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# Software Check Stab NET User Guide



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# 1 Software Installation

## 1.1 Set Up

To begin using Check Stab Life it is necessary to install the software Check Stab NET.

**The minimum requirements of the Computer, where the software is to be installed, must be:**

- Pentium 4 (or better)
- Memory 2 giga di ram
- Operating system Windows xp, Windows vista, Windows 7.

**Before installing the software make sure that:**

***For the proper functioning of the "Check Stab", ensure that you disable the screen saver on the monitor and the Stand By function.***

***The Windows operating system has performed all the required updates online.***

To download the updates proceed as follows:

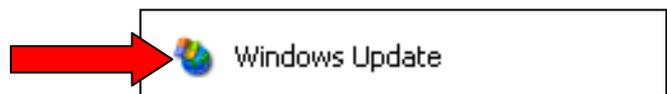
Click "Start "



Click "All Programs"



Click "Windows Update". Follow the wizard to run the download of updates.



Continue until you have downloaded all updates.

At this point you can proceed to install the software.

The software is supplied with the instrument on a CD. It is also possible to download it by using internet and the Delta Acque web site.

To download the software from internet, do as follows:

1. Open our web site [www.checkstab.com](http://www.checkstab.com)
2. Click on Enology
3. Click on download icon.
4. User/E-mail, type in: "guest"
5. Type in Password: "checkstab"
6. Click on set up checkstab.net and wait until the download finishes.

When down loading from the internet, the file will be Zipped. The user must extract the files and then launch set up. When using the file down loaded from our web site or when using the Compact Disk provided with Instrument, it is very important to install the data base engine file **first**. From internet download the **AccessDatabaseEngine** file or from the CD, click on the following Icon and install the file:



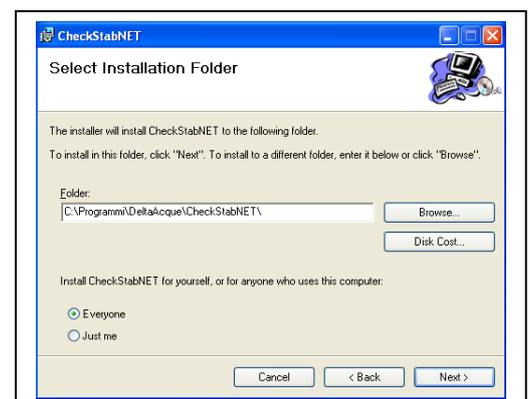
As soon as the database engine has been installed, proceed with the installation of the Checkstab Net software by clicking on the one of the following icons:



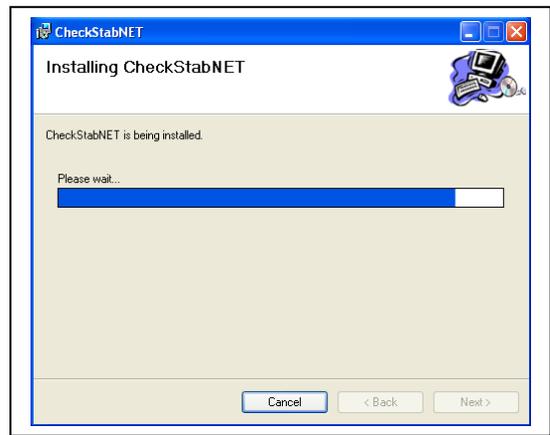
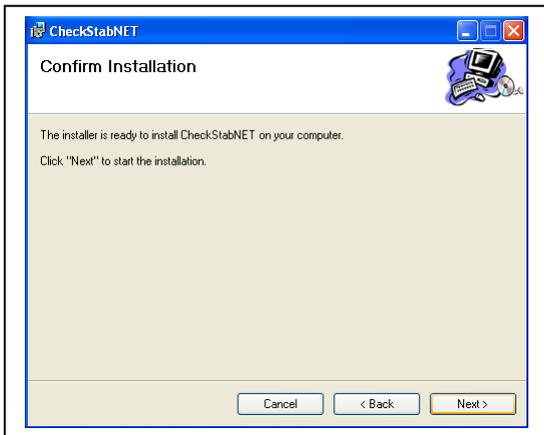
Once launched, the following window appears:  
Click on “next”.



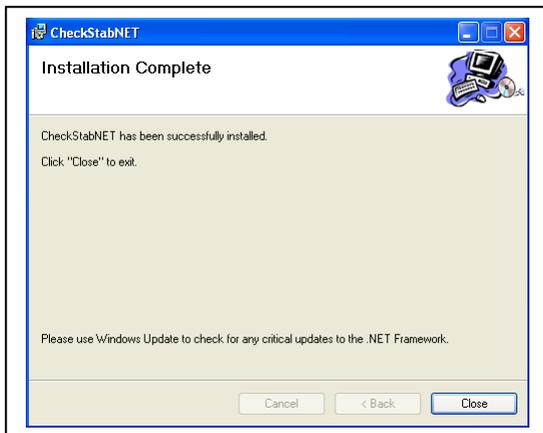
The program asks which folder the user wants to save the program in. By default the following will appear:  
C:\Programmi\DeltaAcque\CheckstabNet\  
“Everyone” will be selected.  
Begin the installation by clicking “next” again.



A new window will appear “Confirm Installation”.  
Click “next” to confirm installation of Check stab NET.



The following window will show that the installation has been completed. Click “Close” to proceed.



The following Icons appear on desktop:

- CheckStabNET
- Setup wznLan.exe

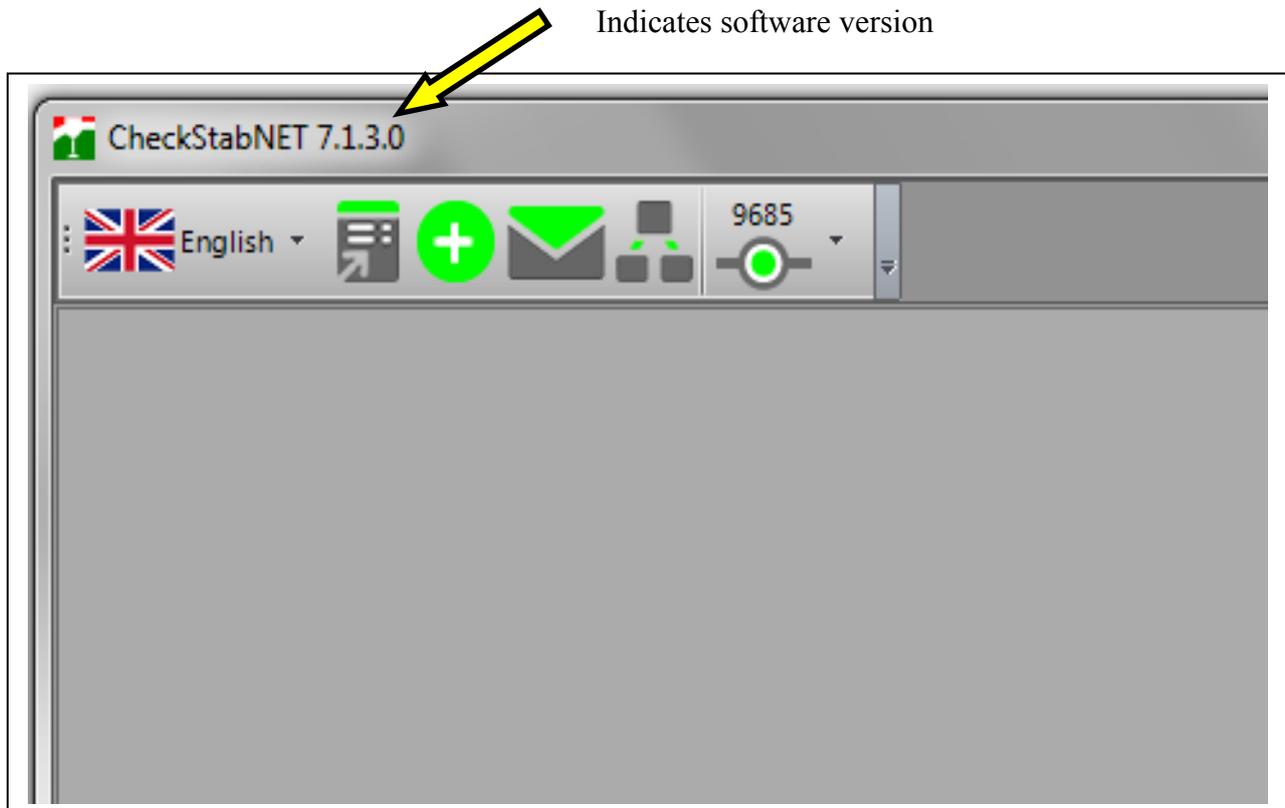


Click here to launch the CheckStabNET program.



Click here to begin the installation of search LAN software.

After clicking on the Icon CheckStabNET, wait a few seconds for the program to load. The program will appear as shown in the following window.

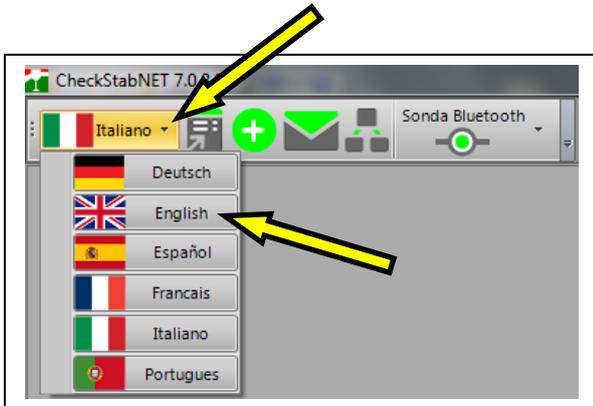


The tool bar consists of the following:

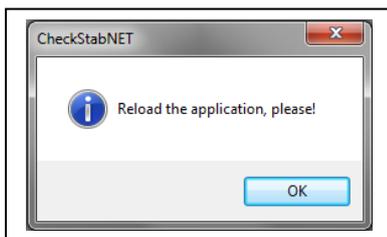
-  Choise of language (see paragraph 1.2)
-  Projects (see paragraph 1.3)
-  Add device (see paragraph 1.4)
-  SMTP configuration (see paragraph 1.5)
-  Arrange windows (see paragraph 1.6)

## 1.2 Choice of language

The Check Stab software NET is multi language: click on window of menu as indicated by the arrows to select a language.



Once a language has been selected it is necessary to close the program (a window opens with instructions) and open the program again.



Check stab NET will now open with the selected language.

## 1.3 Projects

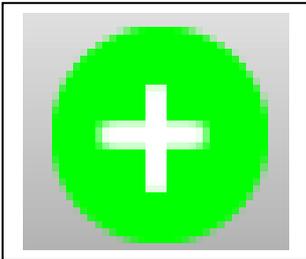
Click on the icon projects, the project window will appear.



See chapter 11 (graphics management) for more information.

## 1.4 Connect to Check Stab

The software CheckStabNET allows the user to manage more than one Check Stab Units contemporaneously. The user will need to supply all the data of the instrument or instruments being used to make a connection. To add an instrument, click the Icon “Add device”, found on the upper left of the window.

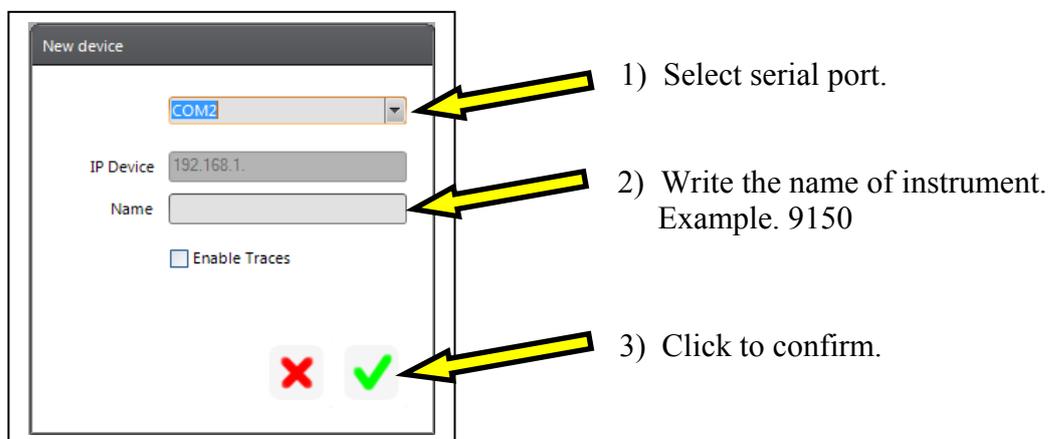


A new window will open in the middle of the screen, “new device”. The user must select which connection for check stab  $\alpha$ 2012 Life. Connections can be made by:

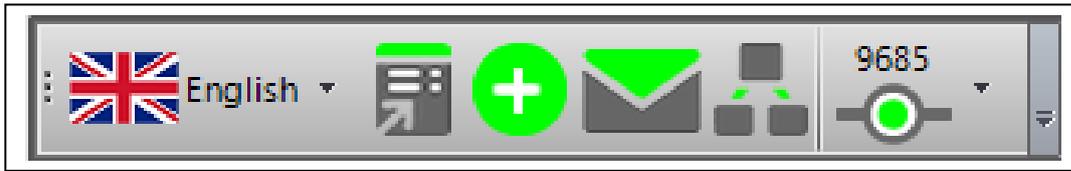
- Serial Cable
- Lan connection.

### 1.4.1 Serial cable connection

- Connect the serial cable to the instrument (located at back of instrument) and computer. If the computer does not have a free serial port, It will be necessary to use a USB adapter.
- It will now be necessary to indicate which serial port to use for communication between the PC and the instrument. Click on the menu “Serial” and indicate which serial port is to be used to connect the instrument. If using a serial port, select Com 1 or Com 2. If using a USB adaptor it will be necessary to find which Com the adaptor is associated with. To know which port is being used, do as follows. Click “Start”, “Control Panel”, “System”, “Hardware”, “Device Manager” and “Port (Com e LPT)”.
- Write the name of the instrument to be connected (ex. 9150) and confirm clicking on “OK”. Automatically, the beginning window of the software will open. The window will show the instrument. In this case “9150”.



- After confirmation, the installed device window will automatically begin to load the data.
- On the tool bar, the installed device will appear. In this case we have “9685”.



- For further information contact “Check Stab Instrument” customer service.

### 1.4.2 Connection by LAN

Connection via LAN can be direct to one instrument (Master) or connected by means of a switching system (for those using modular connections of more than one instrument, Master and Slaves).

#### Direct Connection:

- Switch the instrument on by using the switch at the back of the instrument. Connect as shown below in figure 1. Remember that the instrument is on, but the screen will read “Check Stab OFF” until there has been a connection established between the instrument and software of the PC.

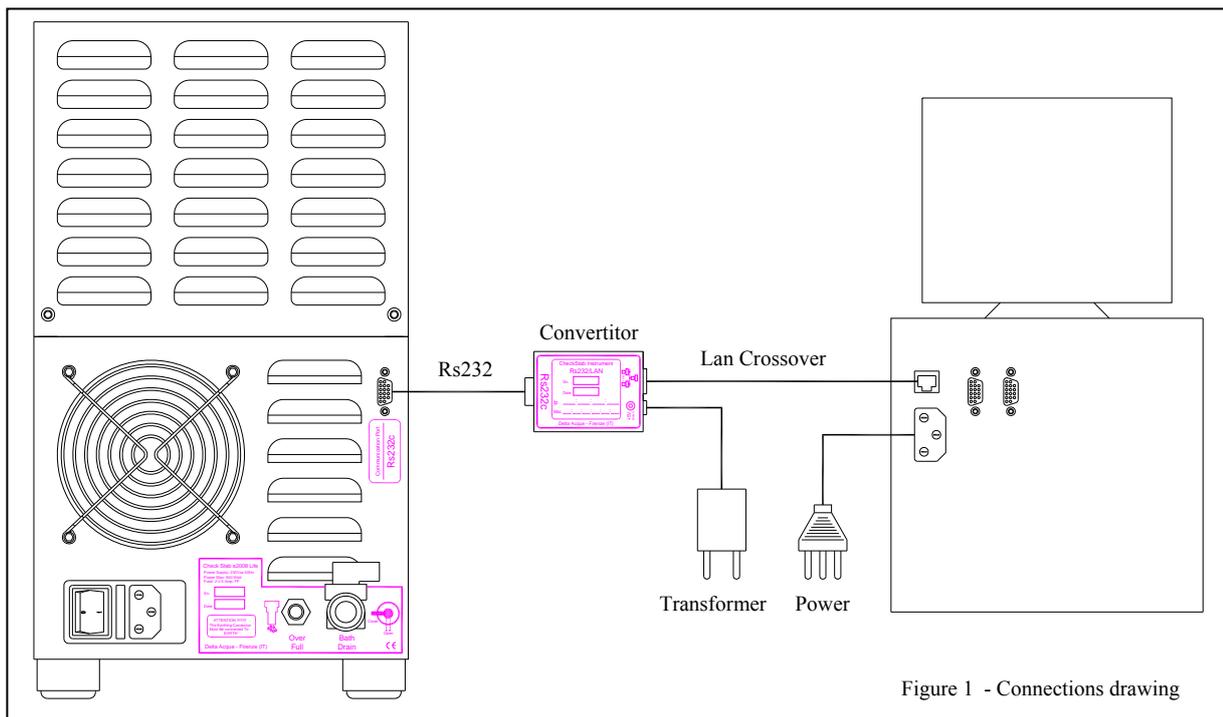
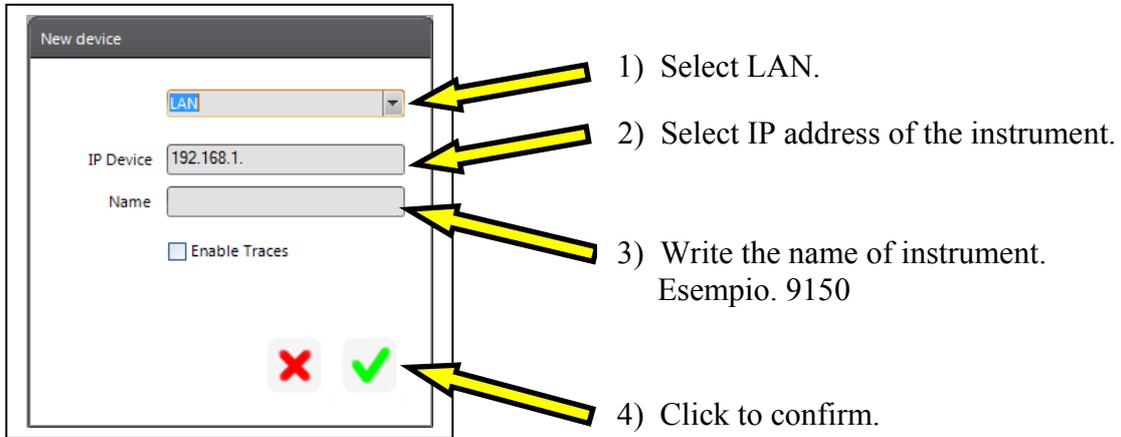


Figure 1 - Connections drawing

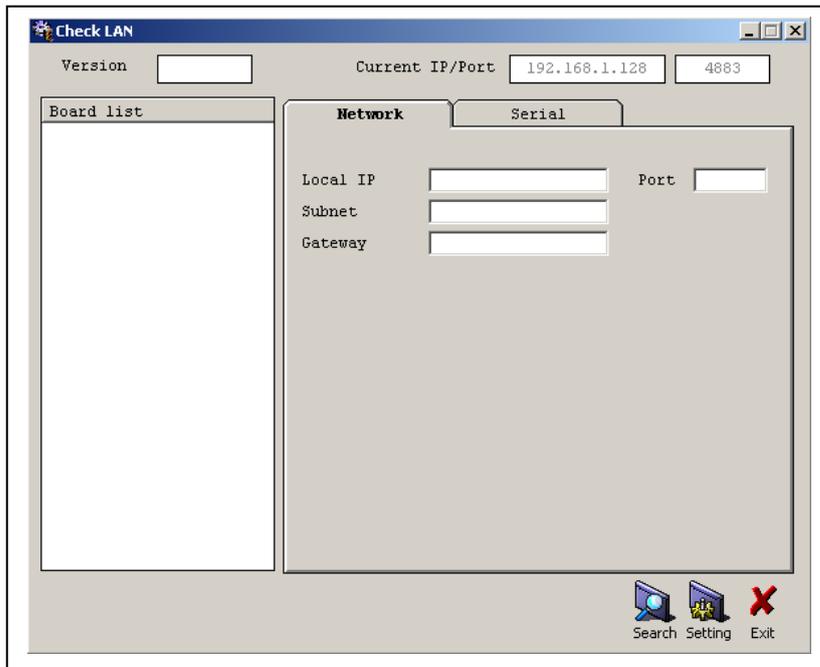
- Click “New device” located on the upper left. A new window with open as seen in figure 1. Write the name of the instrument to be connected, for example “Life 9150”. Click “ok”. The beginning window will appear and the software will begin and the instrument will exchange data with the PC. If the connection does not occur, it will be necessary to change the “IP Device” and put in the correct one.



- Install the program “wznLan” by launching setup.
- On Desk Top, the user can open the program by clicking on the Icon “wznLan”.

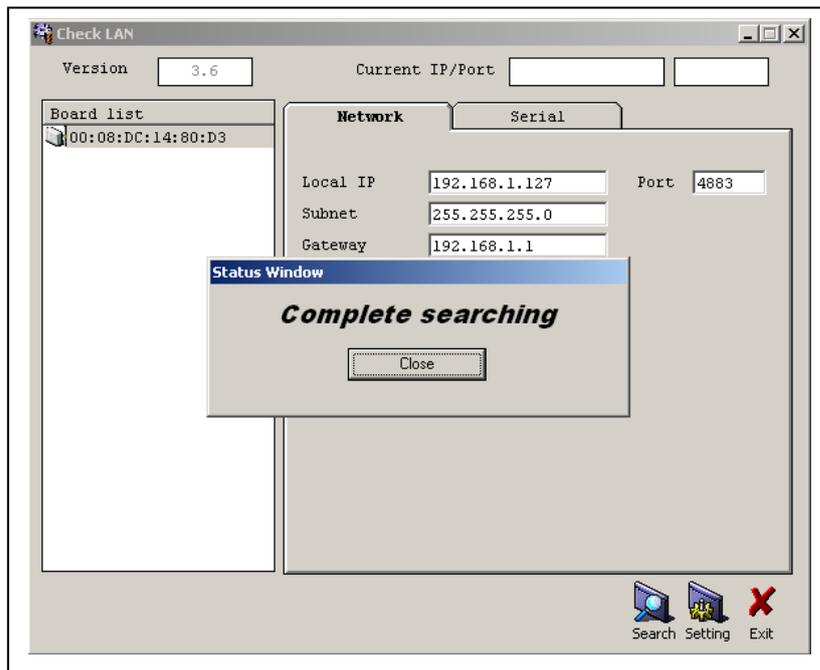


- After clicking on the Icon to configure LAN, the following window appears:



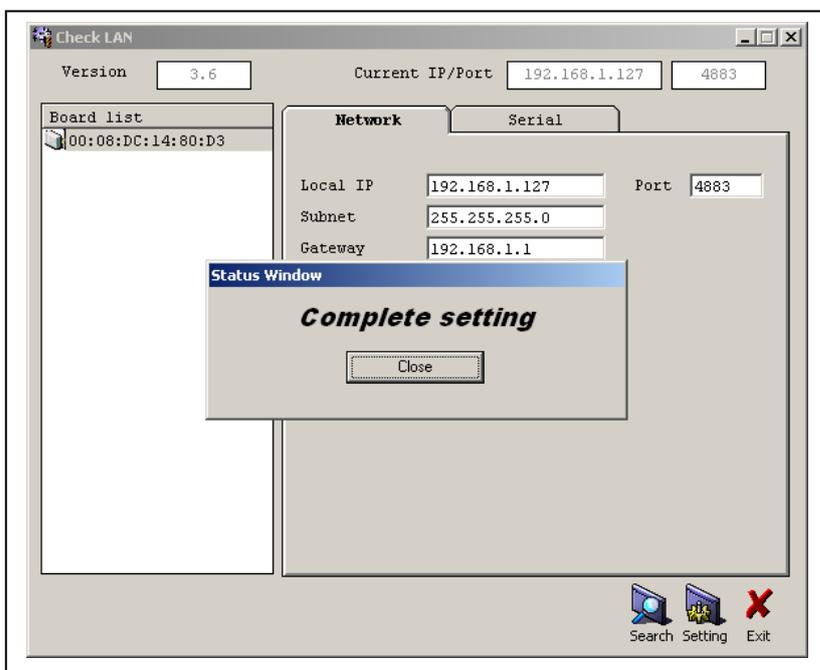
Search setting LAN

- Click the Icon “Search” located on the bottom right. Now the software will look for the RS232/Lan converter that is supplied with the instrument.



