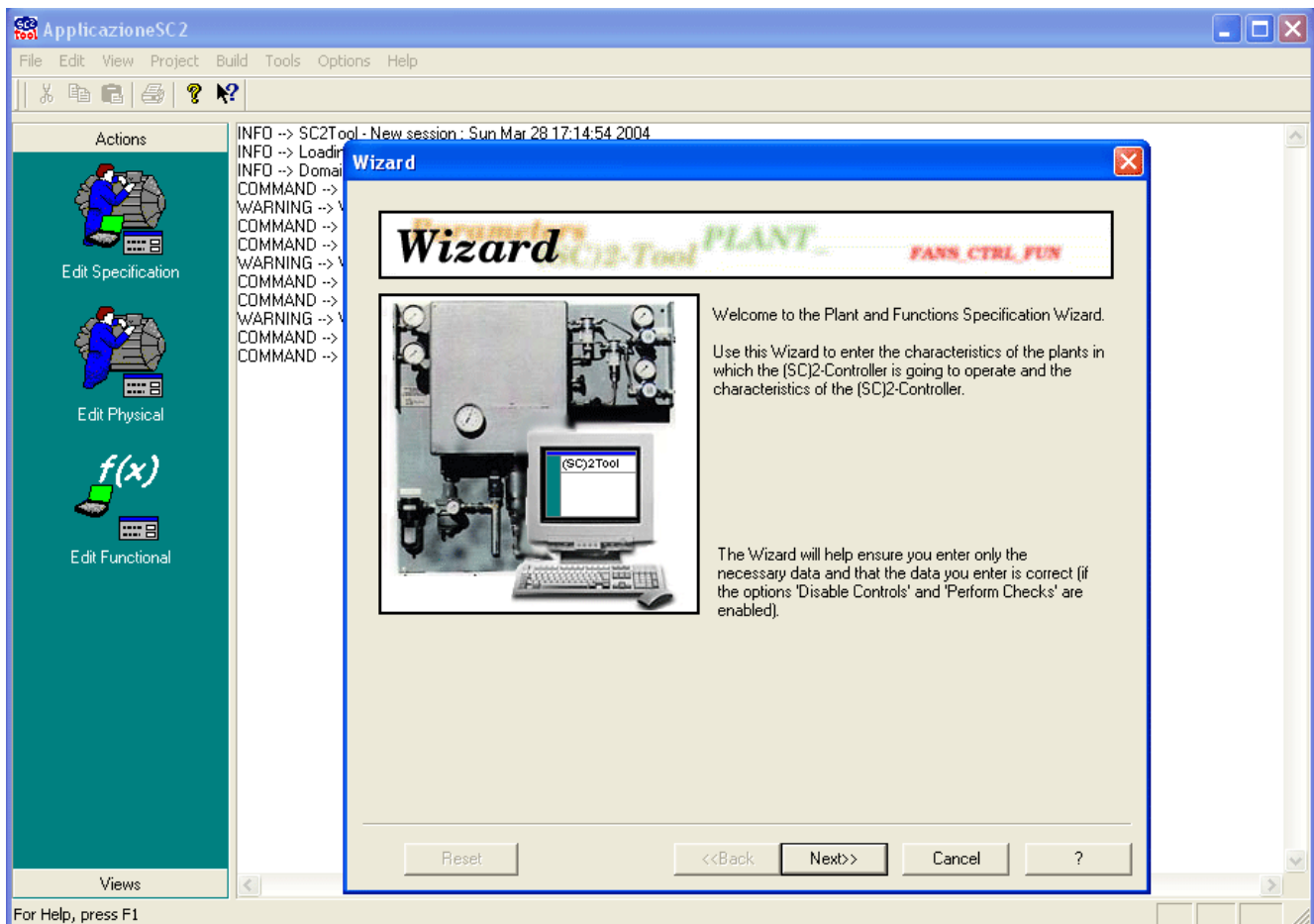


Energy XT Wizard SC2 - Tool



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1 USE OF MANUAL

Customers may refer to the following items for a more immediate use of the manual.

Callouts

Callout column

Callouts on the topics described are placed to the left of the text, to allow users to quickly find the desired information.

Cross references

Cross references

All the words in *italics* are listed in the index along with a reference to the page where they are described in more detail.

The text below serves as an example:

"The enabling of the alarm stops the compressors"

The text in *italics* indicates that section Compressors in the index contains a reference to the page where compressors are described in more detail.

In the online Help, viewable on the PC, the words in *italics* are hyperlinks (automatic links activated with a mouse click) that link the different sections of the manual and allow users to browse through the document.

Highlighted icons

Some parts of the text are highlighted in the callout column with special icons that have the following meaning:



Note: Draws the attention on a specific topic that users should take into account.



Tip: Highlights a suggestion that helps users to understand and use the information on the topic described.



Warning! : Highlights information that may damage the system or cause injuries to people and damage to equipment, data, etc. These sections must always be read prior to use.

2 INTRODUCTION

(SC)²-Tool offers an integrated environment that supports all the controller's development cycles (SC)², from the high level description of the plant and control system to the creation of the firmware that has to be installed on a specific controller.

2.1 Controller development process (SC)²

The tool enables to develop the controller (SC)² through the following main steps:

1. Definition of the system to control (chiller, heat pump, I/O definition...)
2. Definition of the functions that the controller (SC)² must carry out (*defrost*, free cooling, heat recovery.....)
3. Creation of the files to be used by AppLoader to upload the firmware

The first step consists in defining the properties of the family of systems in which the controller (SC)² will be used. The second step consists in defining the properties of the family of control systems that have to be installed in the firmware platform.

The specifications of the plant and control system can be defined by means of specific *parameters* that determine their characteristics, i.e. the functions they perform, their performances and the EPROM and RAM requirements.

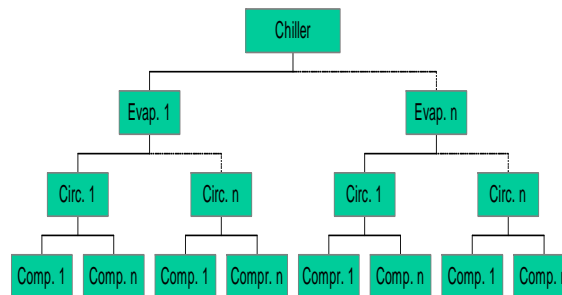
The third step consists in building the bytecode. This implies creating a high level executable file and converting it into a bytecode by means of tool AppLoader.

2.2 Modules (SC)²

The architecture of the controller (SC)² is based on the definition of its functions. Consequently, the controller can be personalised and adapted both in terms of performances and memory space.

The (SC)² forms correspond to the standard components of an air conditioning system:

- System (Chiller/Heat Pump)
- Evaporator
- Circuit
- *Condenser*
- *Compressor*



The tool provides, for each module, a set of specifications that define the operation of the single functions.

2.3 Parameters

Parameters are the key concepts of the Tool (SC)², because they enable to define the characteristics of the system that has to be controlled and the requirements of the control system.

The Tool supports parameter setting wizards, based on real time coherence checks (run time) and on user-specified values.

Parameters contain the following data:

- **Name** Parameter name
- **Type** Type of parameter
- **Default value** Value set at the start of a new *compressor*
- **Property** Three types of properties are available:
 - HOT
HOT *parameters* can be changed by the user through the user interface during the ordinary operation of the system.
 - COLD
COLD *parameters* can be changed only if the system is not running and usually lead to the creation of a new configuration of the control system (both in terms of hardware and of user functions).
 - FIXED
FIXED *parameters* can be configured only with the wizard of this tool.



- **Limits (bounds)** Determines the thresholds for the parameter values (range).

When entering a value for a COLD parameter, it is also necessary to specify the value that the parameter acquires during start-up, but also the values that the parameter can acquire during the lifecycle of an Energy XT controller.

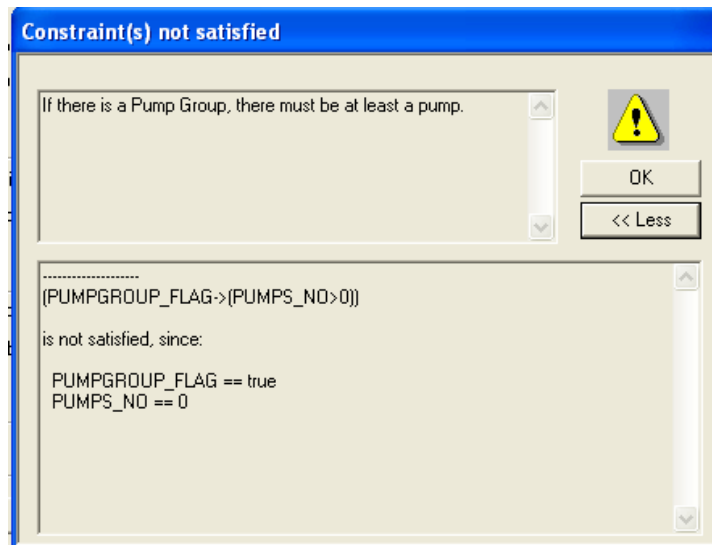
2.4 Limits

Some assigned values may be invalid. For example, if the system does not have a solenoid valve, the pump down cannot be carried out by the controller.

