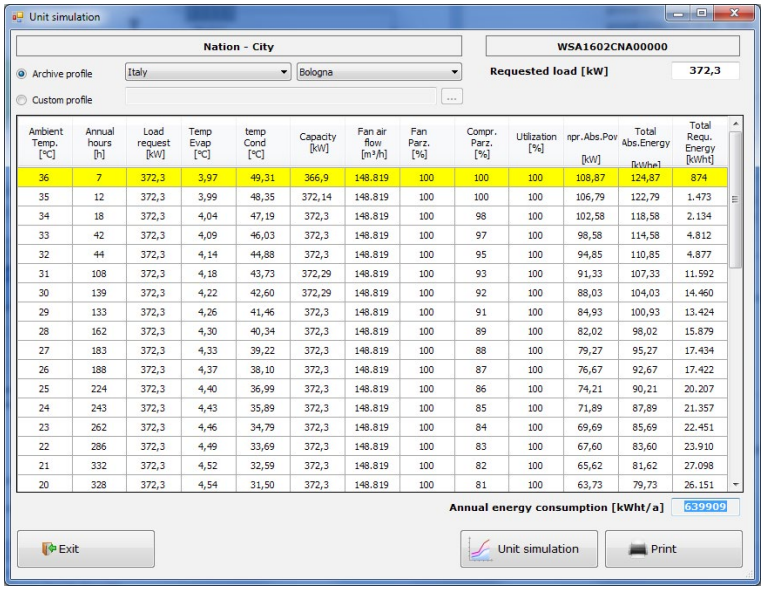
After each parameters changes, press the **Calculate** button to update the data and the graph.
The graph and the data will be reported in the final specifications of the selected chiller.

4.2 Simulation partialization

Simulation of the operation of the chiller operating according to a temperature preloaded or custom profile. This type of simulation allows to view the choking of the individual components throughout the operation. In particular, the table contains:

- **Ambient air temperature** [° C]: air temperature that invests the condenser (in the air-cooled units). In water-cooled units the value of the ambient temperature is corrected with a fixed datum.

- **Annual hours** [h]: number of hours when the outside air temperature is equal to ambient air temperature
- **Required cooling load** [kW] to the chiller
- **Evaporation temperature** [° C]
- **Condensing temperature** [° C]
- **Chiller cooling capacity** [kW]
- **Fans air flow** [m³/h]
- **Partialization of the fan** [%]
- **Partialization of the compressor** [%]
- **Energy absorption of the compressors** [kW]
- **Total unit absorbed** [kWhe]
- **Total energy required** [kWht]: total absorption of the unit at the point, multiplied by the number of hours during the year.



Ambient Temp. [°C]	Annual hours [h]	Load request [kW]	Temp Evap [°C]	temp Cond [°C]	Capacity [kW]	Fan air flow [m³/h]	Fan Parz. [%]	Compr. Parz. [%]	Utilization [%]	npr.Abs.Pov [kW]	Total Abs.Energy [kWhe]	Total Requ. Energy [kWht]
36	7	372,3	3,97	49,31	366,9	148.819	100	100	100	108,87	124,87	874
35	12	372,3	3,99	48,35	372,14	148.819	100	100	100	106,79	122,79	1.473
34	18	372,3	4,04	47,19	372,3	148.819	100	98	100	102,58	118,58	2.134
33	42	372,3	4,09	46,03	372,3	148.819	100	97	100	98,58	114,58	4.812
32	44	372,3	4,14	44,88	372,3	148.819	100	95	100	94,85	110,85	4.877
31	108	372,3	4,18	43,73	372,29	148.819	100	93	100	91,33	107,33	11.592
30	139	372,3	4,22	42,60	372,29	148.819	100	92	100	88,03	104,03	14.460
29	133	372,3	4,26	41,46	372,3	148.819	100	91	100	84,93	100,93	13.424
28	162	372,3	4,30	40,34	372,3	148.819	100	89	100	82,02	98,02	15.879
27	183	372,3	4,33	39,22	372,3	148.819	100	88	100	79,27	95,27	17.434
26	188	372,3	4,37	38,10	372,3	148.819	100	87	100	76,67	92,67	17.422
25	224	372,3	4,40	36,99	372,3	148.819	100	86	100	74,21	90,21	20.207
24	243	372,3	4,43	35,89	372,3	148.819	100	85	100	71,89	87,89	21.357
23	262	372,3	4,46	34,79	372,3	148.819	100	84	100	69,69	85,69	22.451
22	286	372,3	4,49	33,69	372,3	148.819	100	83	100	67,60	83,60	23.910
21	332	372,3	4,52	32,59	372,3	148.819	100	82	100	65,62	81,62	27.098
20	328	372,3	4,54	31,50	372,3	148.819	100	81	100	63,73	79,73	26.151