Window search converting device Rs232/Lan

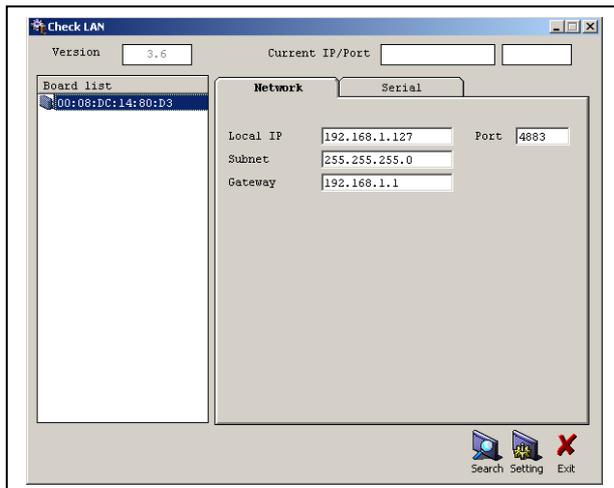
- Ending the search (in this situation there will only be one result as we have only one board connected, the Master), click “Close”.
- Select the resulting board connection and then click on the Icon “Setting” to set the configured board.



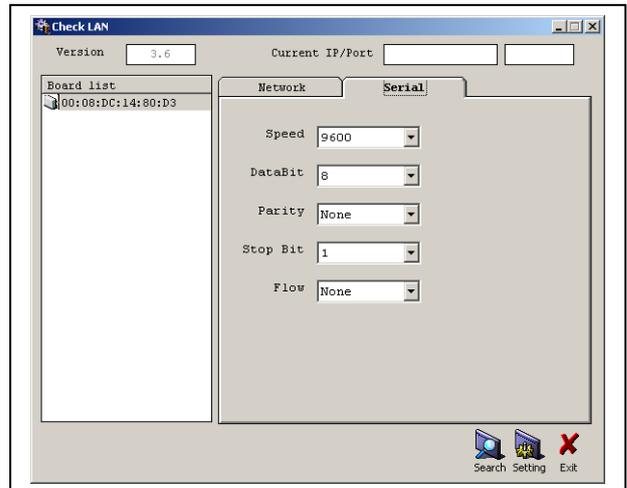
Window end setting converting device Rs232/Lan

- After finishing Setting, click on “Close” again. Now the user can check that on the Network window the data relative to the Local IP, Subnet e Gateway correspond to the parameters of the laboratory’s internet connection. The data relative to “Port” (4883) and the data of the

window “serial” (Speed, Data bit, Parity, Stop Bit e Flow) must never be modified and will be as in the figure below.



Window Network data



Window Serial data

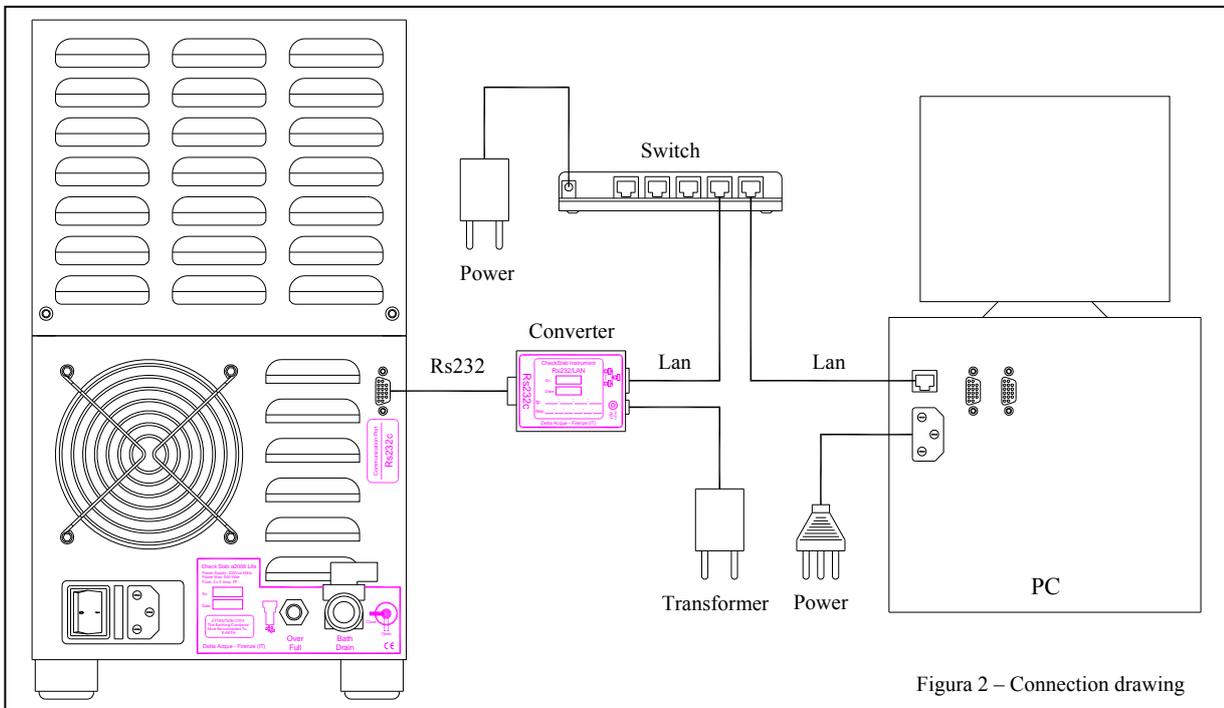
- After verifying the accuracy of all the parameters click “Exit”
- Insert correct IP Device and the name of Instrument to connect (Es. 9150).
- Click “OK” and wait loading of program.
- The installed instrument will appear on the window. In this case “9685”.



Name of the instrument

### Connecting by means of a switch:

- Switch the instrument on by using the switch at the back of the instrument. Connect as shown below in figure 1. Remember that the instrument is on, but the screen will read “Check Stab OFF” until there has been a connection established between the instrument and software of the PC.

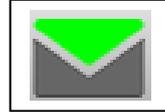


- Repeat as in the previous paragraph 1.2. to look for the Rs232/Lan converter and its relative setting.

## 1.5 SMTP configuration

It is possible to send automatically by e-mail results of analyses with the software Check Stab NET just as soon as the analyses have terminated. It will be necessary to configure the e mail addresses that the software will use to send results of analyses. It is possible to send results to up to five e-mail addresses, these addresses are inserted by using the parameter window, that will be shown later in paragraph 3.3.13

The following window opens when clicking on the icon:



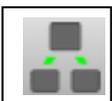
Insert the e mail parameters “send”:

- EMAIL ACCOUNT
- SMTP SERVER
- SMTP LOGIN
- SMTP PASSWORD

After inserting the data confirm by clicking on “ok”.

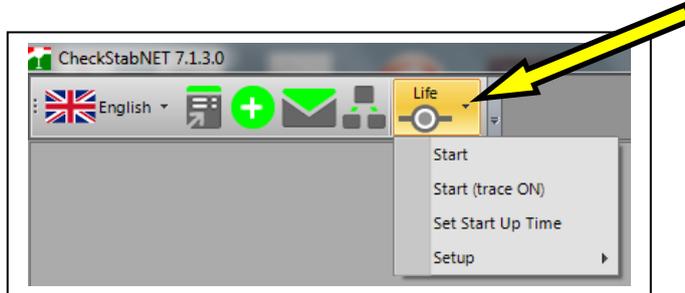
## 1.6 Arrange windows

By clicking on this icon, the program will arrange the software’s window on the computer’s display. If working with only one instrument, the window will enlarge to cover the entire screen. If using more than one instrument, the program will optimise the placement of the windows on the display of the computer.

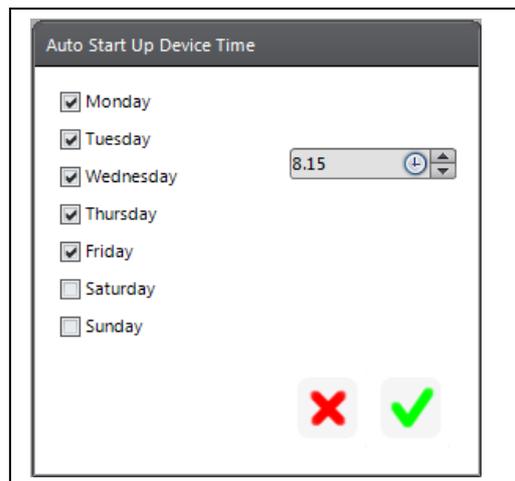


## 2 Beginning Windows

Once installing the software and making a connection, click on the menu list and then click Start to switch on the check stab instrument compressor.



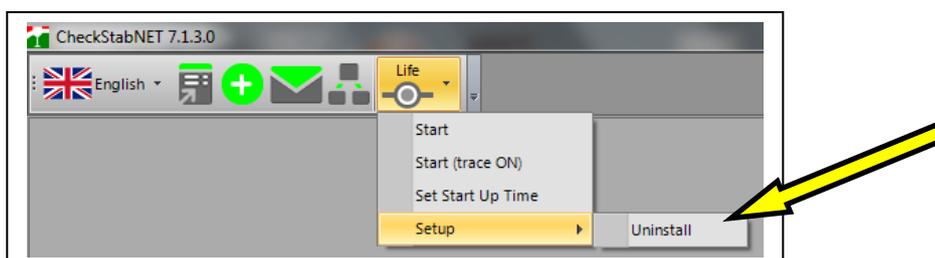
The check stab NET software has a feature that allows the laboratory to program the automatic switching on of the instrument during the week. By clicking on “Set Start Up Time” the following window appears. The user can program the hour and days of week for automatic start up of the instrument.



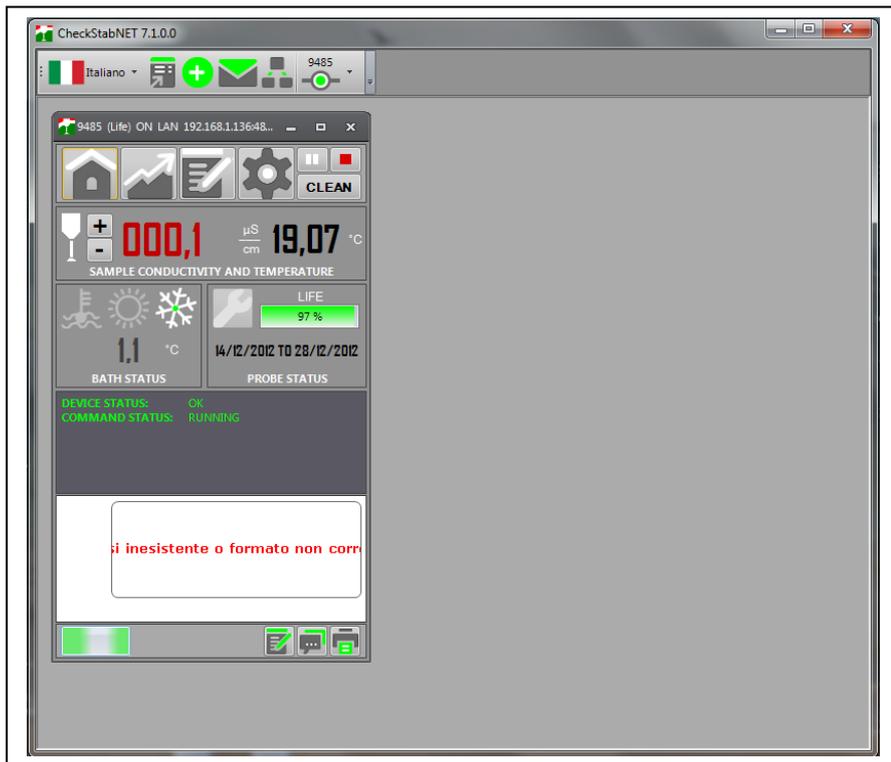
Click “ok” to confirm Auto Start up. In this case the instrument will switch on automatically Monday through Friday at 8:15.

By clicking on “Start Trace On” the software will create a folder checkstab on Desk Top where there will be a sub file called “**Traces**”. The software will memorize all operations performed by both the user and the software. In case of malfunctions of the instruments, send this file to Delta Acque specialists who can proceed with solving eventual problems..

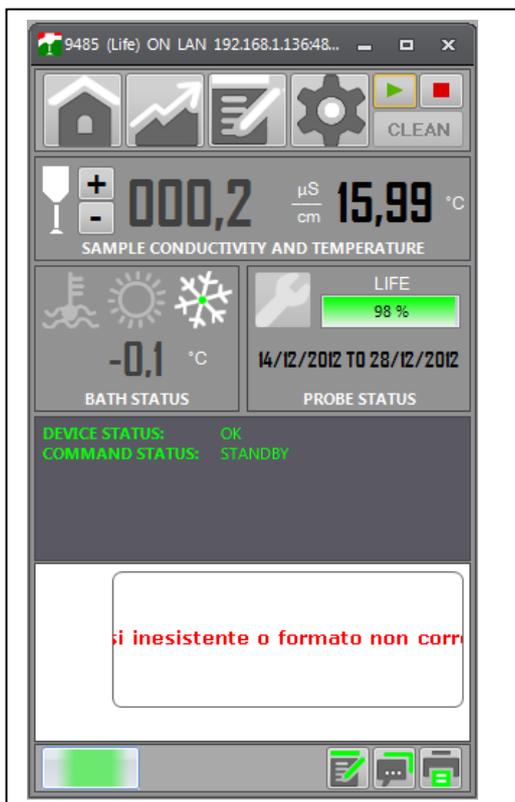
To uninstall an instrument, Click on “Setup”, then “Uninstall”. Close the software and open it again to uninstall.



Once the instrument has been switch on, the following window appears.



The green bar to the lower left indicates that the instrument is in communication with the computer. The name of the instrument and type of connection is found at the top of the window. In this case, the name of the instrument is “9485” and is connected by means of Lan. The menu and instrument status are found on the Control Panel Window:



The menu bar is as follows and includes:



- Control Panel
- Graphics Panel
- Parameters Panel
- Settings Panel
- Stand By-Switch off
- Cleaning of Probe.

The following paragraph will give more details regarding the Menu Bar. First, details of the status of the instrument.

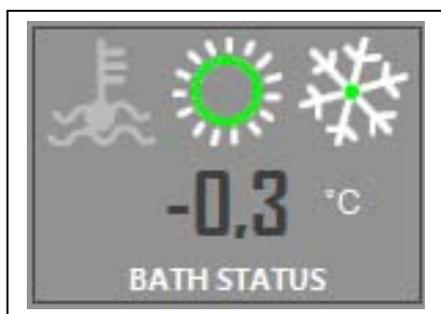
## 2.1 Sample conductivity and temperature

The following indications are found on menu status.



Indicates in real time the measured conductivity and Temperature. Thanks to the wide display, the user can clearly see the variations during the analysis. The conductivity meter scale can be changed. By clicking on the icon “+” (upper scale) or on the icon “-“ (lower scale).

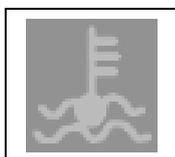
## 2.2 Bath status



Bath data is found on this section. We can monitor constantly the real temperature of the bath. The following leds are also found here:

- 2.2.1 - Liquid level
- 2.2.2 - Heater
- 2.2.3 - Cooler

### 2.2.1 Liquid Level

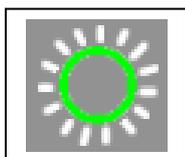


This window indicates the level of anti freeze liquid. When the level is good, the icon is grey coloured.



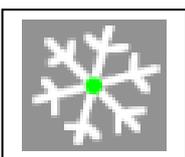
If the liquid level is insufficient, a window “*WARNING! LOW LIQUID LEVEL.*” will appear. The icon will turn to the colour yellow. Add liquid to the bath and then click “OK” to return to the normal state. Be sure to use pure anti-freeze liquid as recommended in the “Technical Documents” pamphlet provided with instrument.

### 2.2.2 Heater



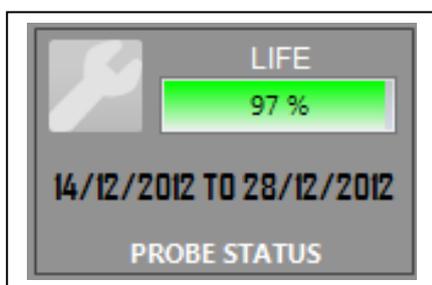
This section indicates the functioning of the heater, when green coloured the heater is working.  
If the symbol is coloured grey, this means that the heater is not running, necessary during the cooling of the wine sample.

### 2.2.3 Cooler



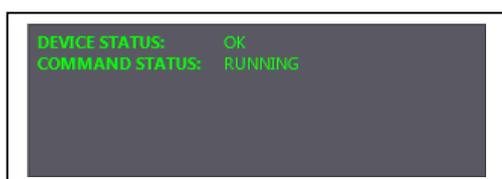
This section indicates that the compressor (cooler) is running. In this case the compressor symbol is green coloured in the middle.  
In case the cooler is not running (when heating the wine sample for example), this symbol will be a grey colour..

## 2.3 Probe status



This section indicates the conductivity probe status.  
The green bar at 97% indicates the relative life left for the conductivity probe. Delta Acque advises users to replace the probe when it reaches 20%.  
The date “14/12/2012” indicates the date of the calibration of the conductivity probe. The date “28/12/2012” indicate the programmed date for the next calibration. This date can be modified by using the Menu “Parameters Panel” (see paragraph xxx). Delta acque recommends calibration every 15 days..

## 2.4 Device Status



This section indicates the instrument status in real time.

Device Status: OK

Indicates the current status of the instrument and software. Normally, if connection and functions are ok, device status indicates “OK”. Otherwise, if there is a problem, a message will appear “RESET ON ERROR”

Command Status: Running

Indicates the current status of the instrument: In this case RUNNING indicates that the instrument is switched on.

### 3 Tool Bar

The tool bar is as follows:



#### 3.1 Control Panel

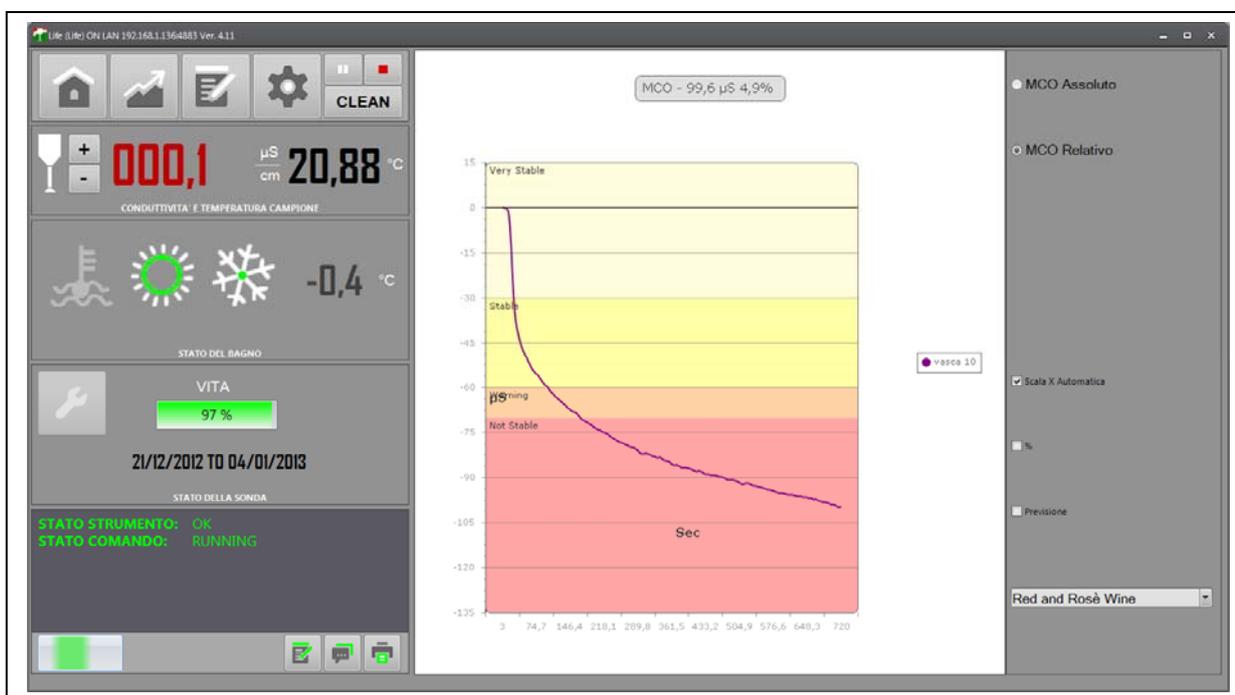
Click on this icon below to return to the home instrument window.



#### 3.2 Graphic Panel



By clicking on this icon, a window will open beside the control panel window (as seen below) that shows the graph in real time. The progress of the building of the curve and conductivity data is seen during the analysis.



Clicking again on the Control Panel icon, the graph window will close but can be visualized in any case under “Device Status”.

### 3.3 Parameters Panel



The Parameter section is used to modify all the working parameters and only read parameters of check stab. These parameters are not available to everyone, as they are protected by a password. The parameter section is shown below.