Tool-(SC)² enables to control these inconsistencies by means of the concept of "limitation".

A "limitation" can be defined as a logical formula that sets specific consistency rules for some of the **parameters**. The tool immediately reports the existence of incongruent assignments in order to allow the user to build a valid Energy XT controller.

Example of an inconsistency warning:

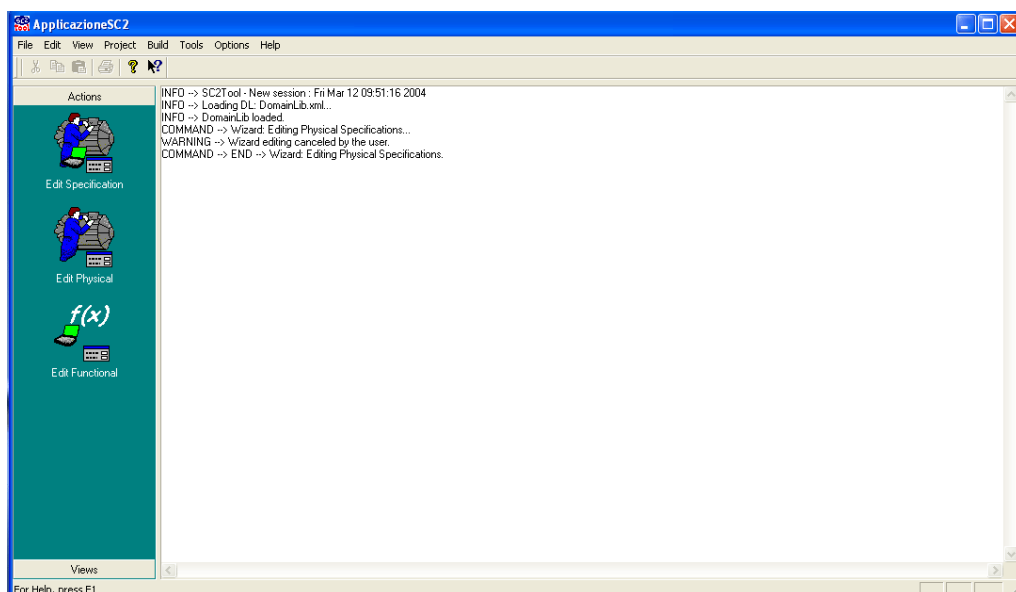


The upper section shows a description of the inconsistency.

The lower section contains the logical and mathematical expression of the inconsistency.

2.5 Starting the tool

When opened, Tool-(SC)² displays the following page:



The left section displays 3 buttons that enable the unit configuration process to be started. These are:



Starts the definition of the whole unit, which includes both the physical and functional characteristics (i.e. the sum of the processes enabled with buttons Edit Physical and Edit Functional).



Starts the definition of the physical characteristics of the unit (valves, probe configuration, I/O....)



Starts the definition of the functional characteristics of the unit (temperature control, *defrost*, free cooling, heat recovery....).

At this point, it is possible to analyse the processes for the definition of the physical and functional characteristics of the unit.

3 PHYSICAL WIZARD

This page can be opened by clicking “Edit Physical” in section “Actions”, at the left of the window, or by selecting “Plant Specification- Edit” from [menu](#) Project.

This page enables to enter the physical [parameters](#) of each Energy XT unit, i.e. to specify the components that form the system.

3.1 Plant composition

Wizard

Plant Composition

Plant Type:

Machine Type:

☐ On/Off Remote Input Flag

Pump Group

☐ Water Pump Group

Number of Pumps:

Evaporators

Number of Evaporators: Minimum Number of Evaporators: Maximum Number of Evaporators:

Circuits

Number of Circuits per Evaporator: Minimum Number of Circuits: Maximum Number of Circuits:

Compressors

Number of Compressors per Circuit: Minimum Number of Compressors: Maximum Number of Compressors:

Reset <<Back Next>> Cancel ?

This page enables to define the composition of the system as follows:

- Type of system:
 - System with chiller (cooling/air conditioning system)
 - System with heat pump (heating system with heat pump)
 - Reversible system
- The type of unit:
 - Water/Air
 - Water/Water
- The existence of a remote control for the ON/OFF switching.
- The existence of a group of water pumps along with the related number of pumps.
- The number of evaporators, which must range between the minimum and maximum number of evaporators that Energy XT is able to control, along with the related default values.
- The number of circuits per evaporator, which must range between the minimum and maximum number that Energy XT is able to control, along with the related default values.
- The number of compressors, which must range between the minimum and maximum number that Energy XT is able to control.

3.2 Plant add-ons

This plant enables to define the characteristic of some of the additional components of the system.

Free Cooling

- If the system is configured for Free cooling: select the checkbox of the Free Cooling *pump group* (*Free Cooling Pump Group*) and enter a number of temperature sensors greater than 0 (*Number of Temp. Probes for Free Cooling*)

Heat Recovery

- If configured to manage the heat recovery function, the system must include:
 - A flow switch (*Heat Recovery Flow Switch*)
 - A heat recovery pump (*Heat Recovery Pump*)
 - A 3-way pump (used for Free Cooling) (*Three Way Valve*)
 - A temperature sensor (*Heat Recovery Temperature Sensor*)
 - An optional digital pressure input for the heat recovery (*Heat Recovery Flow Special Pressure DI*)

Evaporator

- If the system is configured with an anti-freeze electric heater (*Evaporator Electric Heater*). This heater can be installed in systems with a chiller or in reversible systems. The anti-freeze heater is started by the anti-freeze function.

Circuit

- If the circuit has:
 - A solenoid valve (*Soleneoid Valve*)
 - A digital pressure input for pump down (*Special DI for Pump Down*)
 - Reversible systems require a reverse valve (*Inversion Valve*)
 - A high pressure sensor and a low pressure sensor (*High / Low Pressure Sensor*) (*high and low refer to a system running in chiller mode or vice versa if the system is running in Heating mode)
 - If the system has digital sensors to detect high and low pressure (*High Pressure DI / Low Pressure DI*)
 - The possibility to reverse the meaning of the digital pressure transducers (*High Pressure DI / Low Pressure DI*) during the cycle inversion. If the *Inv PressSensors* box is selected, the digital pressure transducers change their meaning and reverse their roles: if deselected *High* means high pressure, *Low* means low pressure.

Dynamic Test

- If the system has an external temperature sensor (*Dyn. Tset External Temperature Sensor*) and a current sensor (4-20 mA) (*Dynamic Tset 4-20mA Current Sensor*) used for the dynamic Tset algorithm.

3.3 Compressor

Wizard

Compressor

Multistage Compressors

Stage Levels: 0

Ignition Mode: standard

Compressor Liquid Injection

☐ Compressor Liquid Injection Digital Output

Pressure Sensor

☐ Oil Pressure Sensor

☐ Oil Pressure Digital Input

Temperature Sensor

Discharge Temperature Sensor Type: sensor

☐ Engine Temperature Digital Input

Reset <<Back Next>> Cancel ?

This page enables to set the characteristics of the compressors in the system.

- If the system has compressors configured with capacity steps, this page displays the number of steps in which the available power is divided.
- The selection of checkbox "Ignition Mode" configures the *compressor* to start in "soft mode" during which the *compressor* is not immediately started at its maximum power. This enables to reduce torque currents on the *compressor's* motor.
- It is also possible to decide whether the *compressor* should use a digital output for the "liquid injection" function.
- The lower section enables to configure the *compressor's* safety sensors. It is possible to control:
 - The oil pressure of the *compressor* with a sensor or digital input.
 - The *compressor* discharge temperature with an analogue sensor or digital input (otherwise "no_sensor" must be configured).
 - The temperature of the *compressor's* motor with the digital input.

3.4 Condenser

This page enables the user to configure the characteristics of condensers:

- The number of fans per circuit
 - The maximum and minimum number of fans that Energy XT is able to support for each circuit
 - The type of fans (configured in On/Off or continuous mode)
 - In On/Off mode, all the fans of the same circuit can have the same or varying sizes. This option enables to choose whether to run the fans in parallel or in sequence.
 - Checkbox "Shared input for Fans'Alarm" controls the thermal alarms of fans:
 - If the checkbox is selected, Energy XT expects to receive a single input from each *condenser*
 - If the checkbox is deselected, Energy XT expects to receive a single input from each fan
 - Sensors and analogue inputs
 - If the *condenser* has a temperature sensor, this is used to control the fans and the *defrost* function
 - If the *condenser* has a digital temperature input dedicated to the control of fans
 - If the circuit has a sensor to measure the pressure of oil (high pressure in Cooling mode, low pressure in Heating mode)
 - The system (with heat pump or reversible) may have a *condenser* with electric heater for the operation of the electric heaters.
 - Water/water units may have an electric heater for the defrosting of the secondary circuit.
- Defrost* can be controlled also by additional temperature and pressure sensors (water/air units).
- Flag 'Combined Condensation Enable Flag' enables condensation in single mode. In this case, it is possible to configure the number of fan groups with parameter 'Number of Fans Groups'. For further information, see the Energy XT Controller Manual.