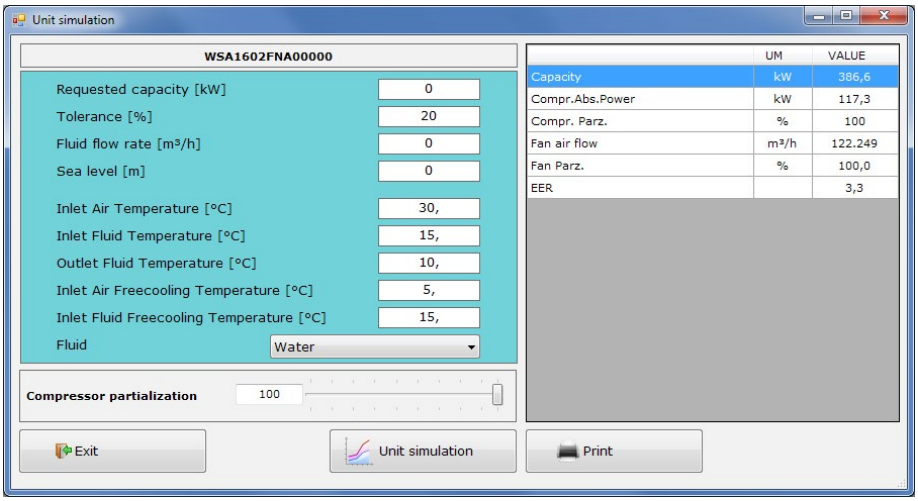
Select **Custom Profile** to load a customized temperature profile and simulate the unit.

Press the button **Unit Simulation** to perform the calculation. In WSA and WSW ranges the calculation can take up to a couple of minutes.

Any lines highlighted in yellow indicate that the chiller is not able to fully meet the required load.
Press the **Print** button to print the simulation performed.

4.3 Unit simulation

Simulates the selected unit in different conditions.
It is also possible to evaluate the operation of the chiller with partial loads.
Press the **Unit Simulation** button to perform the calculation.



5. Options/Accessories

In the **Product Selection** form is possible to select options or accessories for the chiller, by selecting the **Option/ Accessories** button.

Options: additional components or solutions, which are supplied already installed on the chillers.
Accessories: components or solutions which are supplied separately from the chillers.

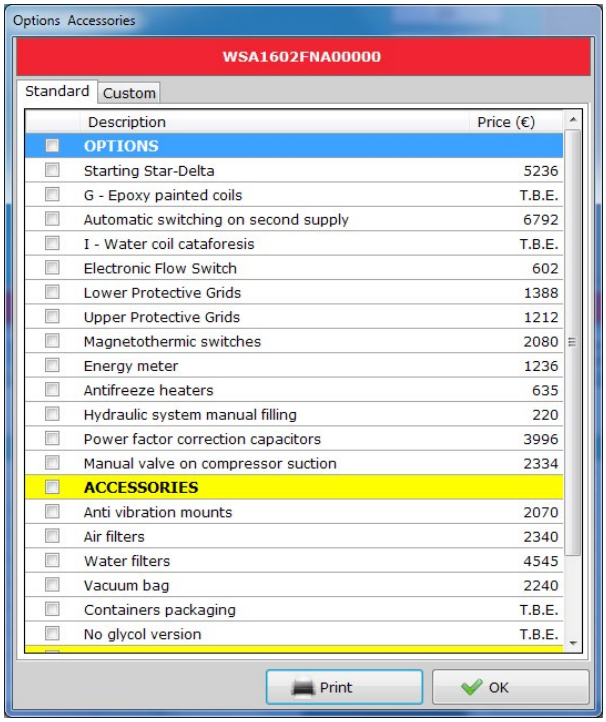


Fig. 1 - Accessories-Options section

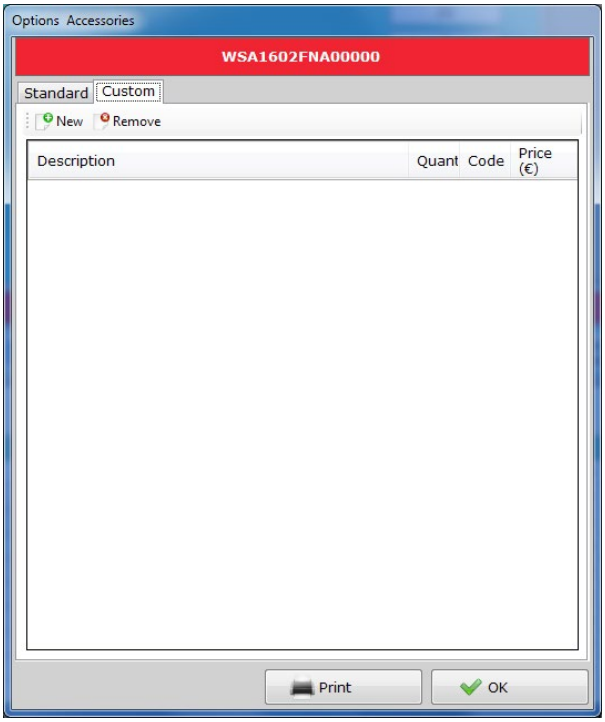


Fig. 2 - Free rows section

In this form two sections are available:
- **standard:** selection of accessories and options (Fig.1)
- **custom:** section to entering empty lines in the final specifications (Fig.2)

In the **standard** section, the selection changes the chiller code: the new code is shown in the red box at the top of the mask.
The selection is applied to all available chiller.