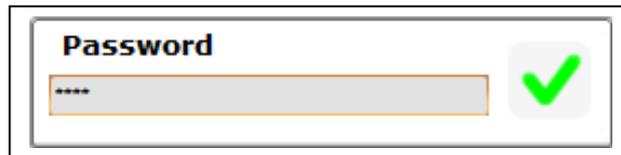
SET	Parameter	Current
<b>SERVICE PARAMETERS</b>		
	Working temperature (-15,0 to 40,0 °C)	-0,8 °C
	StandBy temperature (-10,0 to 10,0 °C)	-4,0 °C
	Beep count on analysis completed (0 to 99)	3
	New password	
<b>CORRECTION FACTOR PARAMETERS</b>		
	Correction factor (0,0 to 9,9 %/°C)	0,0 %/°C
	MIN Correction Factor (0,0 to 6,0)	2,5 %/°C
	MAX Correction Factor (0,0 to 6,0)	5,5 %/°C
<b>MINICONTACT PARAMETERS</b>		
	Minicontact memories (1 to 240)	240
	Minicontact Sample time (1 to 99 Sec)	1 Sec
<b>LONG MINICONTACT PARAMETERS</b>		
	Long Minicontact stability time to stop (60 to ...)	300 Sec
	Long Minicontact conductivity difference to s...	5,00 µS

Read Only Parameters	Current
<b>ROOM DATA</b>	
Room temperature	24,9 °C
<b>CONDUCTIVITY PROBE DATA</b>	
Cell life	99 %
Cell insert date	01/01/2013
<b>LOG DATA</b>	
Probe Saturation analysis	2

To modify parameters, it is necessary to click the icon at the right.

A password window will open. Write in the password. The standard factory set password is “1234”, but it is possible to change it.



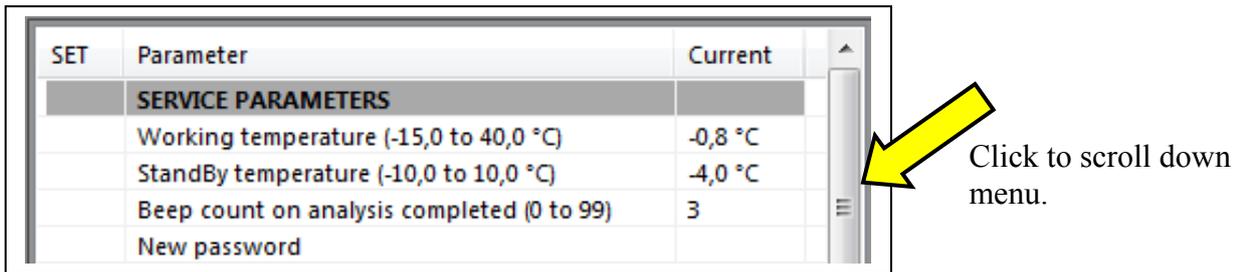
Click OK to confirm. Now the user can modify or read all parameters. Below a list of all parameters that can be modified:

#### PARAMETERS THAT CAN BE MODIFIED:

- Service parameters
- Correction factor parametrs
- Minicontact parameters
- Long minicontact parameters
- Saturation parameters
- Conductivity probe parameters
- Temperature probe parameters

### 3.3.1 Service parameters:

In this section the user can find all working parameters that can be modified by the technician.

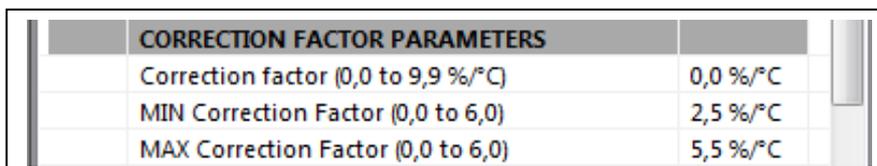


SET	Parameter	Current
	<b>SERVICE PARAMETERS</b>	
	Working temperature (-15,0 to 40,0 °C)	-0,8 °C
	StandBy temperature (-10,0 to 10,0 °C)	-4,0 °C
	Beep count on analysis completed (0 to 99)	3
	New password	

- **Working temperature:** This is the programmed temperature of the thermal bath.
- **Stand By temperature:** When the instrument is put in stand by, this is the temperature that the bath reaches. This means that, at the factory setting of -4°C, if the instrument is put in stand by, the bath will reach -4°C, and then the cooler will shut down. When the temperature of the bath reaches 0°C, the cooler will switch on and will cool the bath to -4°C once again. This will continue until the instrument is taken off stand by or the conductivity probe assembly is put in the wine sample beaker to make an analysis.
- **Beep count on analysis competed:** This indates how many times the instrument will repeat the sound advising the operator that the analysis is finished.
- **New password:** This is used to change the password for parameters.

### 3.3.2 Parametri per il fattore di correzione:

Su questa sezione troviamo tutti i parametri modificabili dall' operatore inerenti al fattore di correzione.



	<b>CORRECTION FACTOR PARAMETERS</b>	
	Correction factor (0,0 to 9,9 %/°C)	0,0 %/°C
	MIN Correction Factor (0,0 to 6,0)	2,5 %/°C
	MAX Correction Factor (0,0 to 6,0)	5,5 %/°C

- **Correction factor:** This value indicates the variation of conductivity measurements in % with respect to temperature variations. This value should fall between 3 and 5,5. If the value is not within these parameters, it means that the instrument could have problems. If the sample wine is put in the bath at a low temperature, the instrument will automatically not perform the correction factor function. In this case it will use the last correction factor value memorized on the instrument. The reason this occurs is because the instrument does not have an adequate range of temperature of the sample wine when it is already cold, and would thus calculate incorrectly the correction factor. This correction factor is used to correct eventual minimal variations in temperature during the analysis. Since the instrument has an automatic KHT dispenser, it is not necessary to do the correction factor since the instrument waits until the instrument has reached stable temperature automatically before adding KHT crystals.
- **Min correction factor:** When the “automatic correction factor accept” function is enabled (see 2.2.6 below), this is the minimum correction factor value the instrument will accept before continuing the analysis automatically. Delta Acque recommends 3.0.
- **Max correction factor:** When the “automatic correction factor accept” function is enabled (see 2.2.6 below), this is the maximum correction factor value the instrument will accept before continuing the analysis automatically. Delta Acque recommends 5.5.

### 3.3.3 Minicontact Parameters

Below a list of all parameters that can be modified by user working with the mini contact analysis.

MINICONTACT PARAMETERS	
Minicontact memories (1 to 240)	240
Minicontact Sample time (1 to 99 Sec)	1 Sec

- **Mini contact memories:** This is the number of readings the instrument does during an analysis. Delta Acque recommends using the maximum value, 240 readings.
- **Mini contact Sample time:** These are time intervals, expressed in seconds, the instrument uses between one reading and the next reading. If programmed “1”, the instrument makes one reading of temperature and conductivity every second, for a total of 240 readings or 4 minutes. We suggest lengthening the reading time for analyzing structured red wines, which require longer times to precipitate.

### 3.3.4 Long Minicontact Parameters

Below a list of all parameters that can be modified by user working with the long mini contact analysis.

LONG MINICONTACT PARAMETERS	
Long Minicontact stability time to stop (60 to ...)	300 Sec
Long Minicontact conductivity difference to s...	5,00 µS
Long Minicontact Max time (60 to 14400 Sec)	5400 Sec
Minicontact Sample time (1 to 99 Sec)	5 Sec

- **Long Minicontact Stability time to stop:** by putting a flag on the option “end at stability“, in the long mini contact analysis, the instrument will automatically terminate the analysis if after the selected time there is no variation in conductivity measurements within a certain range (pre set in “Long Minicontact conductivity difference to stability”, as explained in next paragraph).
- **Long Minicontact conductivity difference to stability:** by putting a flag on the option “end at stability” in the long mini contact analysis, the instrument will automatically terminate the analysis if the instrument does not detect within a period of time (determined by the selected parameter range in previous point) a variation of the pre selected conductivity value.  
Example: If 300 is programmed in “**long minicontact stability time to stop**” and 5 is programmed in “**Long minicontact conductivity difference to stability**”, it means that if the instrument does not detect within 300 seconds a variation of conductivity within a range of +/- 5 µS, the analysis will automatically terminate.
- **Long mini contact max time:** During the long mini contact analysis, the instrument calculates a curve to forecast in the future the stability of the wine sample. This function is for programming the maximum time that the long mini contact will run the analysis. Delta Acque recommends that this function be programmed for at least 30 minutes to obtain a clean curve.
- **Long mini contact min sample time:** These are time intervals, expressed in seconds, the instrument uses between one reading and the next reading.

### 3.3.5 Saturation parameters

Below a list of all parameters that can be modified by user working with the saturation temperature analysis.

SATURATION PARAMETERS	
Conductivity difference to eval SAT (0,0 to 20,...	0,0 $\mu$ S
Power Saturation	50 %

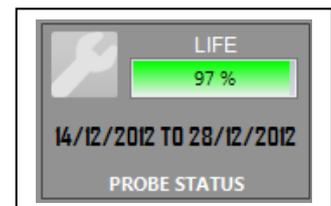
- **Conductivity difference to eval SAT:** The instrument will terminate the analysis when the difference between beginning conductivity and the measurement during the analysis is greater than the selected maximum value.
- **Power saturation:** This is the power of the heater expressed in % during a saturation temperature analysis. The higher the %, the faster the heater heats the sample wine during the saturation test.

### 3.3.6 Conductivity Probe Parameters

Below are parameters of the conductivity parameters.

CONDUCTIVITY PROBE PARAMETERS	
Cell serial (CELL SUBSTITUTION)	9489
Cell constant (0,00 to 2,00)	0,97
Calibration validity days (1 to 180)	14 Days

- **Cell serial:** This parameter indicates the serial number of the probe mounted on the instrument. This number is found on a small label on the conductivity probe.
- **Cell constant:** This parameter indicates the cell constant of the probe mounted on the instrument. This number is found on a small label on the conductivity probe.
- **Calibration validity days:** This parameter reminds the user when to do a calibration of the conductivity probe. By default, 14 days. This means that after 14 days from the calibration of the probe, the date will become a red colour, reminding the user to calibrate the probe. In the example to the right the calibration was done 14/12/2012 and will remind the user 14 days later, 28/12/2012.



### 3.3.7 Thermometer probes parameters

Below parameters of the temperature probes of the bath and wine sample.

TERMOMETER PROBES PARAMETERS	
Offset Sample temperature (-1,0 to 1,0 °C)	0,0 °C
Offset Bath temperature (-1,0 to 1,0 °C)	0,0 °C
NTC offset (-5,0 to 5,0 °C)	0,0 °C

- **Offset sample temperature:** This is used to off set variations of temperature readings of the wine sample temperature probe.
- **Offset bath temperature:** This is used to off set variations of temperature readings of the bath temperature probe.
- **NTC offset:** This parameter cannot be modified by the operator. It can be modified only by qualified personnel of Delta Acque.

### 3.3.8 De-activation of the cooler

This function is used to de-activate the cooler.



When written “Cooler enabled” the cooler is activated.

### 3.3.9 Automatic correction factor accept

This function is used to activate or deactivate the automatic exit from the Saturation Temperature Analysis..



If this function is activated, the instrument will calculate the correction factor, and if the correction factor value falls between the minimum and maximum programmed in the work parameters (see Section 2.2.1.) the instrument will automatically accept the correction factor and proceed with the analysis.

### 3.3.10 Exit automally from Saturation Temperature Analysis

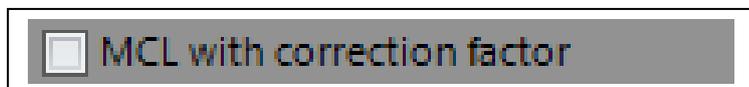
This function is used to activate or deactivate the automatic exit from the Saturation Temperature Analysis.



If this function is programmed “Automatic Output ON”, then as soon as the instrument has calculated the temperature of saturation, the instrument will terminate the analysis. We suggest that this function be deactivated to better visualize graphic test results.

### 3.3.11 MCL with correction factor

This function is used to activate the correction factor during the Long Mini Contact Analysis.

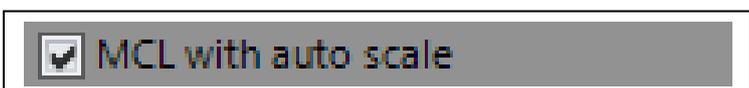


For a better calculation of the forecast curve, Delta Acque recommends that this function remain deactivated.

### 3.3.12 MCL with auto scale

This option is used to modify the automatic working scale of the conductivity meter. Below the values of the upper and lower scale:

- Lower scale: da 0 $\mu$  a 2.999,9 $\mu$
- Upper scale: da 0 $\mu$  a 29.999 $\mu$



Below is an example of a conductivity count that does not show numerical values. In this case the wine sample measurements are out of scale:

This means that the software is reading with a lower scale and the sample wine has a conductivity value more than 3000,00  $\mu$ S.



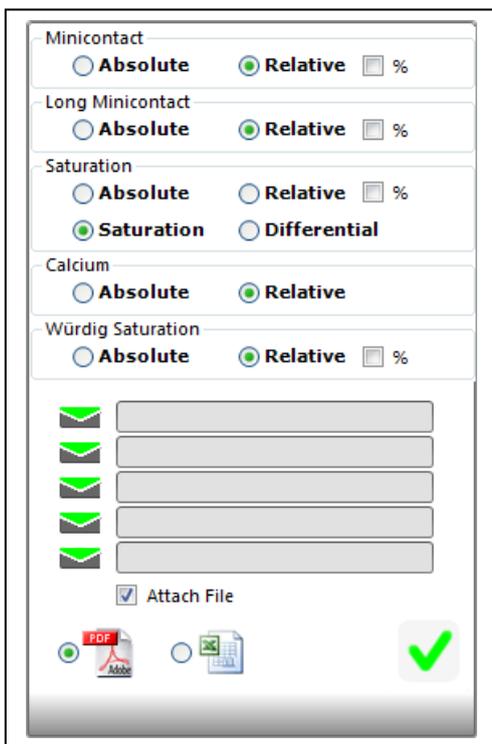
The user can click on “+” to activate the higher scale. Often, a red wine at room temperature has a value of over 3000  $\mu$ S, but as the temperature of the analysis drops, the conductivity values drop, therefore after a few seconds the software will begin to visualize the conductivity counts. Delta Acque recommends that the lower scale be used, in decimals as the analysis will be more precise.

### 3.3.13 Automatic analysis report

This option is used to create automatically a PDF file in the program folder. The software creates a folder on Desktop called CheckStabNET. All PDF format reports will be stored inside this folder. The files are found in: C:/Desktop/CheckStabNET/Exports

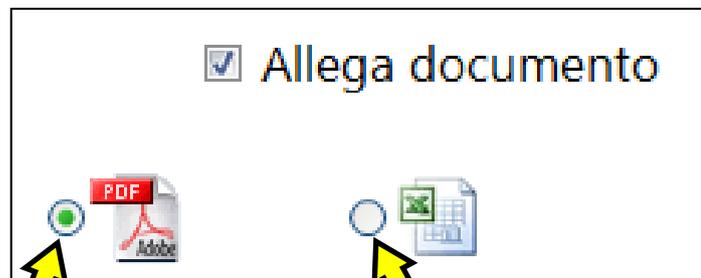


By clicking on this icon it is possible to choose how the printer will print the graph. It is also possible to insert up to a maximum of 5 e-mail addresses and send the analysis results to these addresses.



To the left is an example:

If we do a mini contact analysis, the test terminates automatically, a file pdf is created with the graph in the relative mode. Also, by inserting an e-mail address (it is possible to insert up to 5 addresses). By flagging the "attach file" box, A text message and report of the analysis in PDF will be sent to the e-mail address (or addresses). Selecting excell, the attachment will be in Excell format.



Select here to attach a PDF file.

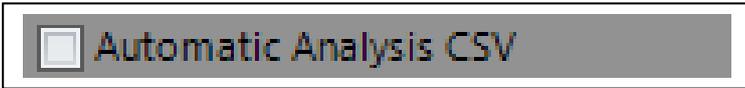
Select here to attach a XLS file.

Click "OK" to close the window and actualize the modifications.

**ATTENTION:**  
BEFORE INSERTING E-MAIL ADDRESSES, THE USER MUST BE SURE TO HAVE CORRECTLY INSERTED THEM! SEND PARAMETERS OF ELECTRONIC MAIL BOX. SEE PARAGRAPH 1.5 "SMTP CONFIGURATION".

### 3.3.14 Automatic analysis CSV

This option is used to create automatically a CSV file inside the program folder. The software creates a folder where all Excel files are placed.



The files are found in: C:/CheckStab/Exports

Generating a file CSV is composed of one line of 11 fields defined by a comma that sums up the analysis status.

- **SAT (Saturation Analyses)**

id analyses, description analyses, type analyses, date analyses, beginning, end, temperature, precipitation,,,,

- **MCL (Mini Contact with forecast)**

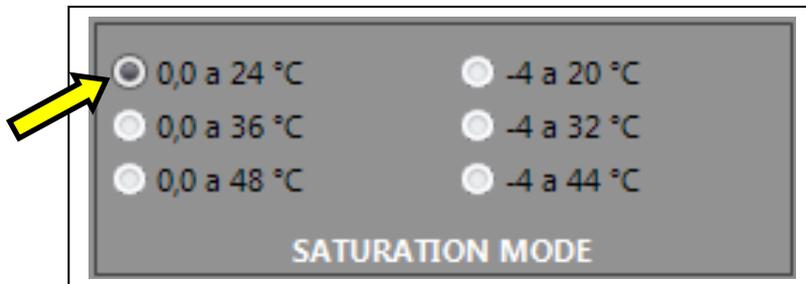
id analyses, description analyses, type analyses, date analyses, beginning, end, precipitation, precipitation at 4 hours, precipitation at 12 hours, precipitation at 24 hours, precipitation at infinity

- **MCO (Mini contact analyses)**

id analyses, description analyses, type analyses, date analyses, beginning, end, precipitation,,,,

### 3.3.15 Saturation temperature analysis mode

This function is used to program Saturation Test mode.



Change flag to obtain desired mode.

Read only parameters. These are used to verify to the user what has be done by the instrument.

### READ ONLY PARAMETERS:

- Room data
- Conductivity probe data
- Log data
- Cell history
- Calibration history
- Read analysis

#### 3.3.16 Room data

This is the room temperature where the instrument is sitting.

ROOM DATA	
Room temperature	23,4 °C

This parameter cannot be modified. In thi s example we have a temperature of 23,4°C

#### 3.3.17 Conductivity probe data

Information regarding the conductivity probe.

CONDUCTIVITY PROBE DATA	
Cell life	99 %
Cell insert date	01/01/2013

- **Cell life: (read only)**, indicates the deterioration over time (in %) of the conductivity probe.
- **Cell insert date: (read only)**, indicates the date the installed conductivity probe was mounted on the instrument.

#### 3.3.18 Log data

Information about the number of analyses performed by a single probe of the instrument is found in this section.

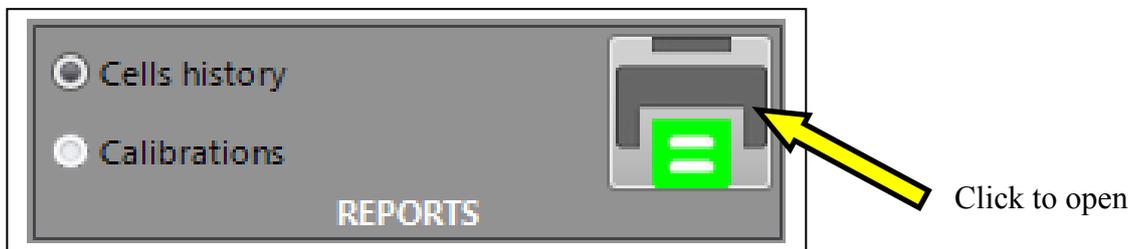
LOG DATA	
Probe Saturation analysis	2
Probe Minicontact analysis	5
Probe Long Minicontact analysis	0
Device Saturation analysis	2
Device Minicontact analysis	5
Device Long Minicontact analysis	0

- **Probe Saturation analysis (read only):** This cannot be modified. This indicates the number of saturation analyses made with the conductivity probe currently mounted on the instrument. This number is re set to zero every time the conductivity probe is replaced.

- **Probe Mini contact analysis (read only):** This cannot be modified. This indicates the number of min contact analyses made with the conductivity probe currently mounted on the instrument. This number is re set to zero every time the conductivity probe is replaced.
- **Probe Long Mini contact analysis (read only):** This cannot be modified. This indicates the number of long mini contact analyses made with the conductivity probe currently mounted on the instrument. This number is re set to zero every time the conductivity probe is replaced.
- **Device Saturation analysis (read only):** This cannot be modified. This indicates the total number of saturation analyses the instrument has made since its installation.
- **Device Mini contact analysis (read only):** This cannot be modified. This indicates the total number of mini contact analyses the instrument has made since its installation.
- **Device Long Mini contact analysis (read only):** This cannot be modified. This indicates the total number of long mini contact analyses the instrument has made since its installation.

### 3.3.19 Cell history

All conductivity cell history of the instrument is contained in this section.



To see the complete history of the conductivity probe, click on “Cell History” and the following window will appear.

The screenshot shows a window titled 'Cells report' with a green and red logo at the top. Below the logo is a table with the following data:

Serial	Date	Costant	SAT Count	MCO Count	MCL Count	Device
9489	01/01/2013 00:00:00	0,97	2	4	0	9489

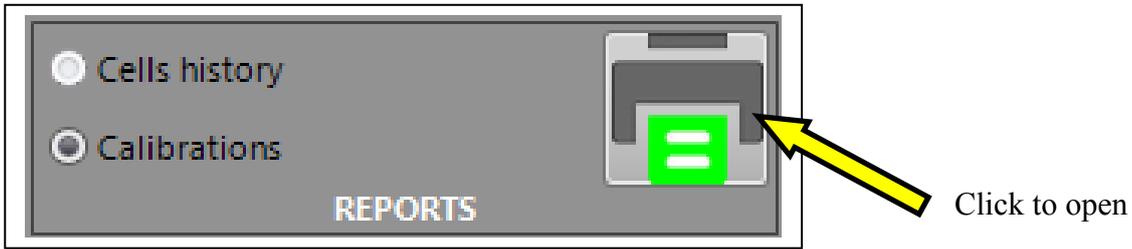
The report contains the following:

- Serial number of the cell.
- The date of installation of the cell.
- The constant of the cell.
- The number of saturation analyses performed by the cell in question.
- The number of mini contact analyses performed by the cell in question.
- The number of long mini contact performed by the cell in question.
- The serial number of the instrument.

The report can be printed or exported in pdf and xls formats.

### 3.3.20 Calibration

The history of all conductivity probe calibrations are stored in this section.



To see the complete history of calibrations carried out on the currently mounted conductivity probe, click on “Calibration History” and the following window will appear.

**Calibration report**

Date	Sample T. (°C)	Result	Probe serial	% Probe	$\mu\text{S}$ Next	Device
21/12/2012 12:49:09	-0,1	True	9489	97	1.274,5	1.277,9 9489

The report contains the following:

- Date calibration was performed
- The temperature of the sample at which the calibration was performed.
- The result of the calibration
- Serial number of the probe on which the calibration was performed
- The cell life in % of the probe in which the calibration was performed
- The conductivity before the calibration was performed ( at stable temperature).
- The conductivity after the calibration was performed.
- The serial number of the instrument.

The report can be printed or exported in pdf and xls formats.

### 3.3.21 Last analysis reading

To see the last analysis performed, Click the icon Read analysis.