4 FUNCTIONAL WIZARD

This page can be displayed by clicking “Edit Functional” in section “Actions” in the left tab or by selecting “Function Specification- Edit” from [menu](#) Project. The dialogue of the wizard enables to enter the functional [parameters](#) of an Energy XT unit.

4.1 High level functions

The screenshot shows a 'Wizard' dialog box with a title bar and a close button. Inside, there's a progress bar with 10 steps, where the 4th step is highlighted in green and labeled 'High Level Functions'. Below the progress bar, there are four sections, each with a title and a group box containing controls:

- Plant Start Mode**: A dropdown menu set to 'chiller'. To its right are two checkboxes: 'Allow switching from chiller to heatpump' (unchecked) and 'Machine Reversal Remote Input Flag' (unchecked).
- Evaporator Selection**: A dropdown menu set to 'saturation'. To its right are two checkboxes: 'Support Evaporators Saturation Algo.' (checked) and 'Support Evaporators Balancing Algo.' (unchecked).
- Circuit Selection**: A dropdown menu set to 'saturation'. To its right are two checkboxes: 'Support Circuits Saturation Algo.' (checked) and 'Support Circuits Balancing Algo.' (unchecked).
- Compressor Selection**: A dropdown menu set to 'saturation'. To its right are two checkboxes: 'Support Compressors Saturation Algo.' (checked) and 'Support Compressors Balancing Algo.' (unchecked).

At the bottom of the dialog, there are five buttons: 'Reset', '<<Back', 'Next>>', 'Cancel', and '?'.

This dialogue enables to enter information on the main functions that the controller must perform and on the distribution of resources.

- The function that must be enabled when the system is started. This value is fixed for systems that operate in chiller or heat pump mode, but can be changed for reversible units.
- For reversible units, it is possible to select checkbox “Allow switching from chiller to heatpump” to switch the mode from chiller to heat pump. If the switching fails, the unit continues to run in chiller or heat pump mode, depending on the setting of parameter “Plant start mode”.
- It is possible to allocate a I/O to allow the switching of the mode from chiller to heat pump by means of a remote control. This applies only if the unit is a reversible one and is not forced to operate in chiller or heat pump mode.
- Section “Evaporator Selection” enables to configure the use of the evaporators of the same circuit by means of two algorithms:
 - Saturation
The second evaporator is started only after the active one has been exploited at maximum power.
 - Balancing
All the available evaporators are started simultaneously in a balanced mode.It is then necessary to set the algorithm that will be used when the system is started.
- Then, it is necessary to select the algorithms supported by the system by selecting the related checkboxes on the right. The algorithm selected for start-up must obviously be supported.
- Section “Circuit Selection” enables to configure the use of the circuits of a system with two algorithms:
 - Saturation
The second circuit is started only after the active one has been exploited at maximum power.
 - Balancing
All the available circuits are started simultaneously in a balanced mode.It is then necessary to set the algorithm that will be used when the system is started.

- Then, it is necessary to choose the algorithms supported by the system by selecting the related checkboxes on the right. The algorithm selected for start-up must obviously be supported.
- Section “**Compressor** Selection” enables to configure the use of the compressors of a circuit with the following two algorithms:
 - Saturation
 - The second **compressor** is started only after the active one has been exploited at maximum power.
 - Balancing
 - All the available compressors are switched on simultaneously in a balanced manner.
- It is then necessary to set the algorithm that will be used when the system is started.
- Then, it is necessary to select the algorithms supported by the system by selecting the related checkboxes on the right. The algorithm selected for start-up must obviously be supported.

4.2 High level add-ons

The screenshot shows a 'Wizard' dialog box titled 'High Level Adds-On'. It features a progress bar at the top with four steps, the second of which is highlighted. The main area contains two sections: 'Thermal Regulation Boost via Resistor Heating' and 'Soft Start'. The first section has a checkbox 'Enable Thermal Regulation via Resistor Heating' (unchecked), a 'Resistor Heating Delta Temp' input field set to '2 C', and a 'Resistor Heating Prop. Band' input field set to '5 C'. The second section has a checkbox 'Soft Start' (unchecked) and a 'Soft Start Time' input field set to '0 sec'. At the bottom, there are four buttons: 'Reset', '<<Back', 'Next>>', and 'Cancel', along with a help icon (?) button.

This page enables to enter information on the main functions that the controller is expected to perform.

- Temperature control (in Heating mode) with electric heaters.
- Temperature range, enabling of electric heater and value of the corresponding proportional band.
- The existence of a "soft start" and the related timing between the start of two compressors.

4.3 Thermal control

This page enables to enter the settings for the temperature control of the system.

- The supported temperature control can be:
 - Proportional
 - Time-proportional
 - Proportional-integrative (PI)

In the proportional temperature control mode, the temperature control starts a specific number of cooling resources (capacity steps) in order to allow the system to reach the predefined temperature set point. The number of required cooling resources is related to the difference between the water temperature and the set point: the higher the difference and the greater the number of enabled resources.

The temperature range between the enabling of two steps varies according to the proportional band and the number of available resources.

In the time-proportional mode, the temperature control enables a specific number of resources (capacity steps), which is proportional to the time elapsed from when the control probe exceeds a specific threshold.

The integrative proportional temperature control enables resources in function of a proportional component, which takes into account only the difference between the measured temperature and the set point, and an integrative component that takes into account the sum of the errors calculated over the sampling time. Therefore, if the error is constant, the proportional component enables a constant number of resources, while the integrative component increases the resources after each reading.

- Temperature can be controlled in function of the temperature of the water output from the temperature control or in function of the input water. It is also necessary to specify if the related sensors are supported.
- It is possible to enable a temperature control anomaly alarm, which measures the difference between the temperature measured by the input and output sensors, comparing it with the value specified in pane "Evap. Thermal Delta". An alarm is generated if the duration of the anomaly exceeds the time specified in pane "Evap. Thermal Delta Bypass Time".
- In the PI temperature control mode, it is possible to configure Energy XT to manage temperature control in the linear section by selecting checkbox "Use Linear part" or in the proportional section by selecting "Use Integral Part". In this case, it is possible to assign the weight of the proportional component with value "Integral K".
- The high temperature alarm that can be enabled by selecting checkbox "High Temperature Alarm Enable Flag" is available in Cooling mode only. The alarm is generated if the temperature of the water input to the evaporator exceeds the value specified by parameter "High Temp. Alarm Threshold" for an interval of time above the value of parameter "High Temp. Alarm Bypass time".
- The low temperature alarm that can be enabled by selecting checkbox "Low Temperature Alarm Enable Flag" is available in HEAT PUMP mode only. The alarm is generated if the temperature of the water input to the evaporator is below the value specified by parameter "Low Temp. Alarm Threshold". The cause of the alarm must persist for an interval of time equivalent at least to the value specified by parameter "Low Temp. Alarm Bypass time" before the alarm signal is issued.

Wizard X

□□□□
□□□□□□□□□□□□□□□□
(ctd.)

Thermal Regulation

Dynamic Tset

Dynamic Tset Function: none

Chiller

Dyn. Tset Chiller Tset Temp. 10 C

Dyn. Tset Chiller Max Offset 5 C

Dyn. Tset Chiller Delta Temp 5 C

Heat Pump

Dyn. Tset Heat Pump Tset Temp. 30 C

Dyn. Tset Heat Pump Max Offset 5 C

Dyn. Tset Heat Pump Delta Temp 5 C

Reset
<<Back
Next>>
Cancel
?

The controller can be used to change the set point automatically according to external conditions. This change can be applied by adding to the set point a positive or negative (offset) value related to:

- The 4-20 mA analogue input (proportional to a signal specified by the user)

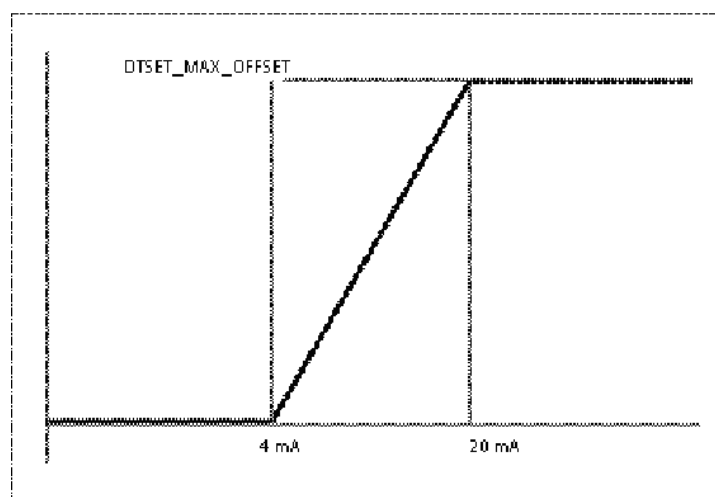
Or

- The external temperature of the probe.