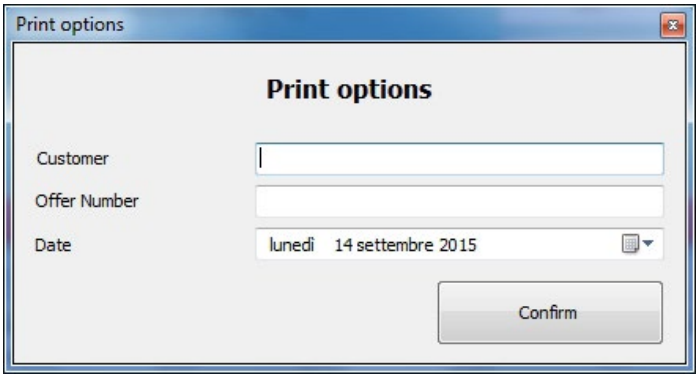
Under **custom** section, press **New** button to add a new free line. The following fields are then available:

- **Description**
- **Quantity**
- **Code**, if available
- **Price** for each piece. The value will be multiplied with the **Quantity**

After the selection, press the **OK** button to return to the selection screen, or the **Print** button to switch to the specifications.

6. Print

Push the **Print** button to create the specific tender text of the selected chiller.
Two new form will be opened: **Print Options** and **Print**



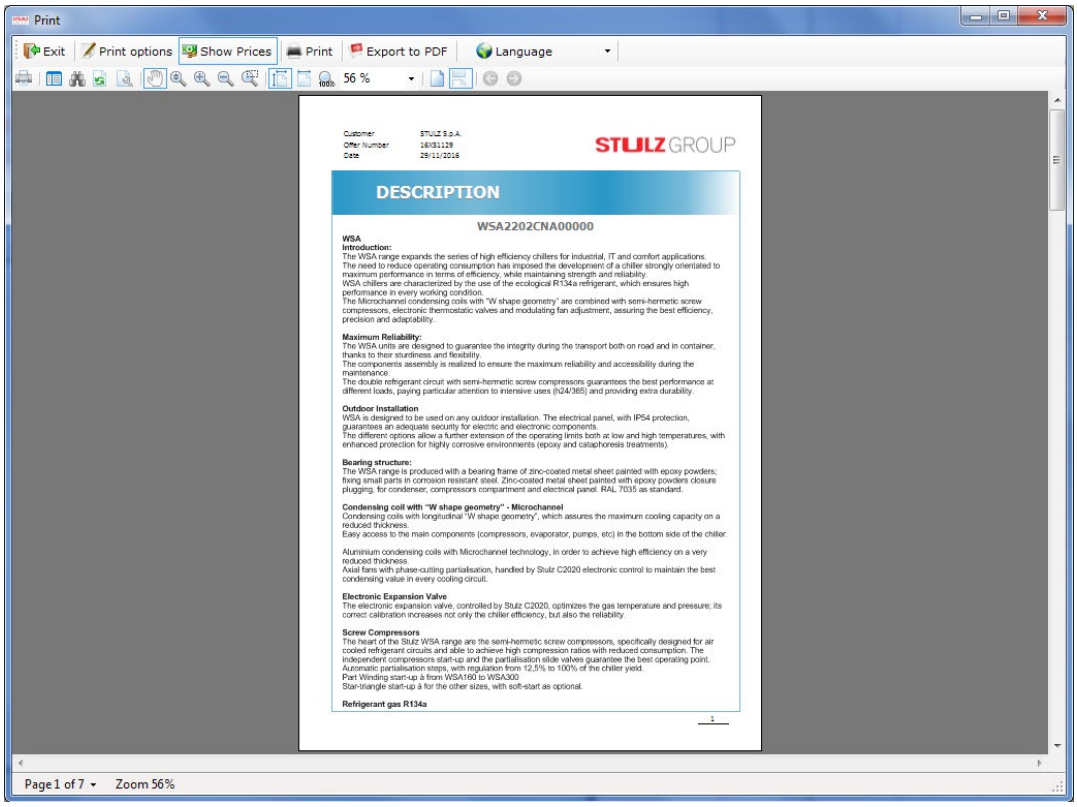
In **Print Options** is possible to input the references of the selection and the offer. This form is shown only one time during the opening of X-Shark

The **Print** form shows the tender text, which is possible to print or export.

- **Exit** button: returns to the Product Selection form
- **Print Options** button: opens the form to change the references of the selection
- **Show Prices** button: if activated, shows last page Accessories and Price
- **Print** button: opens the standard form to print the tender text
- **Export to PDF** button: saves the tender text as PDF file
- **Language**: changes the language only for the tender text.

In the tender text you can find:

- **Description** of all the chiller features
- **Technical data** with the simulation (if available)
- **Layout** and dimensions of the selected chiller
- Refrigerant and Hydraulic **schemes**
- Accessories and **Price** with the ending code of the chillers (if available and enabled)



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