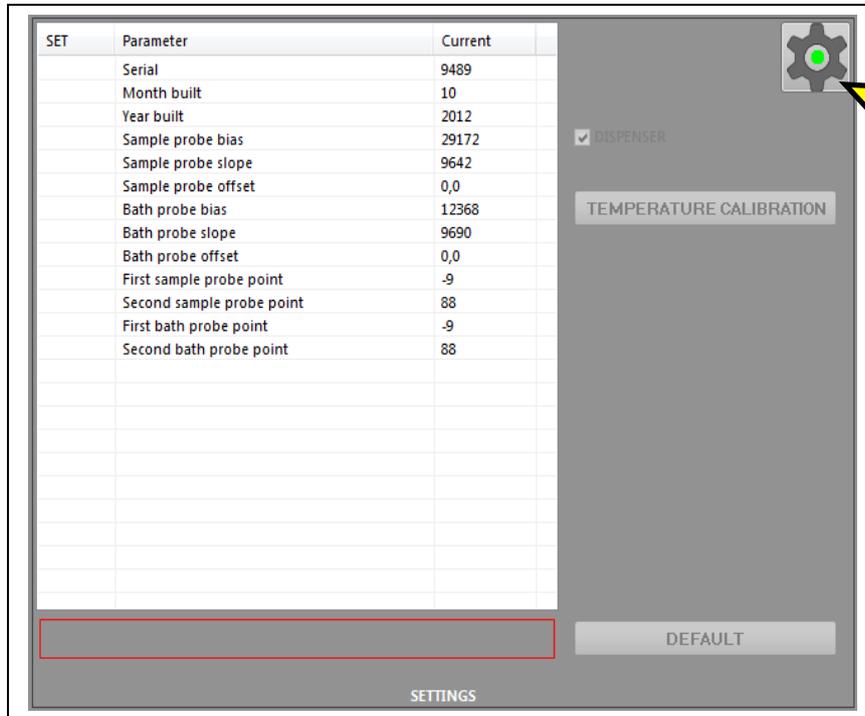


### 3.4 Settings Panel



Some of the factory set parameters are found in the “configuration” section. These configurations cannot be modified by the user. Only qualified DELTAACQUE technicians can change these values.

Clicking on the icon, the follow window opens:



After clicking on the icon “Modify”, a password is asked. Only qualified **DELTA ACQUE** technicians know the password.

Follows is a brief description of these parameters.

- **Temperature Calibration:** This is used to calibrate the temperature probes PT100 of the bath and of the wine sample.
- **Serial:** This indicates the serial number of the instrument.
- **Month built:** This indicates the month instrument was built.
- **Year built:** This indicates the year the instrument was built.
- **Sample probe bias:** Parameter for the calibration of the PT100 of the wine sample.
- **Sample probe slope:** Parameter for the calibration of the PT100 of the wine sample.
- **Sample probe offset:** Parameter for the calibration of the PT100 of the wine sample.
- **Bath probe bias:** Parameter for the calibration of the PT100 of the bath
- **Bath probe slope:** Parameter for the calibration of the PT100 of the bath.
- **Bath probe offset:** Parameter for the calibration of the PT100 of the bath.
- **First sample probe point:** Parameter for the calibration of the PT100 of the wine sample.
- **Second sample probe point:** Parameter for the calibration of the PT100 of the wine sample.
- **First bath probe point:** Parameter for the calibration of the PT100 of the bath.
- **Second bath probe point:** Parameter for the calibration of the PT100 of the bath.

## 4 Cleaning the Probe Assembly (key CLEAN PROBE)

### 4.1 How to clean

The probe assembly consists of:

- The conductivity probe.
- The temperature probe PT100 Wine.
- A plastic sample wine mixer.
- Two protective plexiglass rods.



All of these components must be thoroughly cleaned, especially the conductivity probe:

After each analysis, the assembly must be cleaned with distilled water.

From time to time, it is recommended to clean with a cleaning solution which can be ordered at Delta Acque. The user can also make a 2% or 3% hypochlorite cleaning solution and then after cleaning, rinse with distilled water.

#### IMPORTANT:

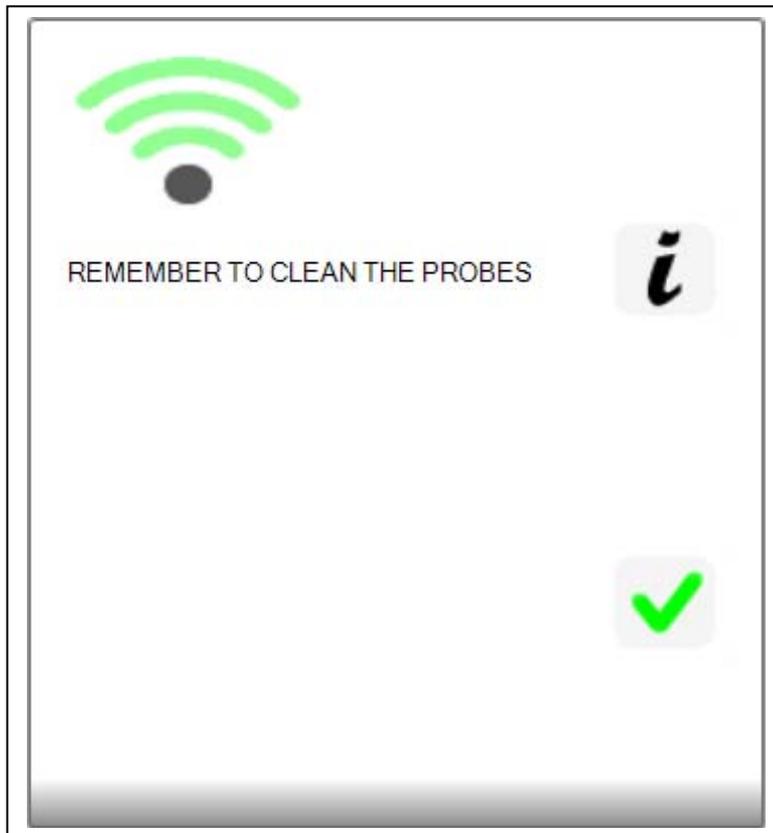
**DO NOT** use objects or tools which can damage the platinum plated electrodes of the probe. The software has an icon “CLEAN PROBE” which is used for the cleaning process. By clicking on this icon, the mixer will begin turning for about 10 seconds and then stops. Delta Acque recommends that at least once a week, a particularly thorough cleaning with the cleaning solution be done.

Do in the following manner:

1. Pour in a beaker 150ml the cleaning solution
2. Put the Probe Assembly in the beaker, then activate the mixer by clicking on “CLEAN PROBE and leave for about 30 seconds. The mixer will stop turning automatically after a few seconds.
3. Take the assembly group out of the beaker and rinse with distilled water. The conductivity probe has two small holes at the bottom. It is important to squirt water to clean the electrodes well.
4. Repeat point 2 if the user finds the probe not perfectly clean and rinse with distilled water.

**ATTN: DO NOT EVER USE TOOLS OR OBJECTS THAT CAN DAMAGE THE PLATINUM PLATED ELECTRODES.**

The software will remind the user to clean the probe assembly. Each time the probe assembly is lifted out of the beaker at the end of the analysis, the following window will appear:

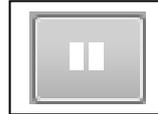


Click "OK" to remove the window "Remember to clean the probes".

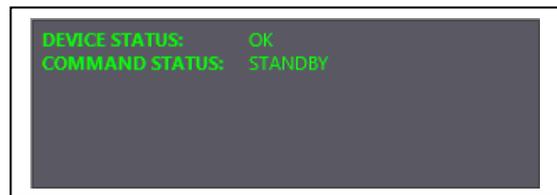
## 5 Stand By

The function stand by is used when the instrument is not to be used for a period of time, but the user wishes to maintain a low temperature of the bath and save energy at the same time. When using the Stand by mode, the instrument will put the bath at a lower temperature than the programmed one, and then it will switch off the cooler. When the temperature increases to above the pre set temperature, the cooler will start again, repeating the process. This means the user will have the bath at the desired temperature but will save energy at the same time. To activate the stand by mode, do as follows:

- Click the icon “STAND BY”



- There will be a beep sound and the command status will indicate “stand by”.



- To deactivate the stand by mode, the user can click again on “Stand By” or simply insert the conductivity probe assembly in the wine sample beaker and the instrument will switch on automatically.

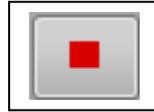


To modify the stand by parameters, see section “PARAMETERS”, 2.2.1.

## 6 Switching the instrument off

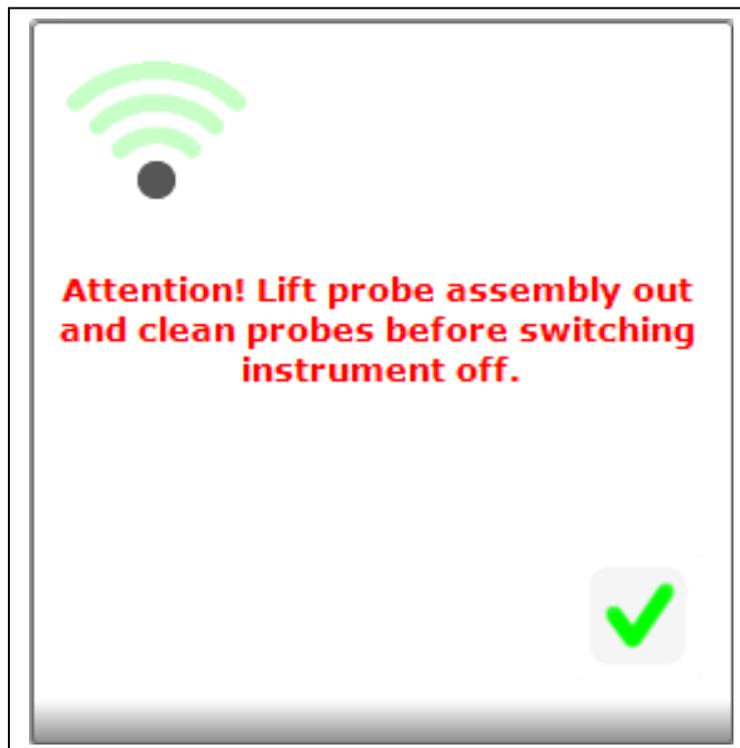
To switch the instrument off, do as follows:

- Click the icon “OFF”



- The instrument will emit a beep as the instrument switches off. “CHECK STAB OFF” will appear on the instrument display.
- There is a switch at the back of the instrument and this can be used to switch it off. For more information, consult the user guide Check Stab instrument.

Before switching the instrument off, take the conductivity probe assembly out of the beaker. If this is not done, the instrument will remind the user with a warning. Lift the assembly out and then click ok. Now the instrument can be switched off.



## 7 Procedure for verifying

### 7.1 Procedure for verifying Calibration

#### 7.1.1 Conductivity.

To obtain accurate results in measurement, we advise to calibrate the sensor in the following manner.

Verify by doing a calibration of the conductivity sensor by using the solution provided with the machine (1278,0 $\mu$ S) at the beginning of each day's use.

Verify that the calibration of the sensor remains in the range admissible 1278,0 $\mu$ S  $\pm$ 1% (do the verification at 0,0°C). If not in this range, the user must calibrate the sensor. (see paragraph 14.4 that follows)

The calibration of the conductivity sensor should be done every 15 days. In any case the software will remind the user to calibrate the sensor.

The precision of the measurement of conductivity is strictly related to the precision of the calibration, and consequently the calibration solution as well. It is important to note that the more precise the calibration the more precise the measurements of precipitation. The precision is measured by repeatability of analysis with a margin of error:

$\pm$ 0,10% on a scale 3000,0  $\mu$ S

For optimum results, use solutions prepared recently and not re-cycled.

Refer to paragraph 14.4 for instructions for calibration.

#### 7.1.2 Temperature Probe PT100

For optimum results, verify and calibrate the thermometer in the follow manner.

Verify the accuracy of the temperature probes Pt100 (wine sample & bath) every three months, by means of a certified laboratory thermometer (Primary Standard). When the user finds variations, use the calibration commands in parameter section to off set the thermometer variations.

It is advisable to calibrate the temperature probes every year, with a certified standard and the sensor itself. This must be done by an authorized technician at DELTA ACQUE.

## 7.2 Preparation Calibration Solution KCL 0,01N

Prepare a calibration solution **1278uS/cm** equivalent to a preparation of a solution **0,01N** in **KCL** keeping in mind that the calibration solution has the conductivity reference value at **20°C**.

The solution is made as follows:

1. Dry **KCL** in an oven at **110°C** for 3 hours and let cool to room temperature in a dryer.
2. Weigh exactly **0,7455g** the **KCL** and transfer all of it in a flask of **1000ml**.
3. Dissolve the salt completely with distilled water and put it at volume.
4. Before using, stir the solution very well.

*Note: The series Check Stab ® instruments are calibrated with a value of 1278,0uS at a temperature of 0,0°C, with a reference at 20°C. This is our standard and guarantees our standard precipitation measurements.*

## 7.3 Preparation TEST Solution

To prepare 1 liter of solution do as follows:

5. Dry **KCL** in an oven at **110°C** for 3 hours and let cool to room temperature in a dryer in a dryer.
6. Weight exactly **2,900g** of **Potassium Bi tartrate (pure for analysis)** and transfer all of it in a flask of **1000ml**.
7. Fill the flask 2/3 full (approx. 0,66 Liters) with distilled water and stir until the solids have dissolved.
8. Weight exactly **0,6500g KCL** and transfer all of it in a flask with the previously prepared solution.
9. Stir until the added KCL is completely dissolved, and bring it to 1 Liter volume with distilled water.
10. Homogenize the solution before using.

The test solution is used to verify the correct functioning of the instrument. This solution is used as if it were a white wine. The final Mini Contact result must be approximately 500 µS (±50 µS) and 11°C (±1°C) for the saturation test.

The test solution expires after 10 days, after which it is no longer reliable.

## 8 Calibrating Conductivity Probe

The conductivity probe needs to be calibrated periodically. Delta Acque recommends doing the calibration at least every 15 days.

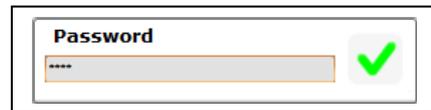
To do the calibration of the probe, do as follows:

- Prepare the beaker with 100cc of calibration solution.
- Put the beaker in the bath and put the conductivity probe assembly in beaker.
- The correction factor window will appear. In this case, since the solution's correction factor is known, we do not need to do the calculation. Click "NO"

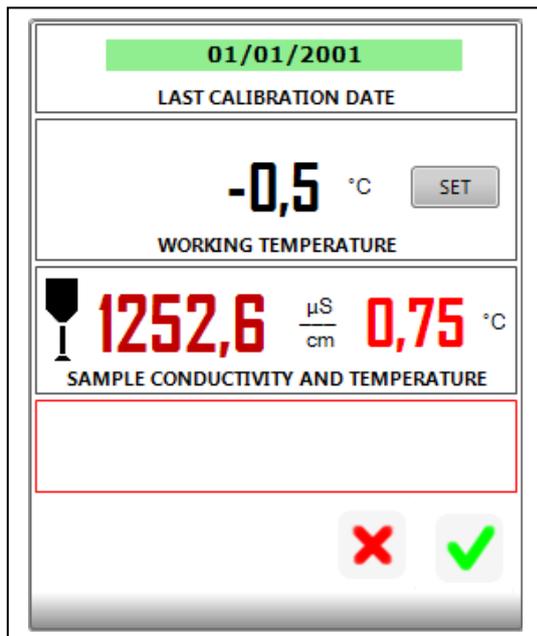
- Now we can click on the key "CALIBRATE".



- Put in the password. The factory set password is "1234". Click "OK".



- The following window opens:



Data of last calibration

Bath temperature

Conductivity and temperature of calibration solution

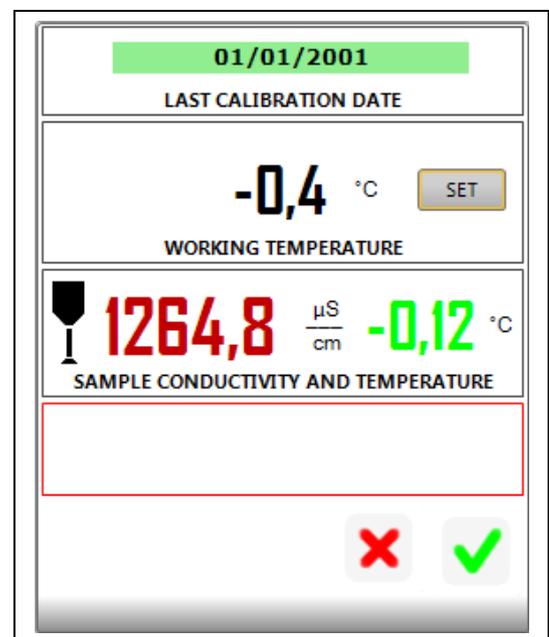
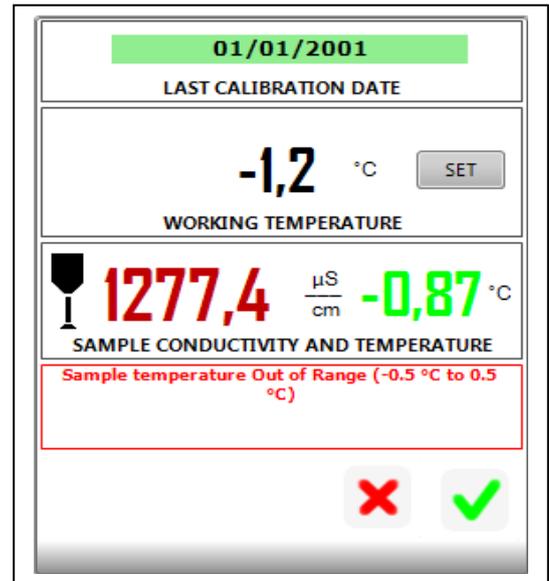
Keys Cancel and Ok

- The window has all details regarding the calibration:
  - date of last calibration of the probe.
  - temperature of the bath
  - values of conductivity and temperature of the solution

- To calibrate properly, the calibration solution must reach a stable temperature between  $-0,5^{\circ}\text{C}$  and  $+0,5^{\circ}\text{C}$ . If not, the software will indicate that it is not possible to calibrate (as seen in the window to the right). To regulate the bath temperature click on the key “Set” and insert a new temperature.



- Set the new temperature, then click on “OK”. Wait until the temperature of the calibration solution becomes stable.
- When the calibration solution becomes stable, the colour changes to green and the user can click of the check 
- Click now on  to start the calibration of the conductivity probe.

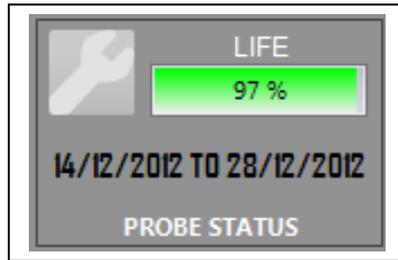


- Wait a few seconds, at the end of the calibration the following window opens:



Key “OK”  
Click to exit

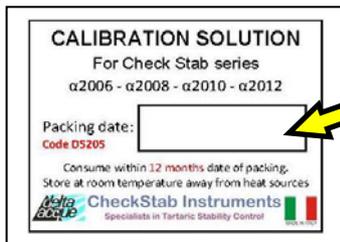
- Click “OK” to exit. Automatically, the software will update the data of the calibration and record the next calibration date. In this case, the calibration done 14/12/2012 will have a remainder to do the next calibration 28/12/2012.



- It is now important to take out the conductivity probe assembly and clean well the assembly with distilled water.

Use exclusively for the calibration:

**Calibration Solution 1278  $\mu$ S a 0°C - code D5205**



Packing date in the window.

**Important:**  
**Use the solution within 12 months**

The calibration solution is supplied in 0,5 litre bottles. Every bottle has a label with the date when the calibration solution was prepared.

The following paragraph describes how to make the calibration solution.

### 8.1 Preparation calibration solution KCL 0,01N

Prepare a conductivity solution **1278 $\mu$ S/cm** equivalent to a preparation of a solution **0,01N** in **KCL** keeping in mind that such a solution has the conductivity value only at **20°C**.

The solution is made as follows:

11. Dry **KCL** in an oven at **110°C** for 3 hours and let cool to room temperature in a dryer.
12. Weigh exactly **0,7455g** the **KCL** and transfer all of it in a flask of **1000ml**.
13. Dissolve the salt completely with distilled water and put it at volume.
14. Before using, stir the solution very well.

*Note: The series Check Stab ® instruments are calibrated with a value of 1278,0 $\mu$ S at a temperature of 0,0°C, with reference temperature of the solution at 20°C. This is our standard and guarantees out standard precipitation*

## 9 Analysis Procedure

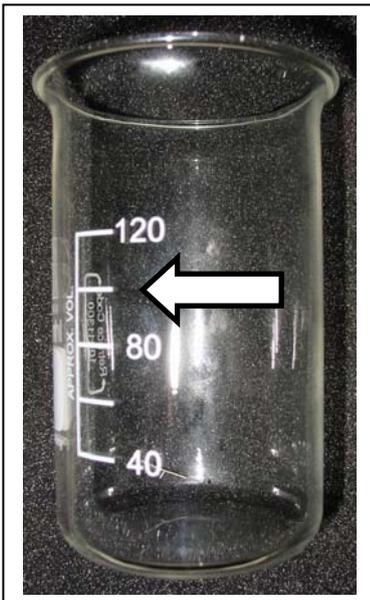
The checkstabNET Life can do the following analysis:

- Mini Contact Analysis.
- Long Mini Contact with forecasting.
- Saturation Point Analysis.
- Calcium analysis

Before doing an analysis, it is necessary to prepare the sample wine for the analysis:

### 9.1 Preparation of sample

The analysis requires 100mls of a sample wine. Use the beaker provided by Delta Acque and fill until the 100ml line on the beaker.



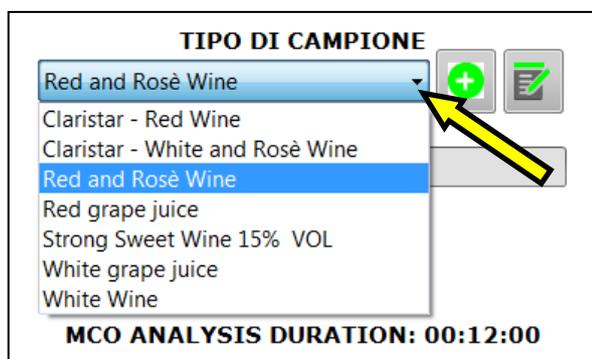
**ATTENTION**  
USE ONLY BEKER SUPPLY BY  
DELTA ACQUE  
**CODE D5217**

Filter this 100mls sample wine with 0,45 $\mu$  membrane filter as soon as possible after receiving it in the lab. Do not allow the sample to warm unless it has already been filtered. (filtration removes the potential for re-dissolving of potassium bitartrate if present, removes solids that could interfere with the seeding material during the test, and stabilizes the sample to best represent it's condition from the source.)

Now the sample is ready to be analyzed.

## 9.2 Creating a new wine typology

With the new software Check Stab NET, the user can associate to any wine typology the exact duration (hours, minutes, seconds) of the analysis.



By default the CheckStab NET software has memorized wine typologies. After clicking on the window, as shown to the left, a list of the programmed typologies appear.

**Attention: These pre defined typologies cannot be modified by the user.** In the case of the Claristar typology, the programmed data has been supplied by the manufacturer.

As shown in the figure above, selecting the typology “Red and Rosè Wine” the length of the mini contact analysis would be 12 minutes, as shown in the figure.



Icon Add: to create a new wine typology



Icon Edit: used to modify any wine typology created by the user

**REMINDER: IT IS NOT POSSIBLE TO MODIFY AN ORIGINAL CHECK STAB NET SOFTWARE TYPOLOGY.**

The table below indicates the original Check Stab NET wine typologies with the analysis duration that have been programmed by default.