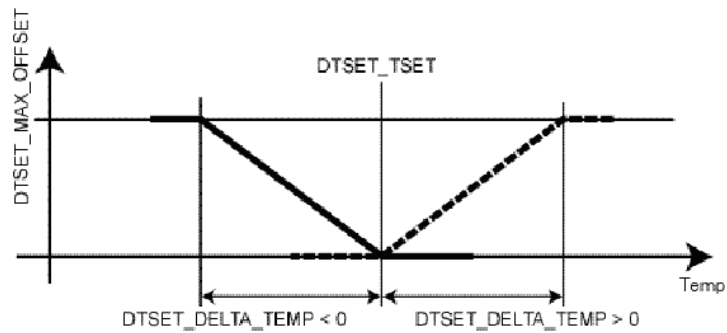
This function has two purposes: to save energy or operate the machine in particularly harsh outdoor temperatures.

It is possible to enable and select the dynamic set point type with “Dynamic T set Function”.

If a current sensor is selected, the control is performed in the sequence shown in the diagram below. The setting of parameter Dyn. T set Chiller Max Offset to a negative value causes the illustrated trend to rotate around the horizontal axis.



If the temperature sensor is selected, the control follows the sequence shown in the diagram below. The setting of parameter Dyn. T set Heat Pump T Max Offset to a negative value causes the illustrated trend to rotate around the horizontal axis.



In Chiller mode, the dynamic set point is controlled by means of the following Class C [parameters](#):

- Dyn. T set Chiller Tset Temp
Specifies the neutral temperature for the dynamic Tset algorithm.
- Dyn. T set Chiller Max Offset
Specifies the maximum offset of the Tset temperature that the dynamic Tset algorithm can generate.
- Dyn. T set Chiller Delta Temp
Specifies the rate by which the dynamic Tset must change in function of external temperature. Together with parameter **DTSET_MAX_OFFSET** it controls the slope of the dynamic Tset function.

In Heating mode, the dynamic set point is controlled by means of the following three Class C [parameters](#):

- Dyn. T set Heat Pump T set Temp.
Specifies the neutral temperature for the dynamic Tset algorithm.
- Dyn. T set Heat Pump T Max Offset
Specifies the maximum offset of the Tset temperature that the dynamic Tset algorithm can generate.
- Dyn. T set Heat Pump Delta Temp
Specifies the rate by which the dynamic Tset must change in function of external temperature. Together with parameter **DTSET_MAX_OFFSET** it controls the slope of the dynamic Tset function.

4.4 Thermal control: Chiller

Wizard

Thermal Regulation: Chiller

Set Point and Proportional Band

Cooling Set Point: 7 C

Cooling Minimum Possible Set Point: 5 C

Cooling Maximum Possible Set Point: 15 C

Cooling Proportional Band: 5 C

Cooling Minimum Prop. Band Limit: 5 C

Cooling Maximum Prop. Band Limit: 5 C

Entry Sensor Offset

Cooling Entry Offset: 5 C

Time Delays

Inc Step Time: 10 sec

Dec Step Time: 10 sec

Res. Temp

Set Point

Prop. Band

Inc. Step Time

Dec. Step Time

Prop. Band

Reset

<<Back

Next>>

Cancel

?

If temperature control is based on the temperature of the water output from the evaporator, the set point and proportional band values are determined by the following Class H [parameters](#):

- The cooling set point is specified with option "Cooling Set Point".
The value that can be assigned must be included within the minimum and maximum values of the following Class C [parameters](#):
- "Cooling Minimum Possible Set Point"
- "Cooling Maximum Possible Set Point"
- "Cooling Proportional Band" determines the amplitude of the proportional band.
The value that can be assigned must be included between the minimum and maximum values of the following Class C [parameters](#):
- Cooling Minimum Prop. Band Limit
- Cooling Maximum Prop. Band Limit

If temperature control is based on the temperature of the water input to the evaporator, the set point will be increased by the offset specified by the following Class H parameter:

- Cooling Entry Offset

The enabling/disabling of a step (capacity step) requested by the temperature control is carried out (except in specific cases like alarms, shutdown, variation in the availability of components) only after the time specified by the following parameter has elapsed:

- Inc Step Time (Increase)
- Dec Step Time (Decrease)

If simultaneous safety intervals are present, the capacity steps are enabled/disabled after the longest safety interval has elapsed.

4.5 Thermal control: Heat Pump

Wizard

Thermal Regulation: Heat Pump

Set Point and Proportional Band

Heating Set	40 C	Heating Minimum Possible Set	30 C
		Heating Maximum Possible Set	50 C
Heating Proportional Band	5 C	Heating Minimum Prop. Band	5 C
		Heating Maximum Prop. Band	5 C

Entry Sensor Offset

Heating Entry Offset 5 C

Time Delays

Inc Step Time 10 sec Dec Step Time 10 sec

Res. Temp

Set Point

Prop. Band

Inc. Step Time

Dec. Step Time

Set Point

Prop. Band

Reset <<Back Next>> Cancel ?

This page is similar to the previous one, but refers to the Heating mode.

4.6 Free Cooling & Heat Recovery

This page enables to enter the settings of the Free Cooling and Heat Recovery functions.

The screenshot shows a 'Wizard' window titled 'Free Cooling & Heat Recovery'. It contains two main sections: 'Free Cooling' and 'Heat Recovery'. Each section has a checkbox to enable the function and several input fields for specific parameters. At the bottom, there are buttons for 'Reset', '<<Back', 'Next>>', 'Cancel', and a help icon '?'. The 'Free Cooling' section includes fields for 'Delta Activation Free Cooling' (3 C), 'Delta Activation Hysteresys' (0 C), 'Min Time Between Free Coolings' (60 sec), 'Fans Regulation Maximum Band width' (50), and 'Fans Regulation Max reaching time' (6 min). The 'Heat Recovery' section includes fields for 'Heat Recovery Tset Temp' (10 C), 'Heat Recovery Proportional Band' (10 C), 'Heat Recovery Forcing Pressure' (23 bar), 'Heat Recovery Delta Pressure' (7 bar), 'Heat Recovery Min. Resting Time' (5 min), 'Forced Chill Bypass Time' (5 min), 'Forced Chill Min Time' (5 min), and 'Forced Chill Sensor' (hr_condenser_p).

Section	Parameter	Value
Free Cooling	Free Cooling	<input type="checkbox"/>
	Delta Activation Free Cooling	3 C
	Delta Activation Hysteresys	0 C
	Min Time Between Free Coolings	60 sec
	Fans Regulation Maximum Band width	50
	Fans Regulation Max reaching time	6 min
Heat Recovery	Heat Recovery	<input type="checkbox"/>
	Heat Recovery Tset Temp	10 C
	Heat Recovery Proportional Band	10 C
	Heat Recovery Forcing Pressure	23 bar
	Heat Recovery Delta Pressure	7 bar
	Heat Recovery Min. Resting Time	5 min
	Forced Chill Bypass Time	5 min
	Forced Chill Min Time	5 min
	Forced Chill Sensor	hr_condenser_p

- Free cooling
 - Select checkbox Free Cooling to enable this function.
 - Delta Activation Free Cooling:
This is the minimum difference between the external temperature and the temperature of the water that triggers the Free Cooling function.
 - Delta Activation Hysteresis:
Hysteresis for the Free Cooling enabling/disabling.
 - Min Time Between Free Coolings:
Specifies the minimum interval in seconds between the enabling of two Free Cooling functions.
 - Fans Regulation Maximum Band Width
This parameter enables to optimise the benefits of the Free Cooling by shifting the set point by the same amount of the set point.
This reduces the request for resources in the system.
The shift is carried out during the interval of time specified by the parameter.
 - Fans Regulation Reaching Time
- Heat Recovery
 - Select checkbox Heat Recovery to enable this function.
 - Heat Recovery T Set Temp: Set point temperature for the enabling of the function.
 - Heat Recovery Proportional Band: Proportional band of the heat recovery function.
 - Heat Recovery Min Resting Time
Specifies for how long the chiller mode must be running before the heat recovery function is enabled.
 - Heat Recovery Forcing Pressure
Pressure above which the heat recovery function is interrupted, causing the forcing of the system to the Chiller mode. The exchange of heat on the [condenser](#) is reduced when the function is active; this could consequently cause an increase of pressure. This is why it is necessary to set a safety interval to block the function.
 - Heat Recovery Delta Pressure
Hysteresis for the restart of the function. This option applies if the function has been blocked due to a value above the pressure limit Heat Recovery Forcing Pressure.
 - Forced Chill Bypass Time
Specifies for how long the high pressure sensor must be above value Heat Recovery Forcing Pressure (or the active digital alarm) before the heat recovery function is interrupted and the mode is forced to Chiller.
 - Forced Chill Min Time
Specifies the minimum length during which the system must run in Chiller mode (forced due a pressure value above the limit) before it is possible to restart the heat recovery function.
 - Forced Chill Sensor
 - Specifies the sensor used to detect the pressure of the heat recovery function.

4.7 Circuit Configuration

This page enables to enter the functional settings of circuits.

- Section Pump Down

This area enables to set the [parameters](#) required to start and stop the pump down function.

- Pump Down Function
 - Specifies the default value of the function.
 - No_pd: the pump down function is disabled; this option is available only if checkbox No Functions supported is selected.
 - On start: the function is enabled as soon as the system is started; this option is available only if checkbox Pump Down Function on_start supported is selected.
 - Full: the function is enabled in full mode; this option is enabled only if checkbox Pump Down Functions full supported is selected.
 - Pump Down Sensor
 - Specifies the type of probe used for the pump down function (this option is available only if checkboxes Pump Down Function on_start supported e/o Pump Down Functions full supported are selected):
 - Pd_pressure_sensor: pressure probe
 - Pd_low_pressure_di: low pressure pressure switch
 - Pd_special_pressure_di: dedicated pressure switch
 - Soft pumpdown enable
 - Enables the Soft Pump down.
 - Pump Down Min reference Pressure (this option is available only if checkboxes Pump Down Function on_start supported and/or Pump Down Functions full supported are selected).
 - Minimum pump down reference pressure.
 - Pump Down Max reference Pressure (this option is available only if checkboxes Pump Down Function on_start supported and/or Pump Down Functions full supported are selected).
 - Maximum pump down reference pressure.
 - Pump Down On-Off Max Time (this option is available only if checkboxes Pump Down Function on_start supported and/or Pump Down Functions full supported are selected).
 - Maximum length of the pump down function after the start of the circuit (the function is always disabled after the elapse of this interval of time).
 - Pump Down Off-On Max Time (this option is available only if checkboxes Pump Down Function on_start supported and/or Pump Down Functions full supported are selected).
 - Maximum length of the pump down function after the block of a circuit (the function is always disabled after this interval of time has elapsed).

- Section Maximum Pressure Alarm

This area enables to enter the set points for the enabling of the maximum pressure alarm.

- Maximum Pressure Alarm
 - Pressure above which the maximum pressure alarm is enabled.
 - Maximum Pressure Differential
 - Specifies the hysteresis for the reset of the high pressure alarm (pressure below this value). The alarm is reset if Maximum Pressure Alarm - Maximum Pressure Differential.

- Section Minimum Pressure Alarm
 - Minimum Pressure Alarm / Minimum Pressure Differential:
Equivalent to Maximum Pressure Alarm/ Maximum Pressure Differential.
 - Minimum Pressure Alarm Bypass Time
Bypass time for the minimum pressure alarm.
 - Alarms Events per Hour with Auto Reset
Maximum number of alarms per hour after which the reset mode of the alarm switches from automatic to manual.

4.8 Compressor Configuration

This page enables to enter the functional settings of compressors.

- Section **Compressor Safety**
 - Minimum Time **Compressor** Off
Specifies the minimum interval of time that must elapse between the stop and start of a **compressor**.
 - Minimum Time **Compressor** On
Specifies the minimum operating time of a **compressor** before its stop.
 - Maximum Number of Starts in an Hour
Maximum number of starts per hour.
- Section **Compressor Swaps**
 - Enable Compressors Swaps
Enables to swap the compressors in order to balance the operating hours.
 - Single Comp. On Maximum Time
Specifies for how long the **compressor** must be running before the **compressor** with a lower number of hours of operation is selected.
- Section **Partial Power**
 - Enable Partial Power
Enables the partial power function for compressors with capacity steps.
 - Maximum Time @ Partial Power
If the **compressor** runs at partial power for a time above this value, it is forced to maximum power for an interval of time equivalent to the setting of parameter Minimum Time @ Maximum Power.
- Section **Alarms: Engine Temp Alarm**
 - Engine Temp Alarm Enable Flag
Enables the **compressor** thermal switch alarm.
- Section **Advance Ignition Policy**
 - Advance Ignition Enable Flag
Enables the advanced start policy.
 - Compressors' Start Weight (this option is available only if checkbox Advance Ignition Enable Flag is selected).
Weight that has to be assigned to every **compressor** start.
 - Compressors' Usage Time Weight (this option is available only if checkbox Advance Ignition Enable Flag is selected).
Weight that has to be assigned to the hours of operation of a **compressor**.

- Section Oil Pressure Differential Alarm
 - Oil Pressure Digital Input Alarm Enable Flag
Enables the digital oil pressure alarm, provided that the *compressor* has an oil pressure switch.
 - Oil Pressure Differential Alarm Enable Flag
Enables the differential pressure alarm, provided that the *compressor* has an oil pressure switch and that the circuit has a low pressure sensor.
 - Oil P. Differential alarm (this option is available only if checkbox Oil Pressure Differential Alarm Enable Flag is selected).
Represents the differential threshold that determines the enabling of the alarm.
 - Oil P. Differential alarm (this option is available only if checkbox Oil Pressure Differential Alarm Enable Flag is selected).
 - Represents the differential threshold that determines the enabling of the alarm. (this option is available only if checkbox Oil Pressure Differential Alarm Enable Flag and/or Oil Pressure Digital Input Alarm Enable Flag are enabled).
 - Bypass time during which the alarm conditions must persist for the alarm to be enabled.
- Section Discharge Temperature Alarm
 - Discharge Temperature Alarm Enable Flag
Enables the discharge temperature alarm, provided that the *compressor* has a temperature alarm sensor.
 - Discharge Temp. Alarm: Tset
Set point for the enabling of the high temperature alarm.
 - Discharge Temp. Alarm: Delta Temp.
Hysteresis of the high temperature alarm enabling set point. The alarm is reset when the temperature falls below Discharge Temp. Alarm: Tset - Discharge Temp. Alarm: Delta Temp).

The screenshot shows a software interface titled "Compressor Configuration" with a "(config. pars)" label. Below the title bar, there is a section labeled "Compressor Liquid Injection". Inside this section, there is a checkbox labeled "Compressor Liquid Injection Enable Flag" which is currently unchecked. Below the checkbox, there are two input fields: "Compressor Liquid Injection Temperature" with a value of "125 C" and "Compressor Liquid Injection Delta" with a value of "30 C".

- Section *Compressor* Liquid Injection
 - *Compressor* Liquid Injection Enable Flag
Enables the *compressor* liquid injection.
 - *Compressor* Liquid Injection Temperature
Temperature that enables the digital output associated to the *compressor* liquid injection.
 - *Compressor* Liquid Injection Delta
Hysteresis on the temperature that enables the liquid injection: the function is stopped when the temperature falls below *Compressor* Liquid Injection Temperature - *Compressor* Liquid Injection Delta.

4.9 Condenser

This page enables to enter the functional settings of condensers.

The screenshot shows a 'Wizard' window with a blue title bar and a close button. Inside, there's a progress bar with several steps, and the current step is 'Condenser'. Below the progress bar, there are two main sections: 'Fans Control Function' and 'Other Properties'. In the 'Fans Control Function' section, there's a dropdown menu for 'Fans Control Function' set to 'fans_continuous', and three checkboxes: 'Fans 'Continuous' Ctrl Supported' (checked), 'Fans 'Digital' Ctrl Supported' (unchecked), and 'Fans 'Maxpower' Ctrl Supported' (unchecked). Below this, there's a dropdown menu for 'Fans Control Input Source' set to 'condenser_pressure_sensi', and a checkbox for 'Individual Fan Thermal Alarm' (unchecked). The 'Other Properties' section has two checkboxes: 'Fans Activation Dependent on the Compressor' (checked) and 'Fans Max Power if Condenser Probe Error' (unchecked). At the bottom, there are four buttons: 'Reset', '<<Back', 'Next>>', and 'Cancel'.

- Section Fans Control Function
 - Fans Control Function
 - Default fan control mode. The following three modes are available:
 - Fans_continuous
 - Fans are controlled in continuous mode; this option is available only if checkbox
 - Fans 'Continuous' Ctrl Supported is selected.
 - Fans_digital
 - Fans are controlled in digital mode; this option is available only if checkbox
 - Fans 'Digital' Ctrl Supported is selected.
 - Fans_maxpower
 - Fans are controlled at maximum power; this option is available only if checkbox
 - Fans 'maxPower Ctrl Supported is selected.
 - Fans Control Input Source
 - Specifies the sensor that will be used to control the fans. The following 4 types are available:
 - [Condenser](#) Pressure Sensor: pressure probe on [condenser](#).
 - [Condenser](#)_Pressure_di: (digital) pressure switch on [condenser](#).
 - [Condenser](#)_Temperature_sensor: temperature probe on [condenser](#).
 - [Condenser](#)_Temperature_di: (digital) temperature probe on [condenser](#).
 - Individual fan Thermal Alarm:
 - Enables the fan alarm to be controlled individually.
- Section Other Properties
 - Fans Activation Dependent on the [Compressor](#)
 - If this option is selected, the fans are started only if the compressors are on.
 - Fans Max Power if [Condenser](#) Probe Error
 - If this option is selected, the fans are operated at maximum power if a probe error occurs on the [condenser](#).

4.10 Fans Continuous F.: Chiller

This page enables to enter the functional settings of the fans when they are controlled in continuous mode during Cooling.