TYPE OF WINE (DEFAULT)	TIME PROGRAMMED (DEFAULT)
Claristar – Red Wine	03 : 00 : 00 (Hours : Minutes : Seconds)
Claristar – White and Rosè Wine	00 : 48 : 00 (Hours : Minutes : Seconds)
Red and Rosè Wine	00 : 12 : 00 (Hours : Minutes : Seconds)
Red Grape Juice	00 : 04 : 00 (Hours : Minutes : Seconds)
Strong Sweet Wine 15% VOL	00 : 04 : 00 (Hours : Minutes : Seconds)
White grape juice	00 : 04 : 00 (Hours : Minutes : Seconds)
White Wine	00 : 04 : 00 (Hours : Minutes : Seconds)

If the user wants to have a shorter or longer programmed time or wants to change the boundaries for the limits between Very Stable, Stable, Risk, and Not Stable, he/she must create a new wine typology.

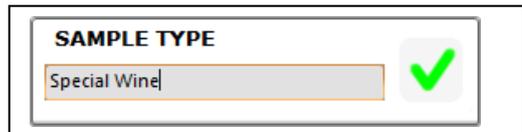
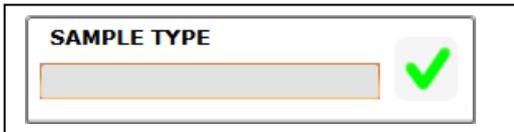
To create a new wine typology, proceed as follows:

After selecting an analysis to make, and selecting also a project, click on the icon  to add a new wine typology.

After clicking on the icon, the Password window will appear.

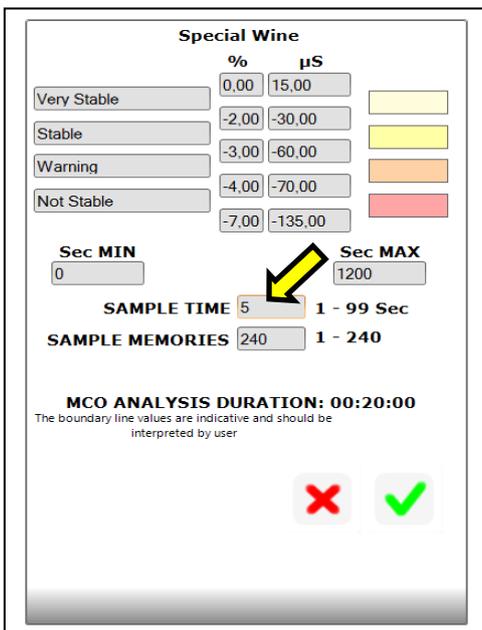


Write in the password (default password 1234) and click ok. The “Sample Type” window will then appear.



The user can write in sample type a new wine typology and then click ok. In this case the new typology created is called “Special Wine”.

The following window will open with the new type of wine. The user must program the length of the analysis under the heading sample time. Automatically the software will indicate the duration of the analysis (in this example a **sample time** of “5” has been programmed and the maximum duration of the analysis is 20 minutes (5 x 240 = 1.200 seconds).



Limits of stability zones

Write in sample time in seconds

Indicates total duration of analysis

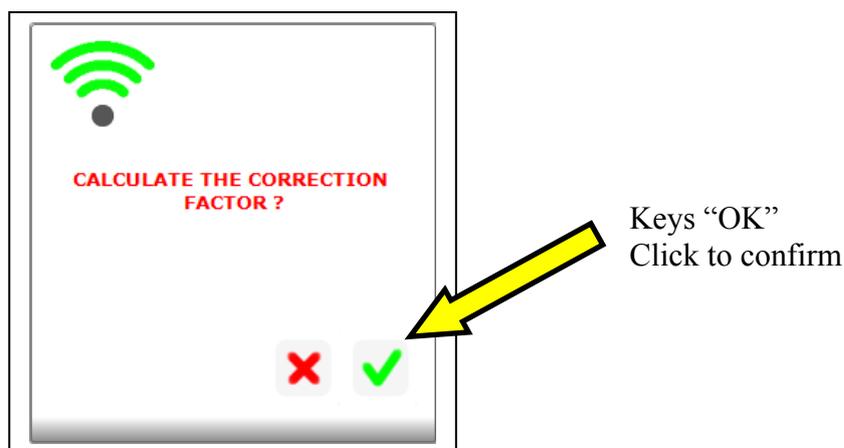
The user must also modify the different ranges (boundaries) of stability with different colours to separate them. Once modifying all parameters, click on “ok” to memorize the new type of wine. The user has now added a new typology “Special Wine” and can continue the analysis. Once created, it is not possible to cancel this new type of wine. The user can, however, modify wines created by using the following icon.



### 9.3 Mini Contact

To do the mini contact analysis proceed as follows:

1. Prepare the beaker with 100cc of wine to analyze.
2. Put the beaker in the bath, moving slightly forward the automatic KHT dispenser.
3. Load the dispenser tray with KHT by using the measuring spoon supplied with the instrument:
  - 1 gram for white wines.
  - 2 grams for red wines.
4. Lift the sensor assembly with the handle, turn it and place it inside the beaker.
5. As soon as the sensor assembly has been placed, the following window will appear.



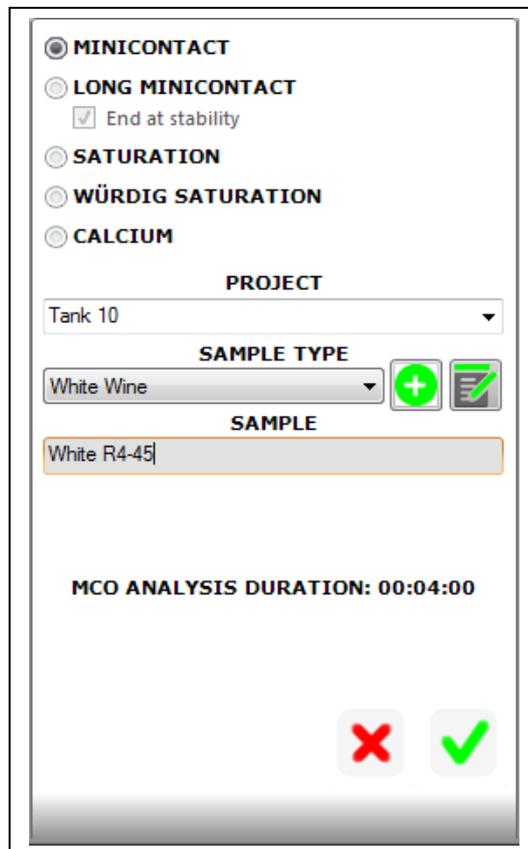
6. Confirm the desire to do the calculation of the correction factor by clicking "YES" and wait until the instrument gives us the value. The correction factor is the value that expresses the variation in percent of conductivity with respect the variation of temperature, such value must be between 3 and 5,5. If the resulting value is not in these parameters, it means the instrument can have a problem. If the sample wine is already at a low temperature, the instrument automatically does not do a calculation of the correction factor. It maintains the memory of the last analysis done (this is because with a wine at a low temperature, the instrument does not have to right thermal range to make a correct calculation of the factor). Delta Acque recommends that to maximize the efficiency (time) of the lab and its technicians, that the automatic correction factor accept function be flagged in the PARAMETERS section (see sections 2,2 and 2.2.6). Be sure to write in the minimum and maximum values (3 and 5.5). Once flagged, the instrument will automatically proceed through the analysis without the necessity of the user to intervene. If the parameters are below or above the minimum and maximum value, the instrument will automatically signal an anomaly.

7. The following window opens. Click “YES” to continue.



Keys “OK”  
Click to confirm

8. The following window opens:



Type of analysis

Name of project

Type of wine

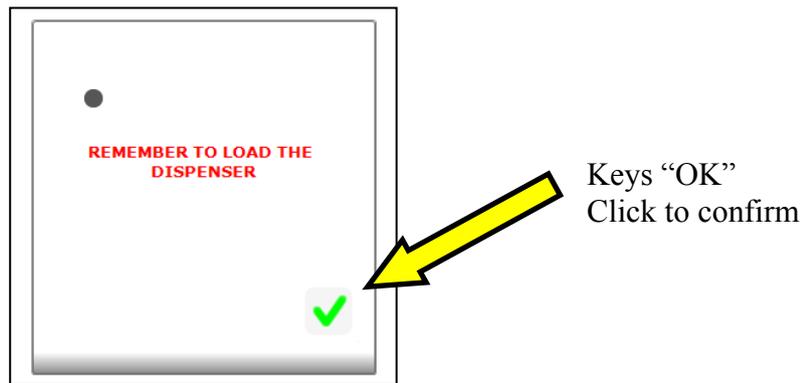
Name of sample

Length of analysis in hours,  
minutes, seconds

Keys CANCEL e START

9. Select the type of analysis desired, writing in a project, and the type of wine and the name of the sample being used. Click “START” to begin. Attention: It is possible to associate to each type of wine a specific analysis duration that once programmed cannot be changed. In our example above, white wine mini contact is programmed at 4 minutes (default setting). To change the mini contact length of analysis and change a new wine typology, see paragraph “Modify Sample Wine Type”.

10. The instrument will remind the user to add the KHT to the automatic dispenser tray.



11. Click "OK" and wait until the instrument finishes the analysis. The software shown in real time the graphic.

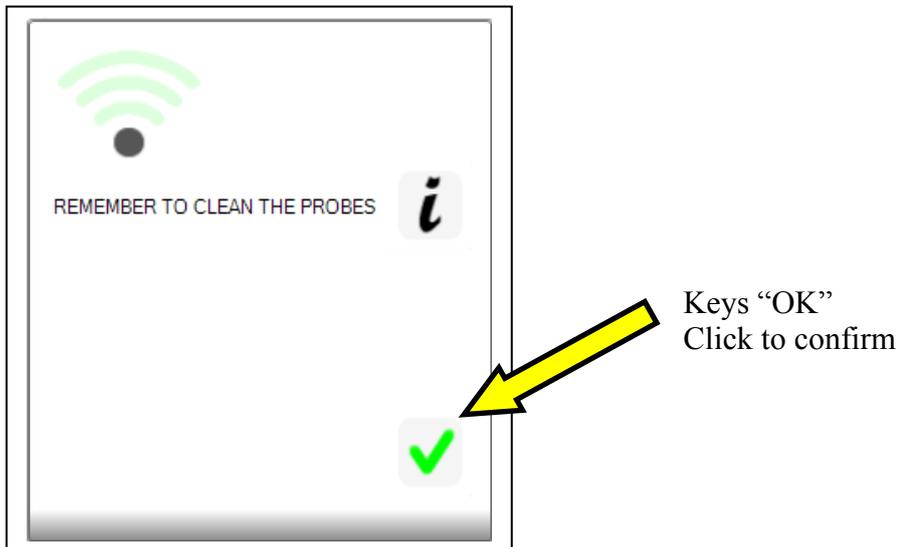


12. At the end click the icon to see the graphic like the picture.



Click to icon to come back at control panel.

13. Once finished, a graphic table will appear on the screen; the user must lift out the conductivity probe assembly out of the beaker, and do the cleaning procedure. The instrument will remind the user to clean the probe assembly (click on ok to take off the window). Cleaning is extremely important for the life of the conductivity probe.

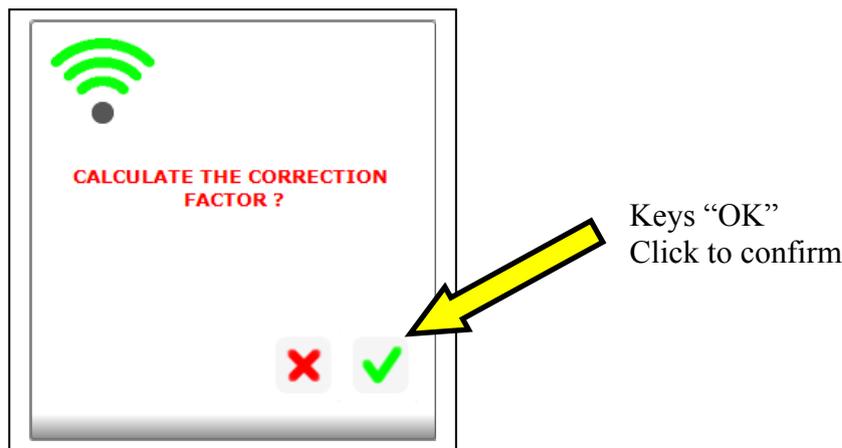


14. Take out the beaker, pushing slightly forward the automatic dispenser, and paying special attention to let the drops of residual anti freeze solution fall back in the bath. The instrument is ready to make another analysis.

#### 9.4 Saturation Analysis

To do the saturation analysis proceed as follows:

1. Prepare the beaker with 100cc of wine to analyze.
2. Put the beaker in the bath, moving slightly forward the automatic KHT dispenser.
3. Load the dispenser tray with KHT by using the measuring spoon supplied with the instrument:
  - 1 gram for white wines.
  - 2 grams for red wines.
4. Lift the sensor assembly with the handle, turn it and place it inside the beaker.
5. As soon as the sensor assembly has been placed, the following window will appear.



6. Confirm the desire to do the calculation of the correction factor by clicking "YES" and wait until the instrument gives us the value. The correction factor is the value that expresses the variation in percent of conductivity with respect the variation of temperature, such value must be between 3 and 5,5. If the resulting value is not in these parameters, it means the instrument can have a problem. If the sample wine is already at a low temperature, the instrument automatically does not do a calculation of the correction factor. It maintains the memory of the last analysis done (this is because with a wine at a low temperature, the instrument does not have to right thermal range to make a correct calculation of the factor). Delta Acque recommends that to maximize the efficiency (time) of the lab and its technicians, that the automatic correction factor accept function be flagged in the PARAMETERS section (see sections 2,2 and 2.2.6). Be sure to write in the minimum and maximum values (3 and 5.5). Once flagged, the instrument will automatically proceed through the analysis without the necessity of the user to intervene. If the parameters are below or above the minimum and maximum value, the instrument will automatically signal an anomaly.

7. The following window opens. Click “YES” to continue.



Keys “OK”  
Click to confirm

8. The following window opens:

A screenshot of the main analysis configuration screen. It features several sections: "Type of analysis" with radio buttons for MINICONTACT, LONG MINICONTACT (with a checked "End at stability" checkbox), SATURATION, WÜRDIG SATURATION, and CALCIUM; "PROJECT" with a dropdown menu showing "Vasca 10"; "SAMPLE TYPE" with a dropdown menu showing "White Wine" and two icons (a green plus sign and a green checkmark); "SAMPLE" with a text field showing "White G5/TR"; "IPT" with an empty input field; and "MCO ANALYSIS DURATION: 00:04:00". At the bottom, there are two buttons: a red "X" button and a green checkmark button.

Type of analysis

Name of project

Type of wine

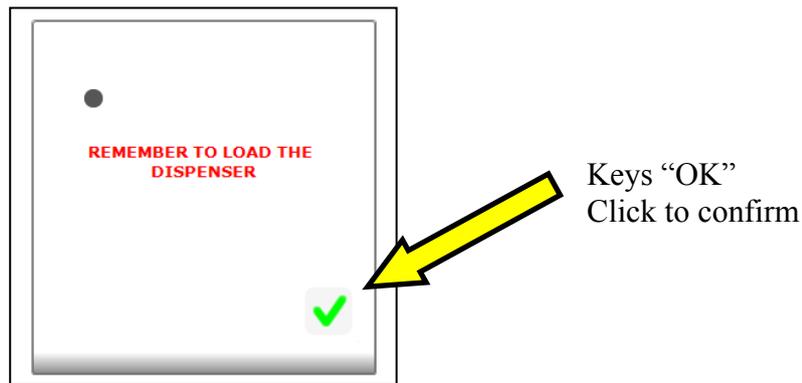
Name of sample

Length of analysis in hours,  
minutes, seconds

Keys CANCEL e START

15. Select the type of analysis desired, writing in a project, and the type of wine and the name of the sample being used. Click “START” to begin. Attention: It is possible to associate to each type of wine a specific analysis duration that once programmed cannot be changed. In our example above, white wine mini contact is programmed at 4 minutes (default setting). To change the mini contact length of analysis and change a new wine typology, see paragraph “Modify Sample Wine Type”.

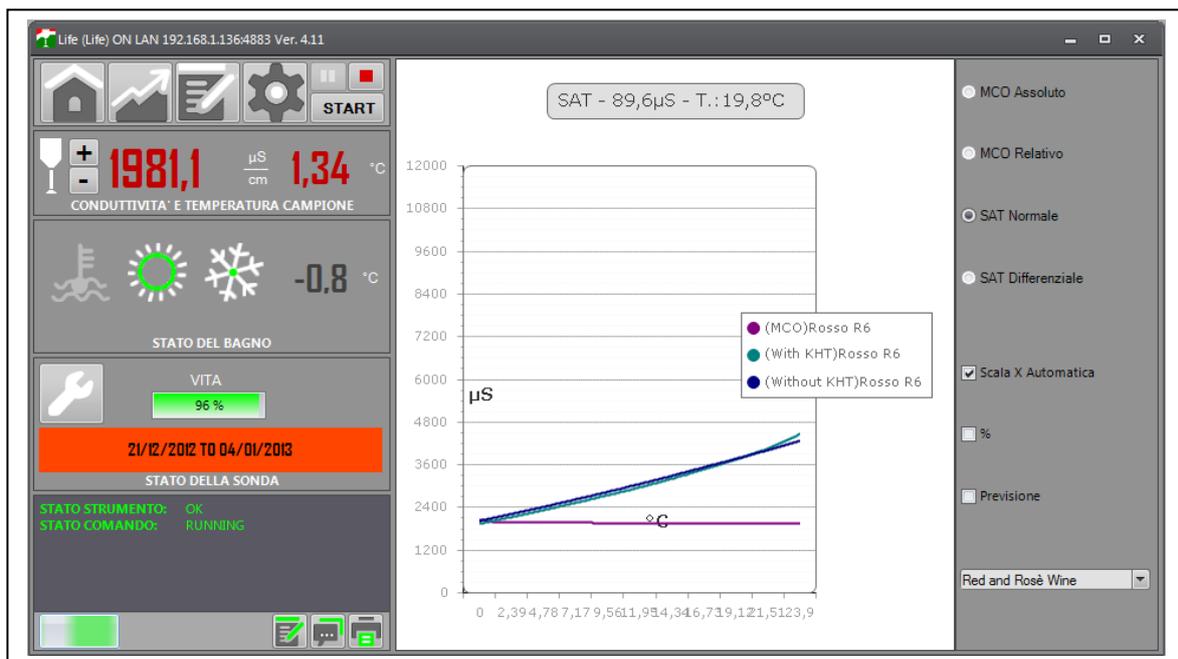
9. The instrument will remind the user to add the KHT to the automatic dispenser tray.



10. Click "OK" and wait until the instrument finishes the analysis. The software shown in real time the graphic.

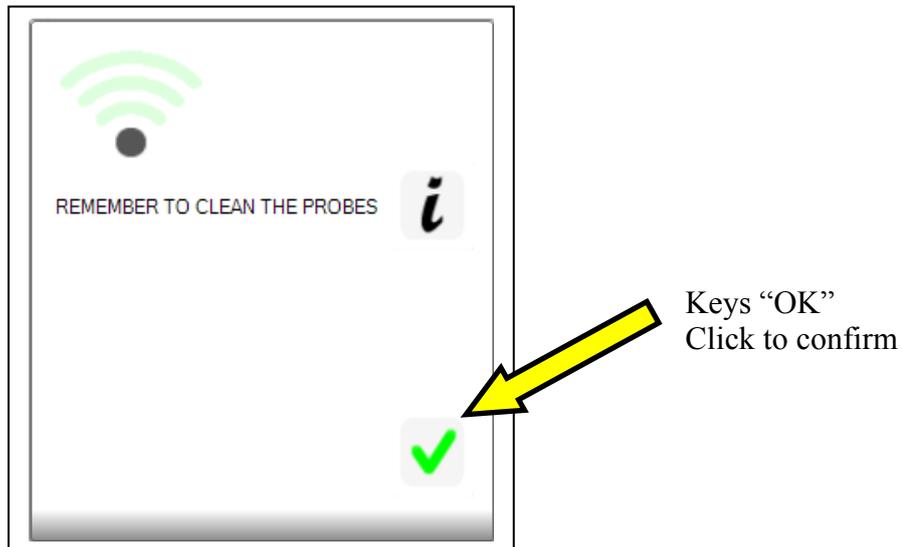


11. At the end click the icon to see the graphic like the picture.



Click to icon to come back at control panel.

12. Once finished, a graphic table will appear on the screen; the user must lift out the conductivity probe assembly out of the beaker, and do the cleaning procedure. The instrument will remind the user to clean the probe assembly (click on ok to take off the window). Cleaning is extremely important for the life of the conductivity probe.

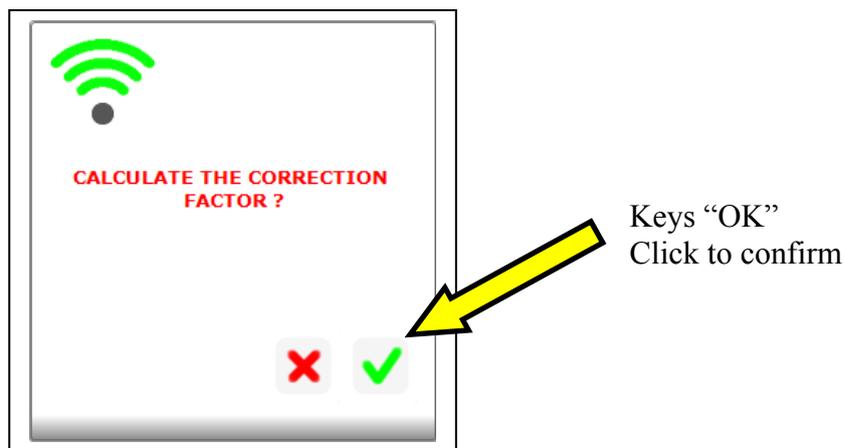


13. Take out the beaker, pushing slightly forward the automatic dispenser, and paying special attention to let the drops of residual anti freeze solution fall back in the bath. The instrument is ready to make another analysis.

## 9.5 Long Mini Contact

To do the Long mini contact analysis proceed as follows:

1. Prepare the beaker with 100cc of wine to analyze.
2. Put the beaker in the bath, moving slightly forward the automatic KHT dispenser.
3. Load the dispenser tray with KHT by using the measuring spoon supplied with the instrument:
  - 1 gram for white wines.
  - 2 grams for red wines.
4. Lift the sensor assembly with the handle, turn it and place it inside the beaker.
5. As soon as the sensor assembly has been placed, the following window will appear.



6. Confirm the desire to do the calculation of the correction factor by clicking "YES" and wait until the instrument gives us the value. The correction factor is the value that expresses the variation in percent of conductivity with respect the variation of temperature, such value must be between 3 and 5,5. If the resulting value is not in these parameters, it means the instrument can have a problem. If the sample wine is already at a low temperature, the instrument automatically does not do a calculation of the correction factor. It maintains the memory of the last analysis done (this is because with a wine at a low temperature, the instrument does not have to right thermal range to make a correct calculation of the factor). Delta Acque recommends that to maximize the efficiency (time) of the lab and its technicians, that the automatic correction factor accept function be flagged in the PARAMETERS section (see sections 2,2 and 2.2.6). Be sure to write in the minimum and maximum values (3 and 5.5). Once flagged, the instrument will automatically proceed through the analysis without the necessity of the user to intervene. If the parameters are below or above the minimum and maximum value, the instrument will automatically signal an anomaly.