- Section Cut-Off
 - Enable Cut Off
Enables the cut-off.
 - Cut Off Pressure Set Point
Specifies the pressure below which the cut-off is enabled and the fans are stopped.
 - Pressure Delta
Specifies the hysteresis for the cut-off pressure: fans are restarted when pressure exceeds the Cut Off Pressure Set Point + Pressure Delta value.
 - Cut-Off ByPass Time
Specifies for how long the cut-off conditions must persist before the fans are blocked (Bypass).
 - Cut-Off Temperature Set Point / Cut-Off Temperature Delta
Equivalent to Cut Off Pressure Set Point e Pressure Delta, but based on temperature.
- Section Linear Behaviour
 - Start Pressure
Pressure above which fans are controlled linearly.
 - Saturation Pressure
Maximum fan power pressure (saturation).
 - Start Temperature / Saturation Temperature
Equivalent to Start Pressure e Saturation Pressure, but based on temperature.
- Section Output
 - Initial Max. Power Time
Interval of time during which fans are operated at maximum power after they have been switched on.
 - Fans Minimum Speed
Specifies the minimum fan speed (for the continuous control mode only).
 - Fans Maximum Speed
Maximum fan speed (for the continuous control mode only).

4.11 Fans Continuous F.: Heat

This page is equivalent to the previous one, but refers to the Heating mode.

4.12 Fans Digital F.: Chiller (pres)

This page enables to enter the functional settings for the fans controlled digitally in Cooling mode.

Wizard

Progress bar: 12 steps, 10th step highlighted (Fans Digital F.: Chiller (pres))

Start Pressure: SETCn	Stop Pressure: DELTACn
0 bar	0 bar
0 bar	0 bar
0 bar	0 bar
0 bar	0 bar
0 bar	0 bar
0 bar	0 bar
0 bar	0 bar
0 bar	0 bar

Diagram: Pressure (Res.) vs. Temperature (Temp) showing hysteresis loops for Start Set 1, Start Set 2, Start Set 3 and Stop Delta 1, Stop Delta 2, Stop Delta 3.

Buttons: Reset, <<Back, Next>>, Cancel, ?

- Start Pressure: SETC1 ... Start Pressure: SETC8
Pressure above which fan n is enabled (n ranges from 1 to 8).
- Stop Pressure: DELTAC1 ... Stop Pressure: DELTAC8
Defines, for each fan, the hysteresis on the set point: fan n is blocked if the pressure falls below this value.
Start Pressure: SETCn - Stop Pressure: DELTACn

4.13 Fans Digital F.: Chiller (temp)

This page is equivalent to the previous one, but refers to temperature.

4.14 Fans Digital F.: Chiller (pres)

This page is equivalent to page [Fans Digital F.: Chiller \(pres\)](#), but refers to the Heating mode.

4.15 Fans Digital F.: Chiller (temp)

This page is equivalent to the previous one, but refers to temperature.

4.16 Defrost

This page enables to enter the functional settings of the *Defrost* function.

- Section *Defrost*
 - *Defrost* Function
 - Specifies the default *defrost* mode. The following 6 options are available:
 - *Df_resistor*
This is the mode with electric heaters and is available only if the checkbox 'Resistor Supported' is selected.
 - *Df_soft_inversion*
This is the "Soft Inversion" mode (see XT Controller Manual) and is available if checkbox 'Soft Inversion Supported' is selected.
 - *Df_fast_inversion*
This is the "Fast Inversion" mode (see XT Controller Manual) and is available if checkbox 'Fast Inversion Supported' is selected.
 - *Df_fast_inversion_wpd*
This is the "Fast Inversion PD" mode (see XT Controller Manual) and is available only if checkbox 'Fast Inversion PD Supported' is selected.
 - *Df_e400*
This is the "Energy400" mode (see XT Controller Manual) and is enabled only if checkbox 'E400 Supported' is selected.
 - *Df_none*
No *defrost*.
 - *Defrost* Entry Sensor
 - Specifies which type of sensor must be used for the *defrost* input:
 - *Df_condenser_temperature_sensor*: *Defrost* temperature probe on *condenser*
 - *Df_condenser_pressure_sensor*: *Defrost* pressure sensor on *condenser*
 - *Defrost* Exit Sensor
 - Specifies which type of sensor must be used for the *defrost* output:
Equivalent to *Defrost* Entry Sensor.
 - Drip Fans Max Power
 - If selected, this option forces fans at maximum speed during de-tearing.
- Section *Defrost* Functions Common Configuration
 - *Defrost* Type
 - Specifies the default *defrost* mode for all evaporators.
 - *Single_evaporator_defrost*
Defrost is carried out individually on each evaporator. This option is available only if checkbox 'Single_evaporator_defrost enabled' is selected.
 - *Common_evaporator_defrost*
Defrost is carried out on all the evaporators of the same circuit. This option is available only if checkbox 'Common_evaporator_defrost enabled' is selected.
 - *Defrost*: set circuit(s) not defrosting at max power during *defrost*

If the common [defrost](#) is enabled (Single_evaporator_defrost) , all the evaporators that are not involved in the [defrost](#) are operated at maximum power.

- Section [Defrost](#) Configuration: Triggers ([defrost](#) configuration: triggers)
 - [Defrost](#) Start Counter Pressure
Pressure above which the [defrost](#) start time is started.
 - [Defrost](#) Stop Pressure
Pressure below which [defrost](#) is enabled.
 - [Defrost](#) 'Fans Max Power' Pres. Set
Pressure above which fans are operated at maximum power during [defrost](#).
 - [Defrost](#) Delta Pressure
Hysteresis for [Defrost](#) 'Fans Max Power' Pres. Set set point.
 - [Defrost](#) Start Counter Temperature/ [Defrost](#) Stop Temperature / [Defrost](#) 'Fans Max Power' Temp. Set / [Defrost](#) Delta Temperature
Equivalent to [Defrost](#) Start Counter Pressure / [Defrost](#) Stop Temperature / [Defrost](#) 'Fans Max Power' Pres. Set / [Defrost](#) Delta Pressure, but based on temperature.
- Section Configuration: Timers (Configuration of timers)
 - [Defrost](#) Start Delay Time
Specifies for how long the [defrost](#) start condition must be present before it is enabled.
 - [Defrost](#) Minimum Rest Time
Specifies the minimum interval of time that must elapse between two consecutive starts of the defrosting functions.
 - [Defrost](#) Maximum Duration
Specifies the maximum length of the [defrost](#).
 - [Defrost](#) 'Min. P. Alarm' Bypass Time
Specifies for how long the low pressure alarm must be bypassed after the start of [defrost](#).
 - [Defrost](#) Inter Compressor Time
Specifies the interval of time that must elapse between the start of two compressors if the [defrost](#) is set to the E400 mode.
 - [Defrost](#) Inversion Time
[Defrost](#) reversing time.
 - [Defrost](#) Minimum Duration
Specifies the minimum length of [defrost](#).
 - [Defrost](#) Drip Time
Specifies for how long the fans are controlled with parameter DF_DRIP_FANS_MAXPOWER_FLAG during the de-tearing mode (see XT Controller Manual).

Wizard (config. pars)

Defrost

Defrost Dynamic Set

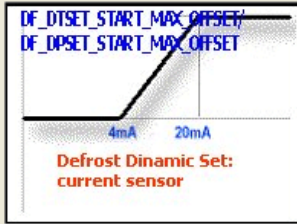
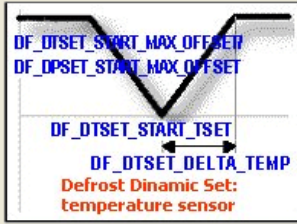
Dynamic Set Function: none

Dynamic Tset Temp.: 10 C

Dynamic Tset Delta Temp.: 5 C

Dynamic Tset Max Offset: 5 C

Dynamic Pset Max Offset: 5 bar

Reset <<Back Next>> Cancel ?

- Section **Defrost** Dynamic Set
 - Dynamic Set Function
 - Specifies the default dynamic **defrost** type. The following three options are available:
 - None: no **defrost** with dynamic set point
 - Temp_function: dynamic set point based on temperature
 - Current_function: dynamic set point based on current
 - Dynamic Tset Temp.
 - Specifies the neutral temperature for the **defrost** function with dynamic set point.
 - Dynamic Tset Delta Temp.
 - Specifies the slope of the **defrost** function with dynamic set point (see figures).
 - Dynamic Tset Max Offset
 - Specifies the maximum value that can be reached by the **defrost** function with dynamic set point (see figure).
 - Dynamic Pset Max Offset
 - Equivalent to option Tset Max Offset, but based on a pressure value.

4.17 Antifreeze

This page enables to enter the functional settings of the anti-freeze function.

- Section [Antifreeze](#) Primary Circuit
 - [Enable Antifreeze](#) Detection
Enables the detection of the anti-freeze alarm (for chillers and reversible systems running in Chiller mode).
 - [Use Resistors in case of Antifreeze](#) Alarm
Enables the evaporator electric heaters when an anti-freeze alarm occurs.
 - [Maximum Number of Antifreeze](#) Alarms with auto-reset (active only if the checkboxes [Enable Antifreeze](#) Detection are selected)
Maximum number of resettable alarms in an hour. This is the threshold after which the alarm becomes manually resettable.
- Section [Chilling](#)
 - [Antifreeze](#) Chilling Set Temperature
Set point that enables the anti-freeze alarm in Cooling mode. The alarm is enabled below this value.
 - [Antifreeze](#) Chilling Differential Temp
Hysteresis for the [Antifreeze](#) Chilling Set Temperature set point. The alarm is reset if the temperature rises above this value.
 - $\text{Antifreeze Chilling Set Temperature} + \text{Antifreeze Chilling Differential Temp}$
 - [Antifreeze](#) Chilling Bypass Time
Interval of time during which the anti-freeze alarm conditions must persist before the actual enabling.
- Section [Heating](#)
 - $\text{Antifreeze Heating Set Temperature} / \text{Antifreeze Heating Differential Temp} / \text{Antifreeze Heating Bypass Time}$
Equivalent to $\text{Antifreeze Chilling Set Temperature} / \text{Antifreeze Chilling Differential Temp} / \text{Antifreeze Chilling Bypass}$ in Heating mode.
- Section [Primary Circuit Prevention](#)
 - [Prevent Antifreeze](#) During Chilling
Enables the preventive anti-freeze function in Cooling mode. For further information, see the XT Controller Manual.
 - [Prevent Antifreeze](#) During Heating
Enables the preventive anti-freeze function in Heating mode. For further information, see the XT Controller Manual.
 - [Prevent Antifreeze](#) During [Defrost](#)
Enables the preventive anti-freeze function in [Defrost](#) mode. For further information, see the XT Controller Manual.
 - [Prevent Antifreeze](#) During Off/Stand by
Enables the preventive anti-freeze function when the unit is off or in standby. For further information, see the XT Controller Manual.
 - [Preventive AF Chilling TSet](#)
Preventive anti-freeze set point in Cooling mode. For further information, see the XT Controller Manual.
 - [Preventive AF Heating TSet](#)

- Preventive anti-freeze set point in Heating mode. For further information see the XT Controller Manual.
- Preventive AF Delta TSet
Hysteresis for the Preventive AF Chilling Tset or Preventive AF Heating Tset set point.

Wizard X

□□□□ □□□□□□□□□□□□□□□□ □ (config. pars) **Antifreeze**

Antifreeze Secondary Circuit

☐ Enable Antifreeze Detection
☐ Use Resistor in case of Antifreeze Alarm

Maximum Number of Antifreeze Alarms with auto-reset

Chilling

Antifreeze Chilling Set Temperature

Antifreeze Chilling Differential Temp

Antifreeze Chilling Bypass Time

Heating

Antifreeze Heating Set Temperature

Antifreeze Heating Differential Temp

Antifreeze Heating Bypass Time

- Section [Antifreeze](#) Secondary Circuit
Equivalent to section [Antifreeze](#) Primary Circuit (see previous page), but referred to the secondary circuit.
- Section Chilling
Equivalent to section Chilling of the main circuit (see previous page), but referred to the secondary circuit.
- Section Heating
Equivalent to section Heating of the main circuit (see previous page), but referred to the secondary circuit.

4.18 Pump Group

This page enables to enter the functional settings of the *pump group*

- Section *Pump Group* Control Function
 - *Pump group* Control Function
 - Specifies the default *pump group* control. Three options are available:
 - Independent: this is available only if checkbox 'Independent' Control Function Supported' is selected.
Pumps are not controlled because only the pressure switch value is detected.
 - Pump_group: this is available only if checkbox 'Pumpgroup' Control Function Supported' is selected.
Pumps will be controlled as a group.
 - Individual: this is available only if checkbox 'Individual' Control Function Supported' is selected.
Pumps will be controlled individually.
- Section Individual/PumpGroup Control Function *Parameters*
 - Pumps Rotation Time
If the system has several pumps controlled individually, this option specifies for how long the pump must run before the second one can be enabled by rotation.
 - Compressors Start Delay Time (This option is enabled only if checkboxes 'Pumpgroup' Control Function Supported' and/or 'Individual' Control Function Supported' are selected)
Delay with which the compressors are started after the start of the pumps.
 - Compressors Start Delay Time (This option is enabled only if checkboxes 'Pumpgroup' Control Function Supported' and/or 'Individual' Control Function Supported are selected)
Delay with which the pumps must be stopped after the stop of the compressors.
 - Halt compressors on pumps rotation with time delay
Enables the stop of the compressors if the pumps are rotated.
 - Time delay on Pumps Rotation
Specifies for how long the compressors must be blocked during the rotation of the pumps.
- Section Pump on Call Function
 - Enable Pump on Call Function
Enables the pump on call function.
 - Pump on Call suspend time (Enabled only if checkbox Enable Pump on Call Function is selected)
Timing between the stop of the compressors and pumps.
 - Pump on Call restart time (Enabled only if checkbox Enable Pump on Call Function is selected)
Timing between the start of the pumps and compressors.
- Section Flowswitch Alarm
 - F.S. Alarm Bypass Time on startup
Specifies for how long the flow switch alarm must be present before it is enabled after the start of the pumps.
 - F.S. Alarm Entry Time
Specifies for how long the flow switch alarm must be present before it is enabled.
 - F.S. Alarm Exit Time
Specifies for how long the flow switch alarm must not be checked before it is disabled.

- F.S. Automatic to Manual set Time
Specifies for how long the flow switch alarm must persist before the reset mode switches from automatic to manual.

4.19 End of the Wizard

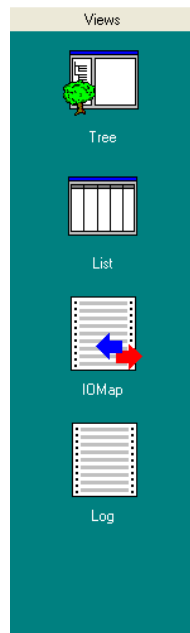
At the end of the sequence of pages, the program displays a message that enables to complete the configuration phase and start creating the firmware files with the configured settings.

5 REPORT

The reporting tools, available at the end of a "wizard" session, can be used on the defined configurations.

The selection of item "Views", in the lower left section of the screen, opens the 4 display tools available:

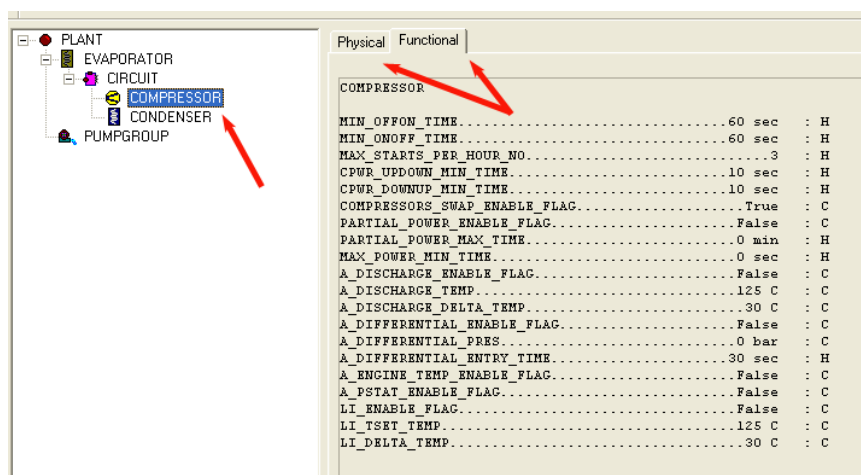
- [Tree](#)
- [List](#)
- IOMap
- [Log](#)



5.1 Tree

This option displays a treeview of the configured system.

It is possible to select every component in the right pane to display both the physical (pane "Physical") and the functional (pane "Functional") characteristics of the system.



5.2 List

This option displays a full [list](#) of the [parameters](#) of the configured unit along with the related characteristics.