7. The following window opens. Click “YES” to continue.



Keys “OK”  
Click to confirm

8. The following window opens:

Type of analysis

Name of project

Type of wine

Name of sample

Length of analysis in hours,  
minutes, seconds

Keys CANCEL e START

9. Select the type of analysis desired, writing in a project, and the type of wine and the name of the sample being used. Click “START” to begin. Attention: It is possible to associate to each type of wine a specific analysis duration that once programmed cannot be changed. In our example above, white wine mini contact is programmed at 4 minutes (default setting). To change the mini contact length of analysis and change a new wine typology, see paragraph “Modify Sample Wine Type”.

10. The instrument will remind the user to add the KHT to the automatic dispenser tray.

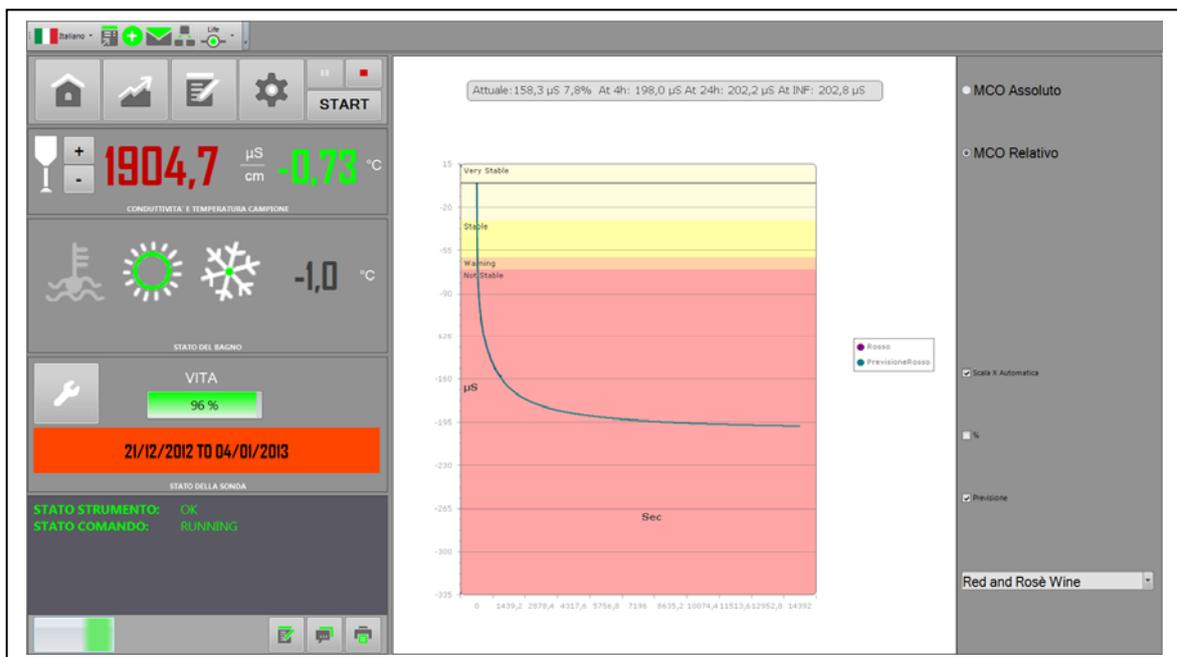


Keys "OK"  
Click to confirm

11. Click "OK" and wait until the instrument finishes the analysis. The software shown in real time the graphic.

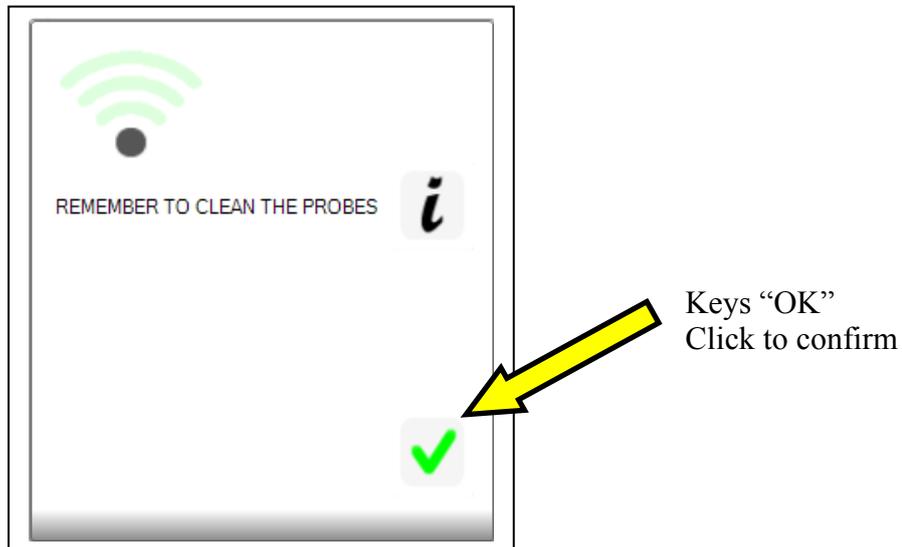


12. At the end click the icon to see the graphic like the picture.



Click to icon to come back at control panel.

13. Once finished, a graphic table will appear on the screen; the user must lift out the conductivity probe assembly out of the beaker, and do the cleaning procedure. The instrument will remind the user to clean the probe assembly (click on ok to take off the window). Cleaning is extremely important for the life of the conductivity probe.



14. Take out the beaker, pushing slightly forward the automatic dispenser, and paying special attention to let the drops of residual anti freeze solution fall back in the bath. The instrument is ready to make another analysis.

## 9.6 Saturation Temperature of Calcium test

How to perform the calcium analysis.

Before doing a calcium analysis, the wine sample to be analyzed must be stable with respect to potassium tartrate. To be sure, we must do a mini contact analysis (that stabilizes the wine sample) and then after, perform the calcium analysis.

Proceed as follows:

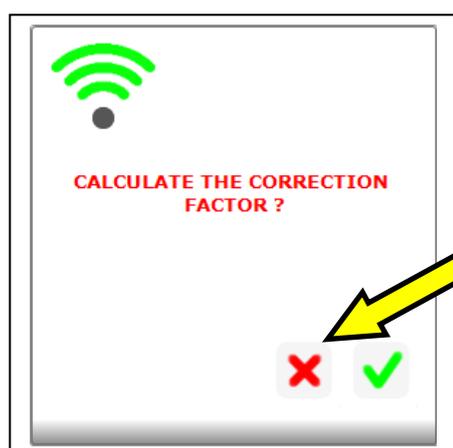
1. Do an 8 minute mini contact analysis. Put 120 ml of sample wine in the beaker, then load dispenser with 0,5 grams of potassium bi-tartrate.
2. After the mini contact analysis is finished, centrifuge the sample for 4 minutes (to avoid clogging the filtering process). Once centrifuged, filtrate the wine sample with a 0,45 filter.
3. Now you can proceed with the calcium analysis.
4. Set the temperature of the bath at 30°C.
5. Set the correction factor at 0%.
6. Wait until the temperature becomes stable at the pre-set temperature.
7. Prepare the beaker with the filtrated wine sample as described above.
8. Insert the beaker with the wine sample in the instrument, pushing slightly forward the automatic dispenser.
9. Load the automatic dispenser with Calcium L-Tartrate. It is very important to weigh out precisely the quantity of powder on an accurate scale:
  - a. 1 gram for white wines
  - b. 2 grams for red wines.

Attention: we recommend the use of the following product:

### **(+)-Calcium L-Tartrate Hydrate C<sub>4</sub>H<sub>4</sub>CaO<sub>6</sub>**

10. Lift and rotate the probe assembly, then lower into the beaker with the sample wine.

11. As soon as the probe assembly is properly placed, the correction factor window appears.

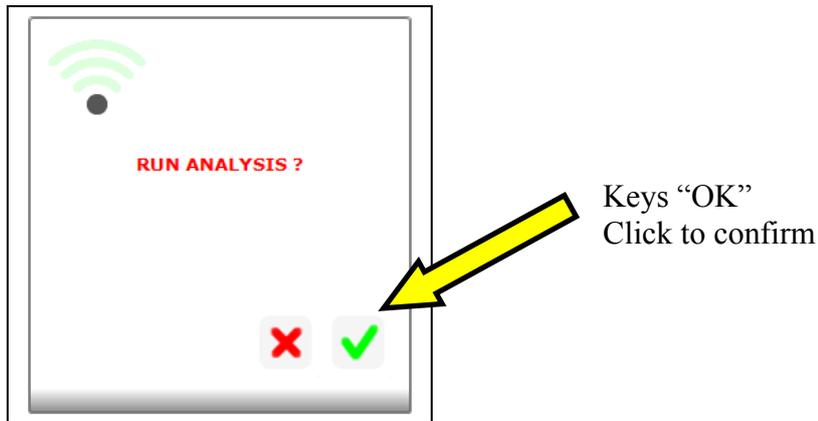


Keys "NO"  
Click to not require the  
Correction Factor

12. The Calcium analysis does not require the Correction factor, therefore, click on the "X" symbol as shown in the figure above.

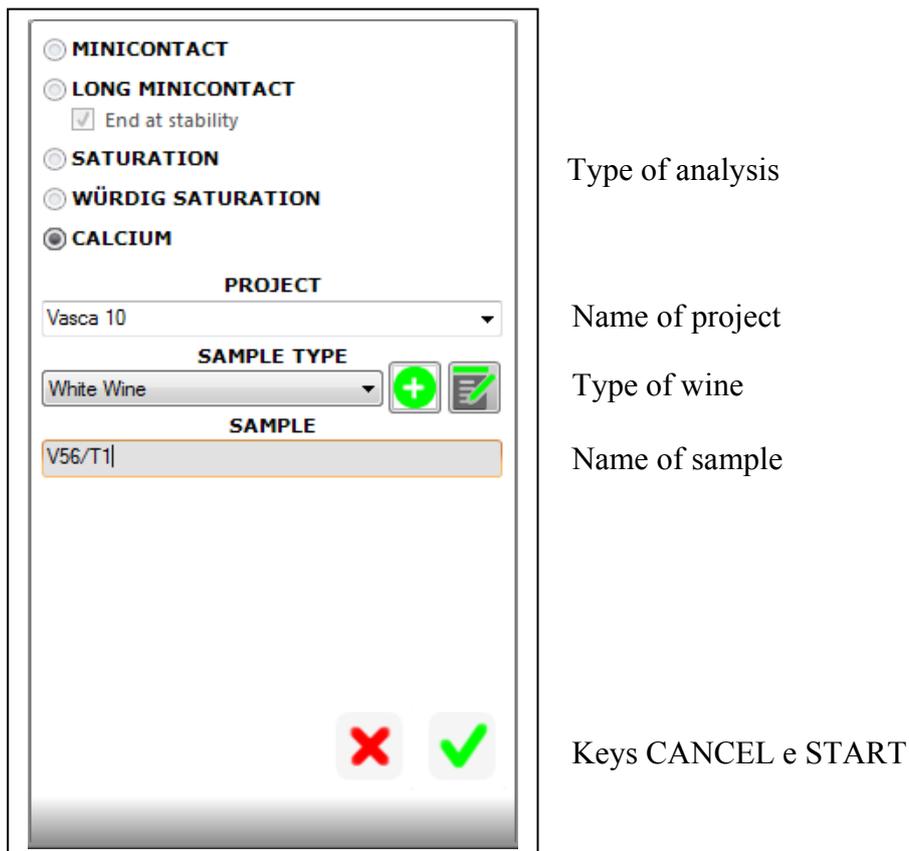
13. You must manually write the correction factor at 0,0% by going to the "PARAMETERS" section.

14. Automatically the following window appears. Begin the analysis by clicking on the tick as shown in the figure to the right.

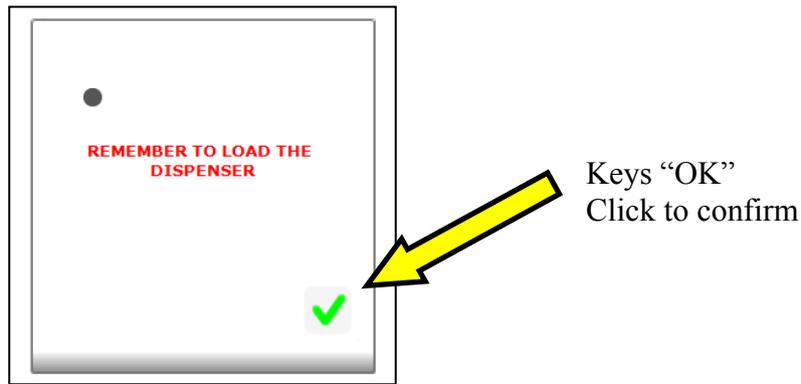


15. The following window appears:

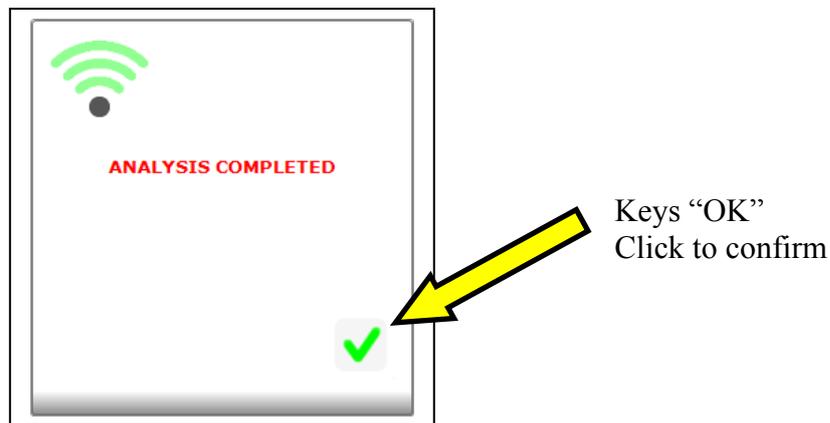
16. Select the type of analysis to do, and write the name of the project, the type of wine, and the name of the sample to be analyzed. Click on "START" to begin the analysis as shown below.



17. The instrument will remind the operator to load the CAT powder on the dispenser.  
18. Click on “OK” as shown on the figure and wait for the analysis to terminate.



19. The following window will appear when the analysis has been saved, confirm as shown in the figure to the right.



20. Automatically, the graphics will appear. The graphics display the conductivity curve in micro siemens and the temperature of saturation of calcium in °C . This result is calculated by using the following formula:

$$\text{Temp Sat Ca} = \text{Temperature} - [(\text{End Conductivity} - \text{beginning conductivity}) / 4]$$

**IN CONCLUSION:**

**FOR WHITE WINE AND ROSE WINES**

Generally speaking we consider a white wine or rose wine very calcium stable for  $T_{sat}$  below  $20^{\circ}\text{C}$ . The lower the temperature the more calcium stable and vice versa.

For temperatures between  $20^{\circ}\text{C}$  and  $22^{\circ}\text{C}$  we consider the wine at risk.

Above  $22^{\circ}\text{C}$  the wine is surely calcium instable.

Summing up, see the following table:

WHITE AND ROSE WINES	
Over $22^{\circ}\text{C}$	– DEFINATELY NOT STABLE
From $20^{\circ}\text{C}$ to $22^{\circ}\text{C}$	– RISK
Up to $20^{\circ}\text{C}$	– VERY STABLE

**The wine must be potassium tartrate stable before testing calcium stability. (The mini contact analysis performed on the sample before testing for calcium stability serves to render the sample potassium tartrate stable).**

**Warning**

**The above is to be considered a guide line, the operator is responsible for determining which values to utilize depending on the destination of the wine.**

**Different interpretations of these parameters are left to the Oenologist's discretion who must decide based on the destination of the wine, shelf time in the bottle, and bottle storage temperature.**

### FOR DESSERT WINE

Generally speaking we consider a white wine or rose wine very calcium stable for  $T_{sat}$  below  $22^{\circ}\text{C}$ . The lower the temperature the more calcium stable and vice versa.

For temperatures between  $22^{\circ}\text{C}$  and  $24^{\circ}\text{C}$  we consider the wine at risk.

Above  $24^{\circ}\text{C}$  the wine is surely calcium instable.

Summing up, see the following table:

DESSERT WINES	
Over $24^{\circ}\text{C}$	– DEFINATELY NOT STABLE
From $22^{\circ}\text{C}$ to $24^{\circ}\text{C}$	– RISK
Up to $22^{\circ}\text{C}$	– VERY STABLE

**The wine must be potassium tartrate stable before testing calcium stability. (The mini contact analysis performed on the sample before testing for calcium stability serves to render the sample potassium tartrate stable).**

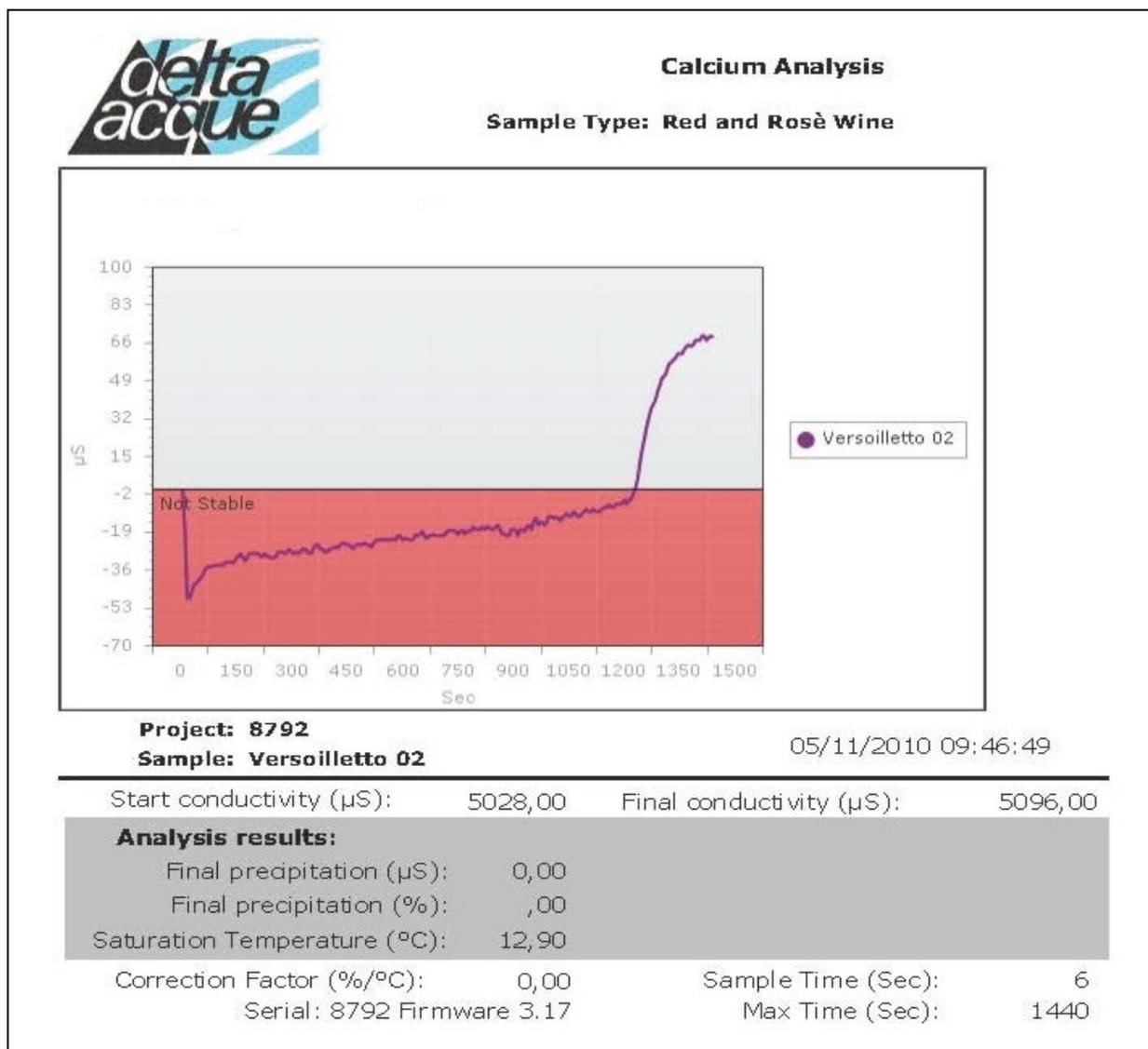
#### **Warning**

**The above is to be considered a guide line, the operator is responsible for determining which values to utilize depending on the destination of the wine.**

**Different interpretations of these parameters are left to the Oenologist's discretion who must decide based on the destination of the wine, shelf time in the bottle, and bottle storage temperature.**

## EXAMPLE:

Below an example of a wine with CAT saturation temperature of 12,90°C, therefore stable.



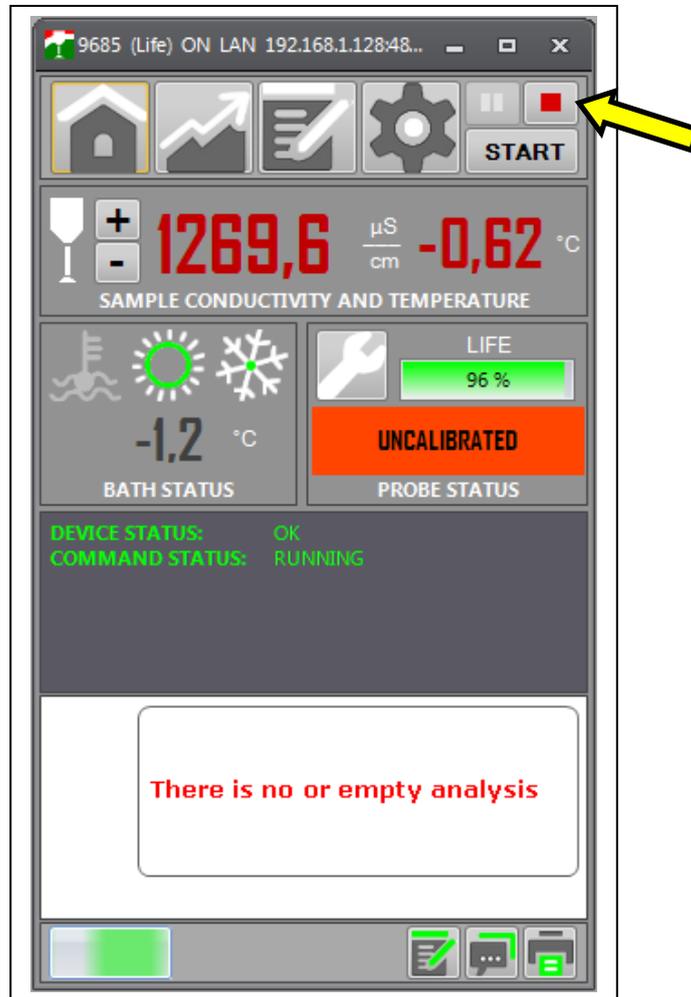
### 9.7 Fast Saturation Temperature Test (Würdig formula)

Check Stab 2008 Life has an experimental test for measuring the point of Potassium Tartrate Saturation Temperature more quickly than the normal Check Stab method.