Parameter	Value	Property	Component	Section	Label
PLANT_START_MODE	chiller	C	plant	Functional	Plant Functioning Mode
EVAPORATOR_SELECTION_FUNCTION	saturation	C	plant	Functional	Evaporators' Selection Algorithm
EVAPORATOR_SELECTION_FUNCTION_BALANCING	false	F	plant	Functional	Support Evaporator 'Balancing' Algo.
EVAPORATOR_SELECTION_FUNCTION_SATURATION	true	F	plant	Functional	Support Evaporator 'Saturation' Algo.
CIRCUIT_SELECTION_FUNCTION	saturation	C	evaporator	Functional	Circuits' Selection Algorithm
CIRCUIT_SELECTION_FUNCTION_BALANCING	false	F	evaporator	Functional	Support Circuit 'Balancing' Algo.
CIRCUIT_SELECTION_FUNCTION_SATURATION	true	F	evaporator	Functional	Support Circuit 'Saturation' Algo.
COMPRESSOR_SELECTION_FUNCTION	saturation	C	evaporator	Functional	Compressors' Selection Algorithm
COMPRESSOR_SELECTION_FUNCTION_SATURATION	true	F	evaporator	Functional	Support Compressor 'Saturation' Algo.
COMPRESSOR_SELECTION_FUNCTION_BALANCING	false	F	evaporator	Functional	Support Compressor 'Balancing' Algo.
MACHINEREVERSAL_FLAG	false	C	plant	Functional	Machine Reversal
MACHINEREVERSAL_REMOTE_INPUT_FLAG	false	F	plant	Functional	Machine Reversal remote input
SOFTSTART_FLAG	false	C	plant	Functional	Soft Start
SOFTSTART_TIME	0 sec	H	plant	Functional	Soft Start Time
INTH_ENABLE_FLAG	false	C	plant	Functional	Use Evaporator's Resistor to boost Thermal Regulation
INTH_DISPATCH_TEMP	2 C	H	plant	Functional	Temperature Delta to enable Evaporator's Resistor boost
INTH_PROPORTIONAL_BAND	5 C	H	plant	Functional	Evaporator's Resistor boost proportional band
TREG_FUNCTION	proportional	C	plant	Functional	Thermal Regulation Function
TREG_FUNCTION_PI	false	F	plant	Functional	Support for PI Function
TREG_FUNCTION_PROPORTIONAL	true	F	plant	Functional	Support 'Proportional' Function
TREG_FUNCTION_TIME_PROPORTIONAL	false	F	plant	Functional	Support 'Time Proportional' Function
TREG_TEMPERATURE_SENSOR	entry_sensor	C	plant	Functional	Thermal Regulation Sensor
TREG_TEMPERATURE_SENSOR_ENTRY	true	F	plant	Functional	Support 'Entry' Sensor
TREG_TEMPERATURE_SENSOR_EXIT	false	F	plant	Functional	Support 'Exit' Sensor
A_THERMAL_DELTA_ENABLE_FLAG	false	C	plant	Functional	Thermal Regulation Anomaly Enable Flag
A_THERMAL_DELTA_TEMP	5 C	H	plant	Functional	Evaporator Thermal Delta
A_THERMAL_DELTA_BYPASS_TIME	120 sec	H	plant	Functional	Evaporator Thermal Delta Alarm Bypass Time
A_HIGH_ENABLE_FLAG	false	C	plant	Functional	High Temperature Alarm Enable Flag
A_HIGH_THRESHOLD_TEMP	19 C	H	plant	Functional	High Temp. Alarm Threshold
A_HIGH_BYPASS_TIME	15 min	H	plant	Functional	High Temp. Alarm Bypass Time
A_LOW_ENABLE_FLAG	false	C	plant	Functional	Low Temperature Alarm Enable Flag
A_LOW_THRESHOLD_TEMP	18 C	H	plant	Functional	Low Temp. Alarm Threshold
A_LOW_BYPASS_TIME	15 min	H	plant	Functional	Low Temp. Alarm Bypass Time
PI_USE_INTEGRAL_COMPONENT	true	H	plant	Functional	PI Thermal Regulation: Use Integral Component
PI_INTEGRAL_CONSTANT	30 sec	H	plant	Functional	PI Thermal Regulation Integral constant

5.3 IO Map

This option provides information on the number of allocated inputs and outputs.

Type	N...	Name	Description
OD	1	Allarme cumulativo macchina	LSPEC: Beta BIOS
IA	1	Sonda temperatura ingresso primario	LSPEC: Alpha-BIOS on Plant(0).average_in_water_temp_phys_ai (e_in_water_temp_phys_di)
ID_AT	1	Flussostato circuito primario	LSPEC: PumpsGroup(0).a_waterflow_phys_di

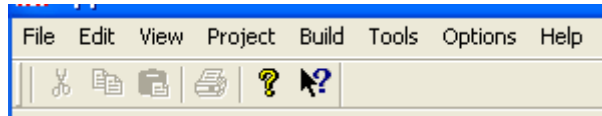
5.4 Log

This option displays a [list](#) of information on the wizard cycle used to configure the unit and create the related files.

6 MENU

The *Menu* bar in the upper section of the screen displays several options grouped in 8 main sections:

- File
- Edit
- View
- Project
- Build
- Tools
- Options
- Help



6.1 File Menu

This *menu* displays the typical options of Windows' applications:

- New PCS
Opens a new project to configure.
- Open PCS
Opens an existing project to allow the user to edit it. The selection of this option displays a window in which it is possible to select the directory and files to be loaded. The file is an XML (.xml) file.
- Save PCS
Saves the current configuration in the directory and file specified in the next window. The file is an XML (.xml) file.
- Save PCS As
This option is similar to Save PCS, except for the fact that it enables to change the name without overwriting the current file.
- Save *IO Map* As
Saves the text file with the I/O configuration with a new name. This option is equivalent to view Views/IOMap. For further information, see previous chapter.
- Save *Log*
Saves the text file with the current configuration data. This option is equivalent to view Views/*Log*. For further information, see previous chapter.
- Print
Prints the *list* of *parameters* related to the current configuration.
- Page Setup
Enables to define the settings of the page that has to be printed. Three sections are available:
 - Header & Fonts
This section enables to select the type of font and font size for the:
 - Header
 - Body
 - FooterIt is also possible to enter a short text that will be included in the header and footer of each printed page.
 - Margins
Defines the page margins.
 - Other Properties
 - Print column separator: divides the columns of the table of *parameters* with a vertical line.
 - Print line separator: divides the lines of the table with horizontal lines.
 - Print Frame: encloses the table with a frame.
- Printer Setup
Enables to configure the printer in use.

6.2 Edit Menu

- Undo
Cancels the last operation performed.
- Copy / Paste / Cut
Typical Windows options that can be used to copy data.

6.3 View Menu

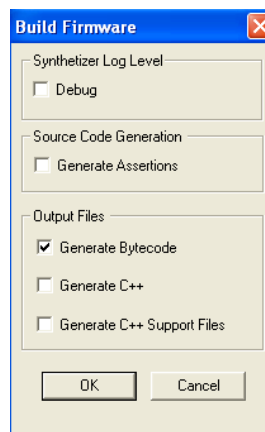
- Toolbar
Displays the bar with the buttons below the *menu* bar.
- Status Bar
Displays a grey bar containing some status messages in the lower section of the application window.

6.4 Project Menu

- Edit Specification
Opens the configuration wizard that enables to define all the (physical and functional) characteristics of the system. This option has the same effect of button Edit Specification displayed on the left of the window.
- Plant Specification
 - Import
Opens the configuration file of an existing system.
Loads the data of the physical configuration only.
 - Edit
Opens the configuration wizard that enables to define the physical characteristics of the system. This option has the same effect of button Edit Physical displayed on the left of the window.
 - Export
Saves the current physical configuration of the system in a file.
- Function Specification
 - Import
Opens the configuration file of an existing system.
Loads the data of the functional configuration only.
 - Edit
Opens the configuration wizard that enables to configure the functional characteristics of the system. This option has the same effect of button Edit Functional displayed on the left of the window.
 - Export
Saves the current functional configuration of the system in a file.
- [Tree View](#)
Displays the current treeview of the system. This option has the same effect of button Views/[Tree](#) displayed on the left of the window.
- [List View](#)
Displays the [parameters](#) of the current system. This option has the same effect of button Views/[List](#) displayed on the left of the window.
- [Log View](#)
Displays the '[log](#)' file of the current system. This option has the same effect of button Views/[Log](#) displayed on the left of the window.
- Check Project
Enables the procedure to control the physical and functional [limits](#) of the current system.
This function is useful if the real-time control function is disabled during configuration.

6.5 Build Menu

- Build Firmware
This [menu](#) can be used, after the configuration of the system, to start compiling the firmware files to be downloaded to Energy XT. The following window displays:



- Synthesizer [Log](#) Level (Debug)
If this option is enabled, messages are displayed during the generation of the firmware.
- Source Code Generation (Generate Assertion)
Generates code assertions.
- Output Files
 - Generate ByteCode
Enables the creation of the firmware files that can be downloaded to Energy XT (the files required to upgrade the device can be created only if this option is checked).
 - Generate C++
Enables to create the C++ files referred to the built firmware.
 - Generate C++ Support Files
Enables to generate the C++ support files related to the built firmware.

Once the procedure has been completed, the program displays a window with the related errors and/or warnings related to the created firmware.

If the procedure is successful, the following main files will be created:

- <MyMachine>.timers
- <MyMachine>.par
- <MyMachine>.memmap
- <MyMachine>.meminit
- <MyMachine>.lspec
- <MyMachine>.defs
- <MyMachine>.bc

Where <MyMachine> represents the name assigned to the PCS file of the configured system.

These files are used by Aploader to update the firmware of Energy XT. For further information, see the related manual.

6.6 Tools Menu

Currently unavailable.

6.7 Options Menu

- Perform Checks
Enables to check in real time (run time) the limitations of the system configuration [parameters](#).
- Disable Controls
Disables the configuration check during the compilation phase.
- Verbose Warning
Currently unavailable.

6.8 Help Menu

Perform Checks

Opens the online Help.

About Applicazione SC2

Displays information on the version of the software tool, the copyright and credits.

7 LIMITED LIABILITY

ELIWELL CONTROLS srl shall not be liable for damages originating from the installation/use of the software that do not comply with the instructions of this manual.

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