**ATTENTION**, this test is being developed, is not definitive, and therefore is not available to the general market.

## 10 Terminating an Analysis

The user can terminate an analysis at any time (even if not completed) by using the Check Stab 2012 Life NET software.

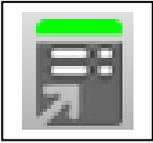


Click on “STOP”, as shown in figure above. The analysis will terminate immediately (without being saved in the data base). The operator can then take the probe assembly out of the wine sample and clean the probe assembly. The instrument is ready to make another analysis.

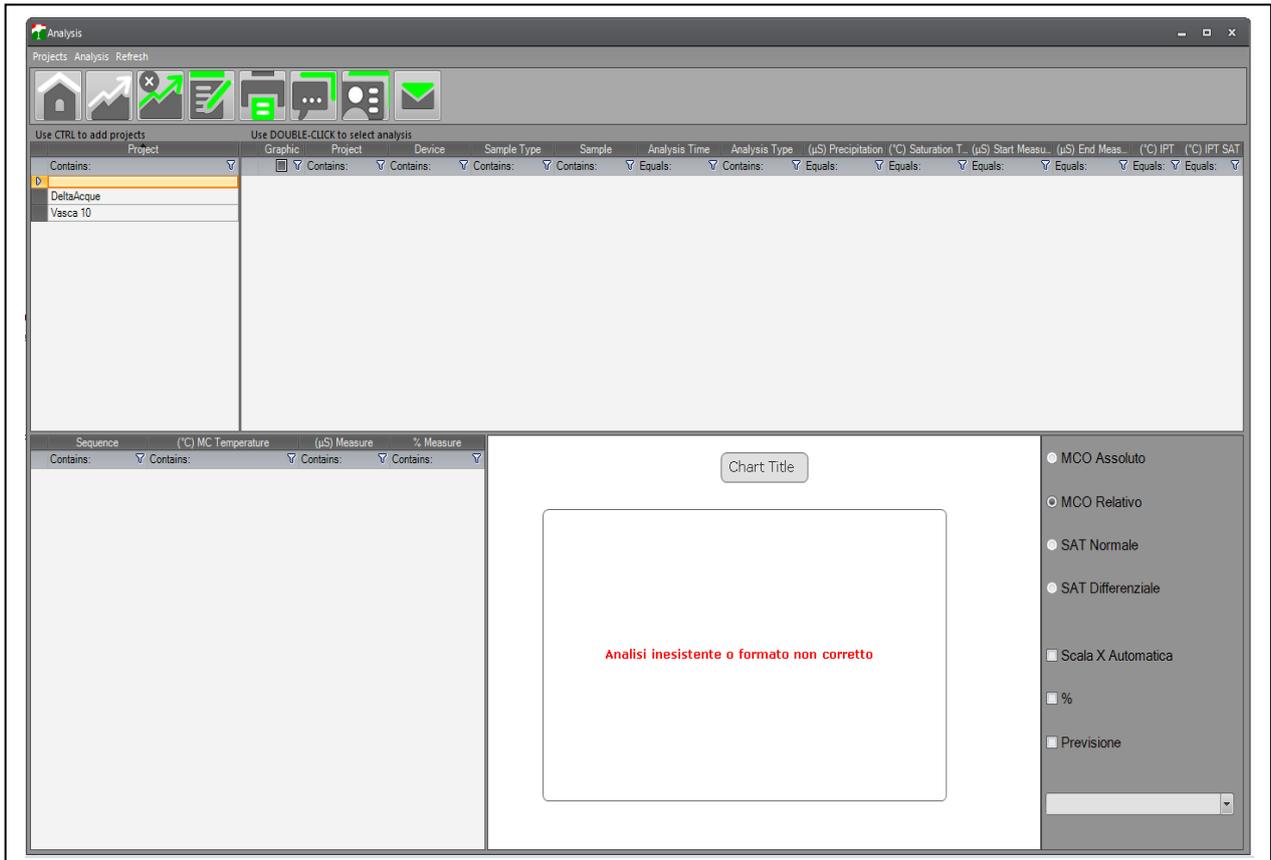
**NB: If the KHT reagent has already been added to the wine sample when terminating an analysis, it will be necessary to replace the sample wine for the next analysis.**

# 11 Graphics management

To read all the analysis and their relative graphics, it is necessary to click on the icon “Projects”.



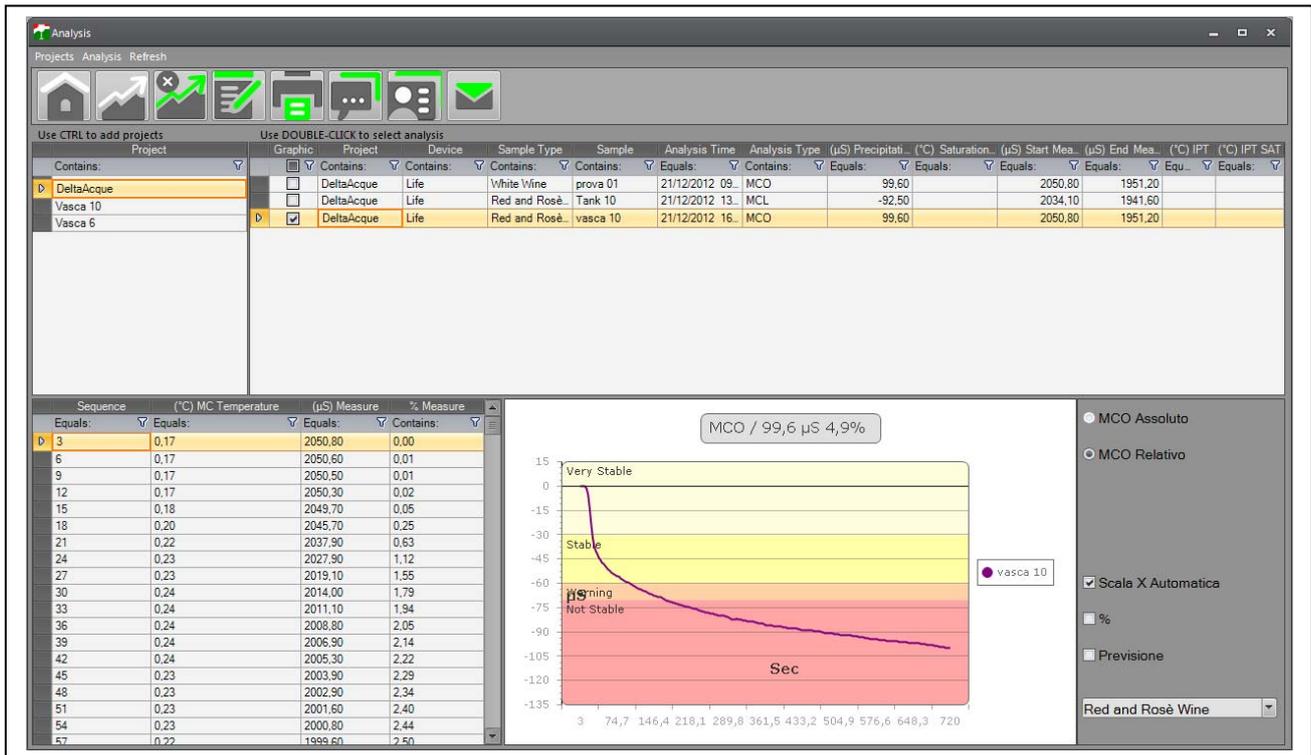
The following window appears after clicking on the icon:



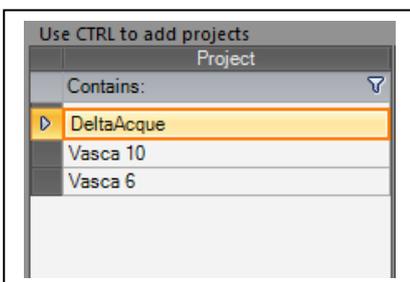
This window has all the data base of the analysis made.

All the projects are found in the window “Project”. Select the project the user wishes to see.

The following window shows the project “Deltaacque”.



There are 3 analyses inside the project Deltaacque. There are 2 mini contact analysis and one saturation temperature.



Information relative to the analysis contained inside the selected project is next to the window:

Graphic	Project	Device	Sample Type	Sample	Analysis Time	Analysis Type	(μS) Precipitati...	(°C) Saturation...	(μS) Start Mea...	(μS) End Mea...	(°C) IPT	(°C) IPT SAT
	Contains:	Contains:	Contains:	Contains:	Equals:	Contains:	Equals:	Equals:	Equals:	Equals:	Equ...	Equals:
	DeltaAcque	Life	White Wine	prova 01	21/12/2012 09...	MCO	99,60		2050,80	1951,20		
	DeltaAcque	Life	Red and Rosè..	Tank 10	21/12/2012 13...	MCL	-92,50		2034,10	1941,60		
	DeltaAcque	Life	Red and Rosè..	vasca 10	21/12/2012 16...	MCO	99,60		2050,80	1951,20		

The following information can be found:

- **Graphic:** indicates which graphics is found in graphics
- **Project:** Indicates which analysis belongs to which project.
- **Device:** Indicates the name of instrument that made the analysis.
- **Sample type:** Indicates the type of wine examined (white wine, red wine, or other).
- **Sample:** Indicates the name of analysis made.
- **Analysis time:** Indicates the date and hour that the analysis was made.

- **Analysis type:** Indicates the type of analysis made (mini contact, saturation, or other)
- **( $\mu\text{S}$ ) Precipitation:** Indicates the precipitation in  $\mu\text{S}$  obtained at the end of the analysis.
- **( $^{\circ}\text{C}$ ) Saturation Temperature:** Indicates the saturation temperature in  $^{\circ}\text{C}$  obtained at the end of the analysis.
- **( $\mu\text{S}$ ) Start measure:** Indicates the conductivity value in  $\mu\text{S}$  at the beginning of the analysis.
- **( $\mu\text{S}$ ) End measure:** Indicates the conductivity value in  $\mu\text{S}$  at the end of the analysis.

The following shows all the values of all the readings made by the instrument during the analysis.

Sequence	( $^{\circ}\text{C}$ ) MC Temperature	( $\mu\text{S}$ ) Measure	% Measure
1	-0,44	1551,90	0,00
2	-0,44	1551,80	0,01
3	-0,44	1551,80	0,01
4	-0,44	1551,80	0,01
5	-0,44	1551,80	0,01
6	-0,44	1551,70	0,01
7	-0,44	1551,70	0,01
8	-0,44	1551,70	0,01
9	-0,44	1551,70	0,01
10	-0,44	1551,60	0,02
11	-0,44	1551,20	0,05
12	-0,43	1550,80	0,07
13	-0,43	1550,20	0,11
14	-0,42	1549,50	0,15
15	-0,42	1548,60	0,21
16	-0,41	1547,50	0,28
17	-0,41	1546,40	0,35
18	-0,41	1545,10	0,44
19	-0,41	1543,80	0,52
20	-0,41	1542,40	0,61
21	-0,41	1541,20	0,69
22	-0,41	1539,90	0,77
23	-0,40	1538,70	0,85

The following are the values of this window:

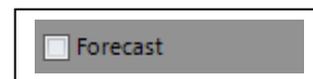
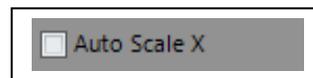
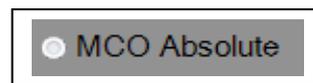
- **Sequence:** Indicates progressively the number of readings made.
- **Measure:** Indicates the conductivity values in reference to the relative reading.
- **Temperature:** Indicates the temperature value in reference to the relative readings.
- **Measure with KHT:** Indicates the conductivity values in reference to the relative readings (with KHT in the saturation point analysis).
- **Measure without KHT:** Indicates the conductivity values in reference to the relative readings (without KHT in the saturation point analysis).

Selected graphics are shown in the following window:



In particular we can see the graph in mode:

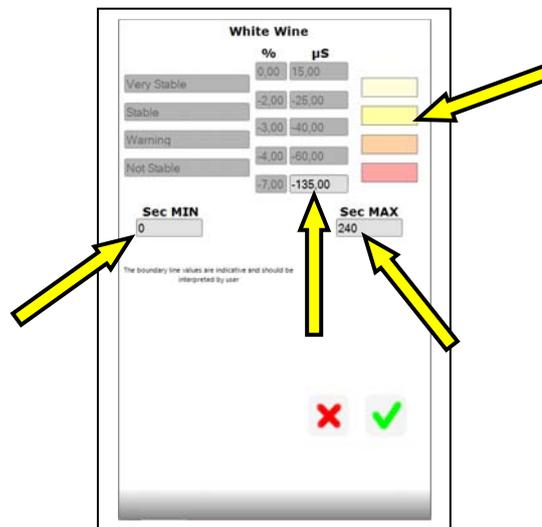
- To view the graph in absolute mode Minicontact
- To view the graph in relative mode Minicontact
- To view the graph in Normal mode Saturation
- To view the graph in Differential mode Saturation
- To activate the auto scale on the x axis (second).
- To visualize the percentage
- To visualize the forecast in long minicontact analysis



Activate 'option to display choice. Caution: in the case of an analysis of minicontatto we can not choose options relating to 'analysis of saturation, while in the case of an analysis of saturation will be possible to activate all the procedures described above.

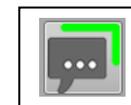
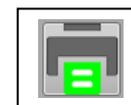
Click the follow icon is possible:

- Projects View: for come back to home page
- Graphic View: to enlarge the graph
- Clear Graphic: to cancel the graph
- Set Graphic parameters: to change the display parameters of the graph. Click this icon opens the following window, where the operator can modify only the areas highlighted in light gray and the colors of the graph (indicated by yellow arrows).



After changing the parameters click “OK” to apply the modify.

- Analysis report preview: to have a preview
- Analysis note: to put a comment
- Select logo image: to insert a logo
- Send Analysis report: to send an e-mail the analysis



## 12 Visualization of graphics

Follows are examples of mini contact and saturation point.

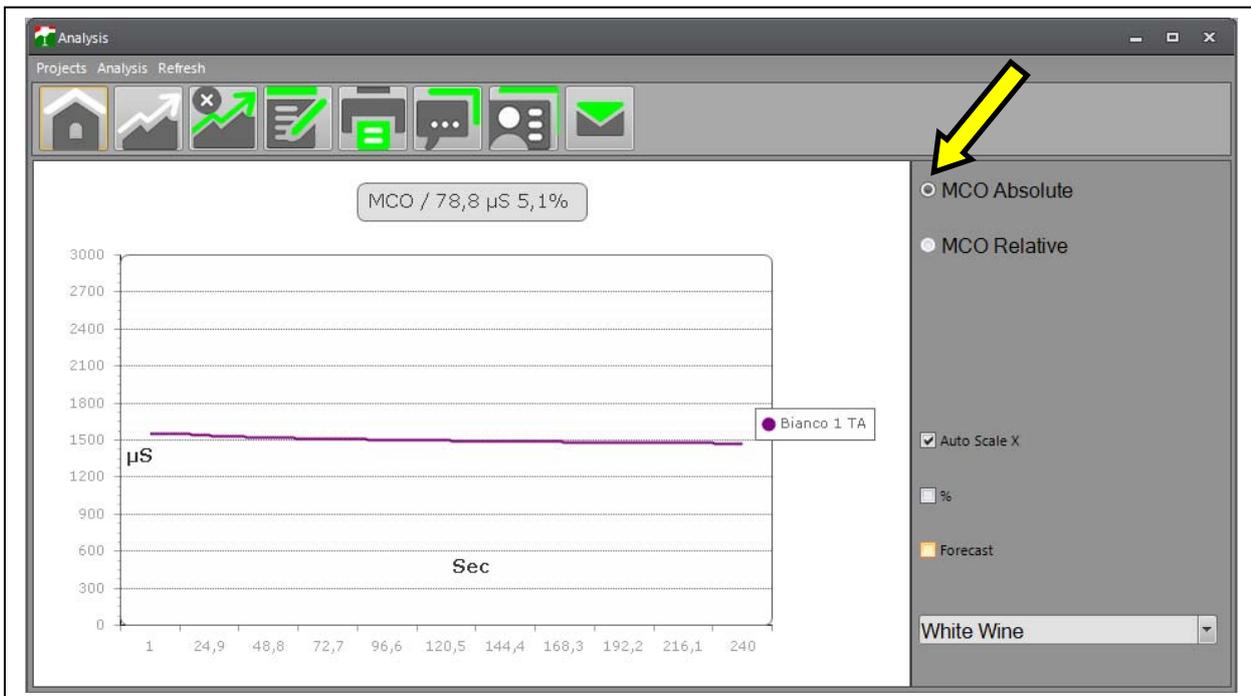
### 12.1 Mini contact analysis

Once selecting a mini contact analysis, the program will show the graphics of the analysis, opening the schematics.

It is possible to visualize the graphics mode *Absolute* or *Relative* (divided in four zones and indicating the various levels of stability); the user can also see sub divisions in relation to the type of wine being analyzed (White wine or Red wine or *Rosé*). These sub divisions are automatically created by the software.

#### 12.1.1 Visualization Absolute Graph with $\mu\text{S}$ precipitation

Click on MCO Absolute to visualize the absolute graphic mode.



### 12.1.1 Visualization Relative Graph with $\mu\text{S}$ precipitation

Click on MCO Relative to visualize the relative graphic mode.

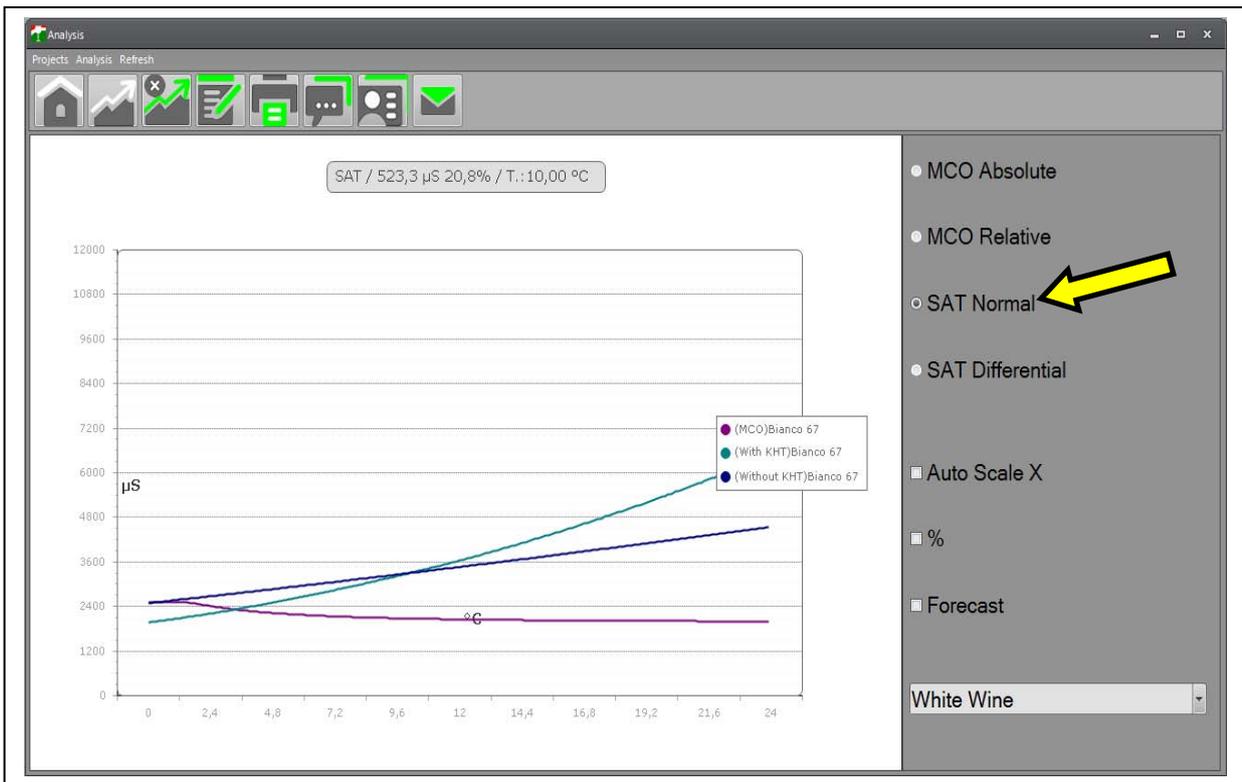


### 12.1.2 Visualization Relative Graph with precipitation in %

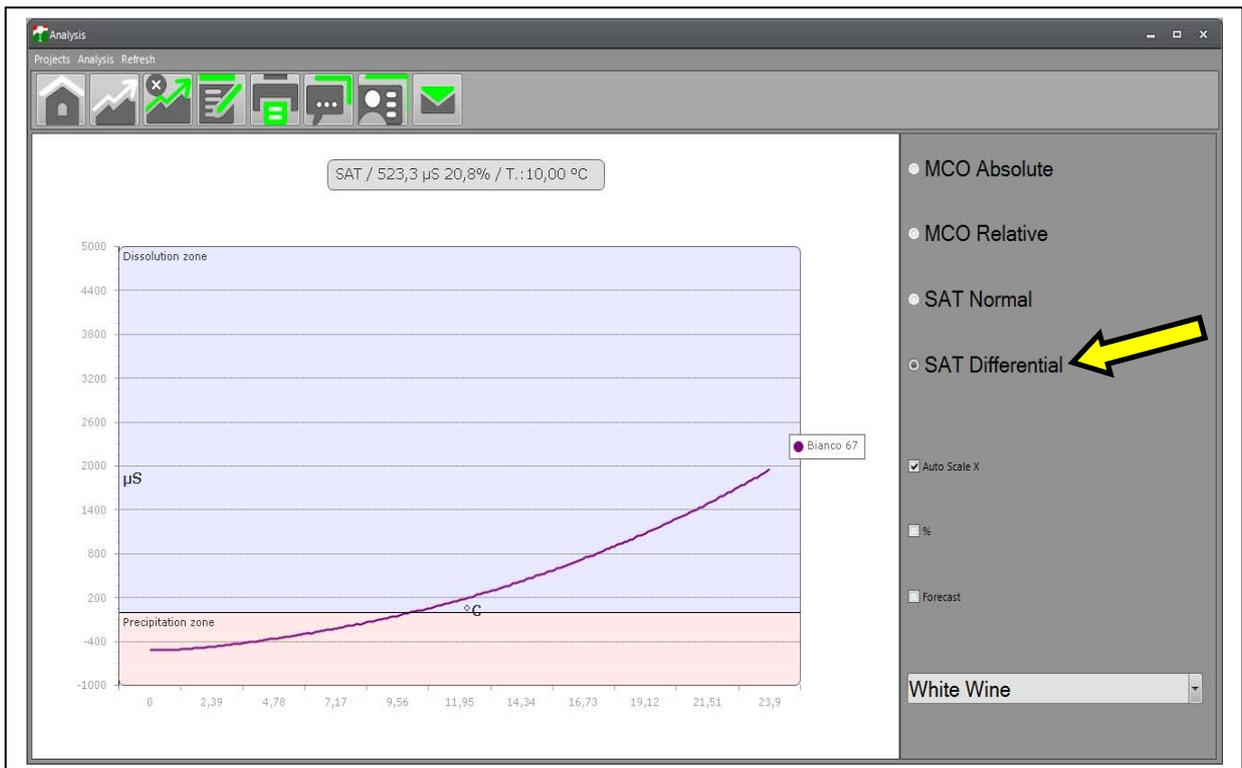
Click on MCO Relative and flag “%” to visualize the relative graphics mode relative to precipitation in percent.



## 12.2 Saturation analysis



Once selecting the saturation analysis and writing *Graphic* from the analysis options, the software will move to the graphic mode, visualized in *Normal* or *Differential* modes (divided in dissolution zone and precipitation zone).



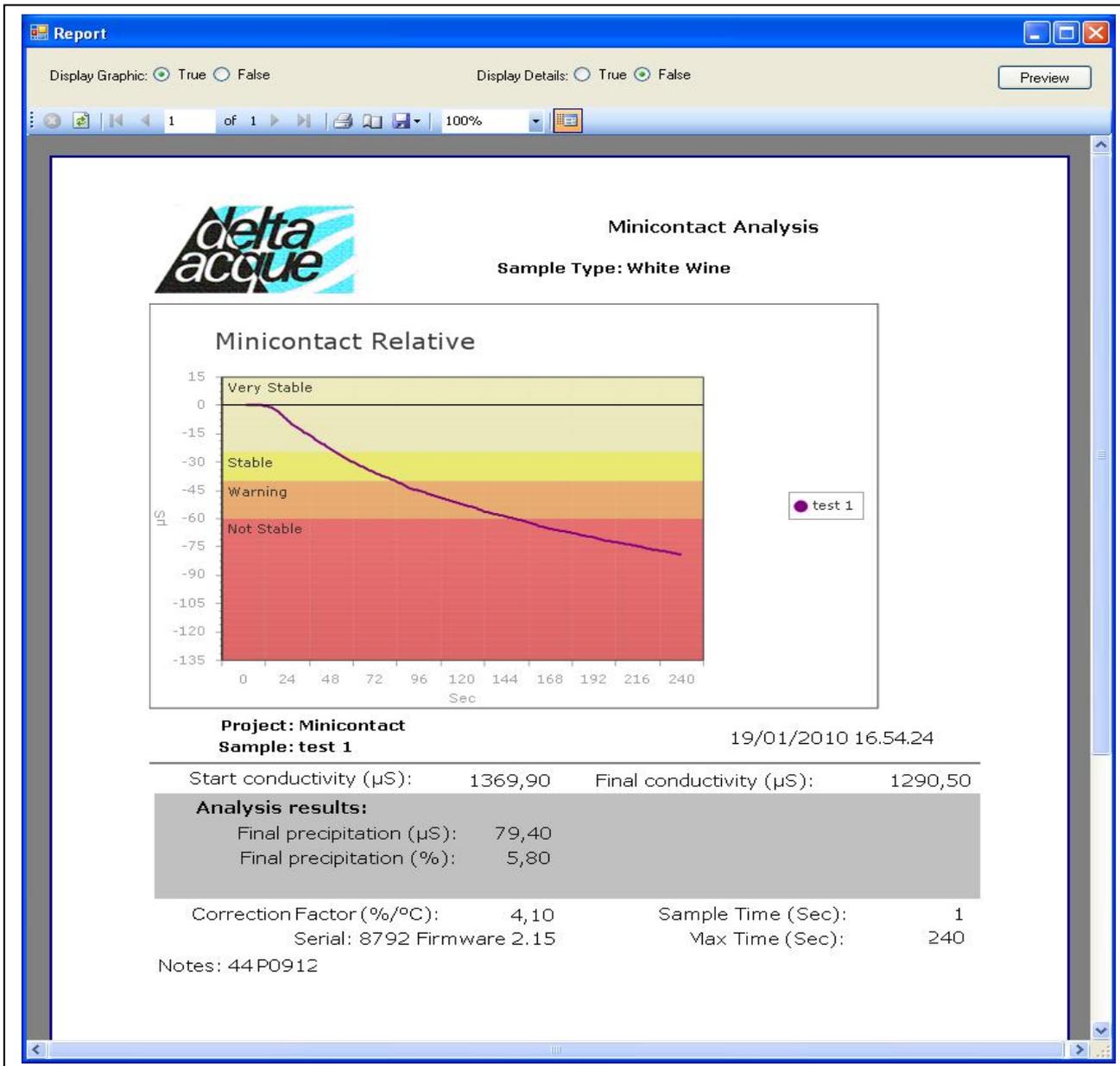
## 13 Printing Graphs

To print graph do as follows:

- Click on the Icon“Preview”



- A window opens as below:



This is the preview of the printed file, with the graphics and results of the analysis. It is set with standard format by default. To visualize all the numerical data of the analysis readings, the operator must remove the flag from “False” and put the flag on “True” in “Display Details”.

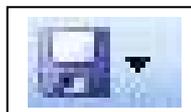
To print the graph, click on “Print Report”.



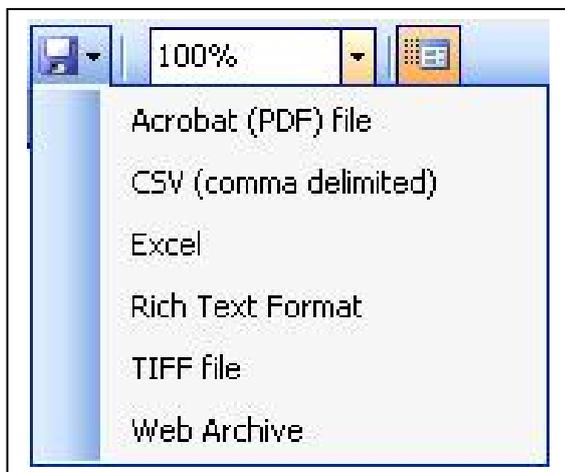
To configure the printer click on the Icon “Page Set Up”.



To print with another format click on the Icon “Export”.



The following window will open. The operator can select the format to export the file. The following formats are available:



Select the desired format and save the file.

If the visualization mode has been changed, click on the Icon “Refresh” or on the key “Preview” to generate the graph with the new settings.



Icon “Refresh”



Key “Preview”

## 14 Analysis Interpretation of the results

### 14.1 Mini Contact

The analysis aims to determine the variation of the conductivity of the wine caused by the addition of **Potassium Bitartrate at 0°C** and being constantly stirred.

#### *Interpretation of the results.*

With this **contact** analysis we can evaluate:

#### **WHITE WINES**

-VERY STABLE WINE	fall	<b>25<math>\mu</math>S</b>
-STABLE WINE	fall	<b>25/40<math>\mu</math>S</b>
- WINE AT RISK	fall	<b>40/60<math>\mu</math>S</b>
- WINE NOT STABLE	falls more than	<b>60<math>\mu</math>S</b>

#### **RED WINES AND ROSÉ**

- VERY STABLE WINE	fall	<b>30<math>\mu</math>S</b>
- STABLE WINE	fall	<b>30/60<math>\mu</math>S</b>
- WINE AT RISK	fall	<b>60/70<math>\mu</math>S</b>
- WINE NOT STABLE	falls more than	<b>70<math>\mu</math>S</b>

#### **SWEET WINES 15% VOL.**

- VERY STABLE WINE	fall	<b>15<math>\mu</math>S</b>
- STABLE WINE	fall	<b>15/25<math>\mu</math>S</b>
- WINE AT RISK	fall	<b>25/40<math>\mu</math>S</b>
- WINE NOT STABLE	falls more than	<b>40<math>\mu</math>S</b>

These are indicative values. The user will determine which values fall in the four categories depending on the destination of the wines.

Different interpretations of these parameters are left to the judgment of the oenologist who must decide depending on the destination of the wines, the length of time left in the bottle, and the temperature where the bottles are stored.

## 14.2 Saturation Point

Theory:

The saturation point is calculated with a soluble product of a certain wine, which must be the same as PC of tartaric acid and potassium present.

A state of saturated wine is related to its thermo dynamic state, and consequently the parameters vary only if parameters that influence the thermo dynamic stability change (see pH or concentration of ionic hydrogen) and not the variation of treatments of the protein stabilization.

This data, indicating the degree of tartaric stability, can be put on a list of wine qualities to be used in commercial proposals. This data is an excellent indicator of the tartaric stability of the wine.

One can say for example that for a wine at a Saturation temperature of 10°C means that the concentration of ionic potassium bi tartrate that is in the product is equal to the solubility of the product at 10°C.

In other words this wine at 10°C will be stable, therefore will not dissolve nor precipitate from the potassium tartrate.

The same wine will be in a condition of saturation at higher temperatures than 10°C and can dissolve more potassium tartrate.

If the wine temperature is below 10°C, there will be an opposite effect in conditions of oversaturation.

Generally speaking wines are in a state of oversaturation. This means that if the wine is conserved at a certain temperature for a period of time in order to become stable, meaning the precipitation of tartaric acid K is complete, the saturation temperature is in any case higher than the temperature of conservation.

It is normal to find wines that have a saturation temperature of 7°C for wines and that have been refrigerated at -5°C for 15 days to be in any case stable.

Now that with Check Stab it is possible to know the saturation temperature, it becomes important to know the temperature when tartaric acid begins to precipitate.

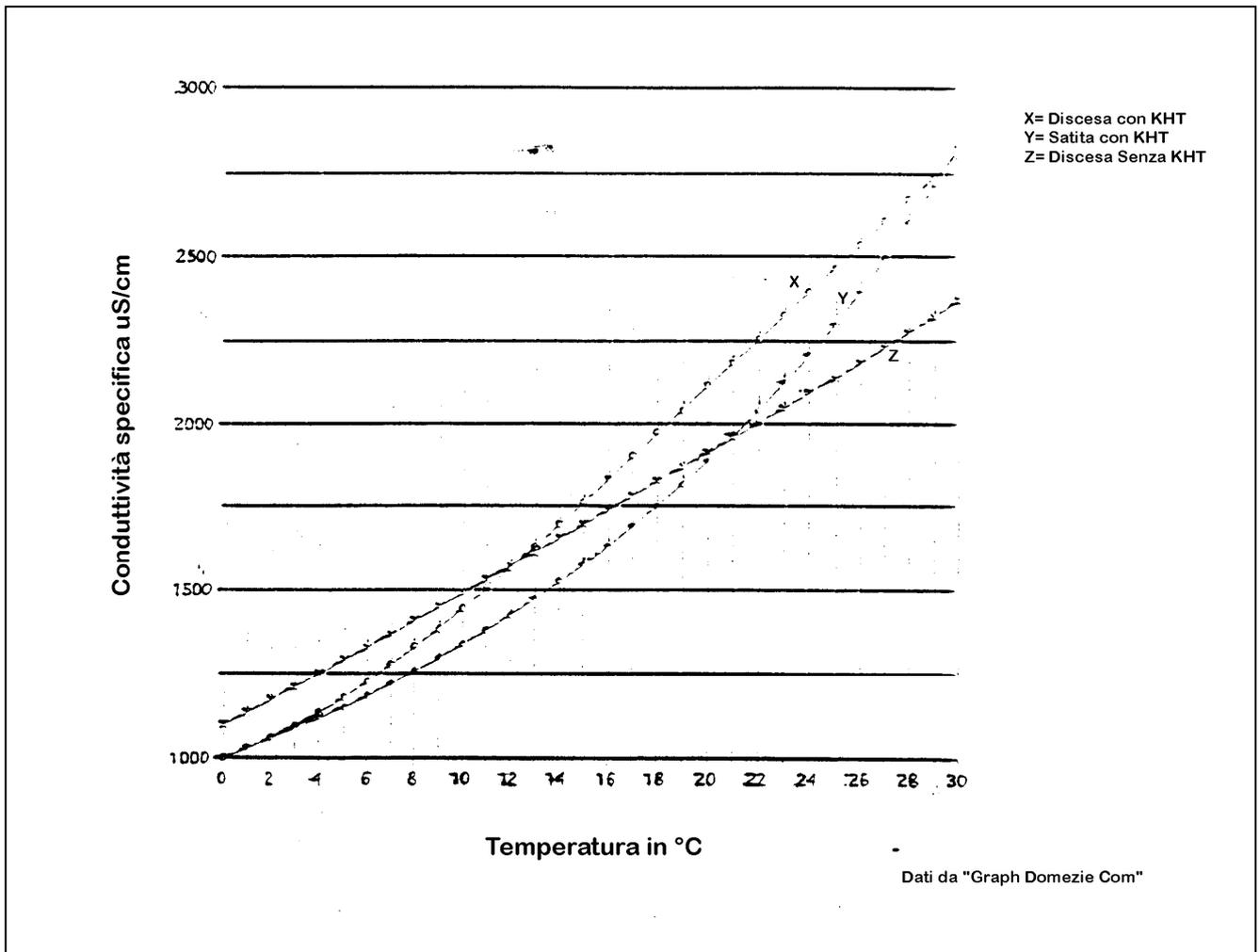
This parameter becomes subjective. It is called movement of saturation temperature, identifiable with the symbol DTS and indicates the degree of stability of the wine.

Some authors (see following table) have identified for every category of wine an average DTS.

The table indicates averages. It is in any case the responsibility of the technician on the basis of his/her experience to individualize the parameters that satisfy his needs for the conservation of his/her wines.

Autore	Wine Type	N°Samples	DTS Min	DTS Max	DTS Average
L.Angle (1992)	White				12,5
H.W.Berg(1971)	White	143			11,2
A.Brugirard(1992)	White				5
M.Domezel(1992)	White	20	4,9	16,5	8,7
M.Domezel(1992)	White	23	1,8	14,1	9,4
L.Usseglio-Tomasset (1982)	White	7	4,6	12,1	6,8
L.Usseglio-Tomasset (1992)	White	95	0	18,3	5,7
H.W.Berg(1971)	Red	138			21,1
M.Domezel(1992)	Red	22	2,5	26,5	12,3
A.Brugirard(1992)	Red				10
L.Usseglio-Tomasset (1982)	Red	5	11,5	11,6	12,8
L.Usseglio-Tomasset (1992)	Red	13	0,7	33,9	11,8
H.W.Berg(1971)	Rosé	100			12,3
A.Brugirard(1992)	Rosé				5
A.Brugirard(1992)	Light Red				6
M.Domezel(1992)	Rosé	37	1,1	18,0	9,7
L.Usseglio-Tomasset (1982)	Must Red	12	8,0	11,1	11,1
L.Usseglio-Tomasset (1982)	Must White	4	7,3	9,9	8,9
L.Usseglio-Tomasset (1982)	Must alcoholic	3	9,2	16,2	12,0
L.Usseglio-Tomasset (1982)	Sweet Wines	3	5,7	8,9	7,1
A.Brugirard(1992)	Sweet White				8
J.M. Garcia Quiz (1991)	Sherry Dry	5	11,7	13,5	12,5
H.W.Berg(1971)	Sherry Dry	145			12,9

Domeizel has supplied the average equations for the behavior of 102 different determinations of wines as seen in the following graph.  
This graph is indicative, none the less can demonstrate the average behaviour of the wine.



Comments Graph:

- Conductivity “**DESCENT without KHT**” demonstrates the variation in conductivity with respect to temperatures from 30° to 0°C
- Conductivity “**ASCENT with KHT**” shows behavior of wine when dissolving added KHT present in the sample.  
The point where this curve meets the previous curve is the Saturation temperature (in this case 21°C).
- Conductivity “**DESCENT with KHT**” shows behavior of conductivity in the same wine, where the maximum possible amount of KHT is dissolved (The same process as ASCENT with KHT, that, afterwards, will be filtered to separate the residual crystals). Then, drop the temperature to 0°C. The point where the curve meets the ascending curve without KHT is the Saturation temperature—which represents the temperature index when the wine can form crystals.  
In this case **T°SAT – d = 12°C**.  
The difference between the two measured temperatures (**T°SAT. 21 – T°SAT.d 12**) constitutes the limit of security. In this case it would be **9°C**.

The diagram of Check Stab a2001 Millennium Evolution ® of automatic curves (therefore Saturation Temperature).

To get the **Saturation Temperature**– Filter the sample after doing the Saturation temperature and do the descent at 0°C on the filtrate to find the point **T°SAT.**- See previous instructions.

*N.B. **Delta Acque** is working on a completely automatic process , currently not available.*

Technical notes and data thanks to **Dott. BERTA (F.lli Ramazzotti)**.

## 15 Interpreting of graphics

### 15.1 Introduction

After completing the analysis, it is very important to interpret well the resulting graphic tables. It is not enough to observe the precipitation measured in Micro Siemens. It is essential to evaluate the progress of the Mini Contact curve (or Saturation Temperature curve) of the graph. The graph can be visualized in the Normal Mode or Relative Mode in the Mini Contact analysis. The graph can be visualized in the Differential Mode or Normal Mode in the Saturation Temperature analysis.

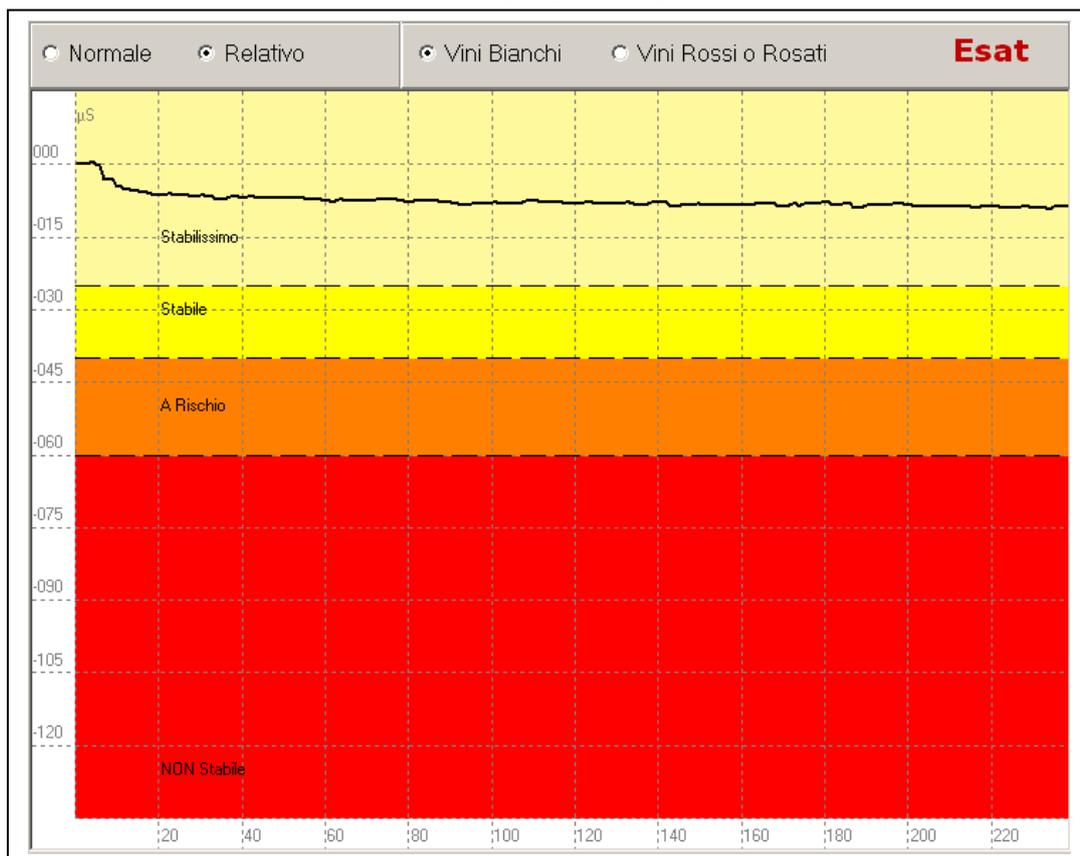
#### Mini Contact:

In the Normal Mode the absolute conductivity is visualized. In the Relative Mode the precipitation values during the analysis are visualized. For an easier interpretation of the chart, we advise using the Relative Mode.

#### Saturation Point:

The Normal Mode graph has three curves (descending curve without KHT, Mini Contact curve, and rising curve with KHT). In the Differential Mode, the curve is visualized by passing through the Solution Zone to Precipitation Zone. Below are a few examples of analysis made with Red and White wine samples.

### 15.2 Mini Contact – White Wine (very stable)

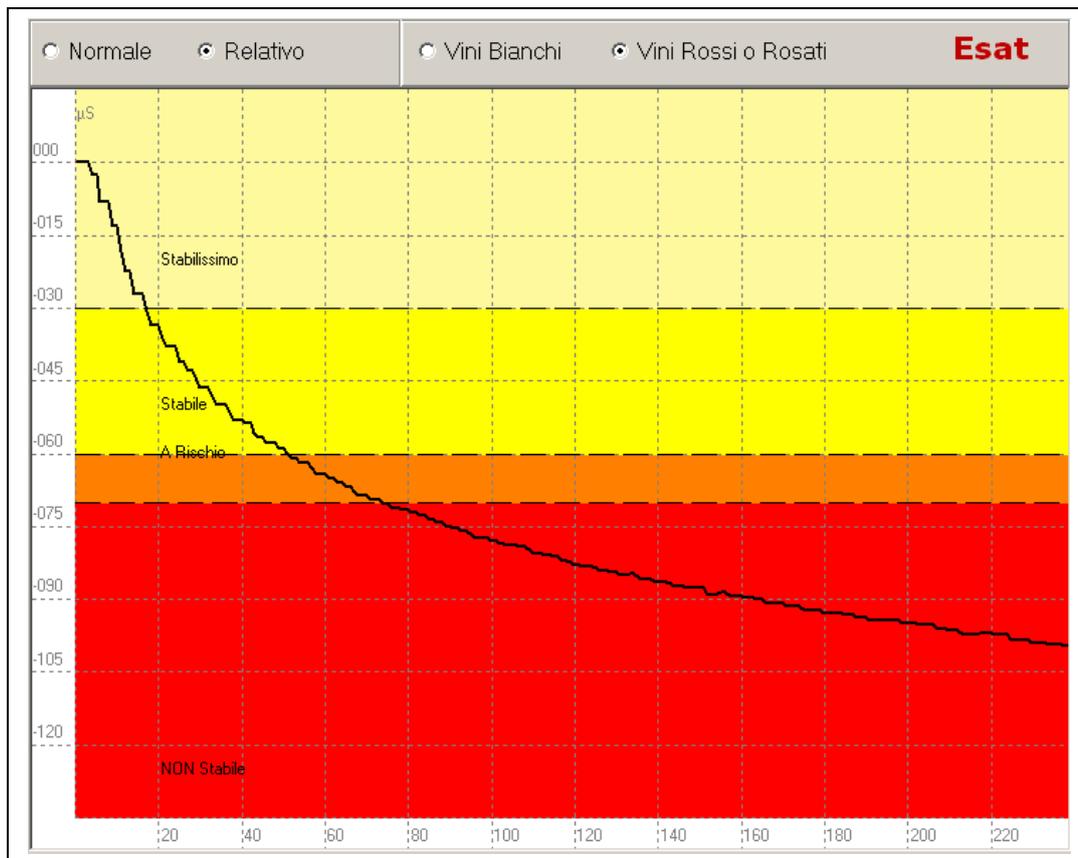


Mini Contact Analysis of a sample of white wine:

Beginning Conductivity: 1214,2  $\mu\text{S}$   
End Conductivity: 1205,2  $\mu\text{S}$   
Knock Down Conductivity: 9,0  $\mu\text{S}$

In this case the wine is **very stable**. The knock down value is only **9  $\mu\text{S}$**  and the curve, after a slight beginning drop, continues in a very linear manner.

### 15.3 Mini Contact – Red Wine (instable)



Mini Contact Analysis of a sample of red wine:

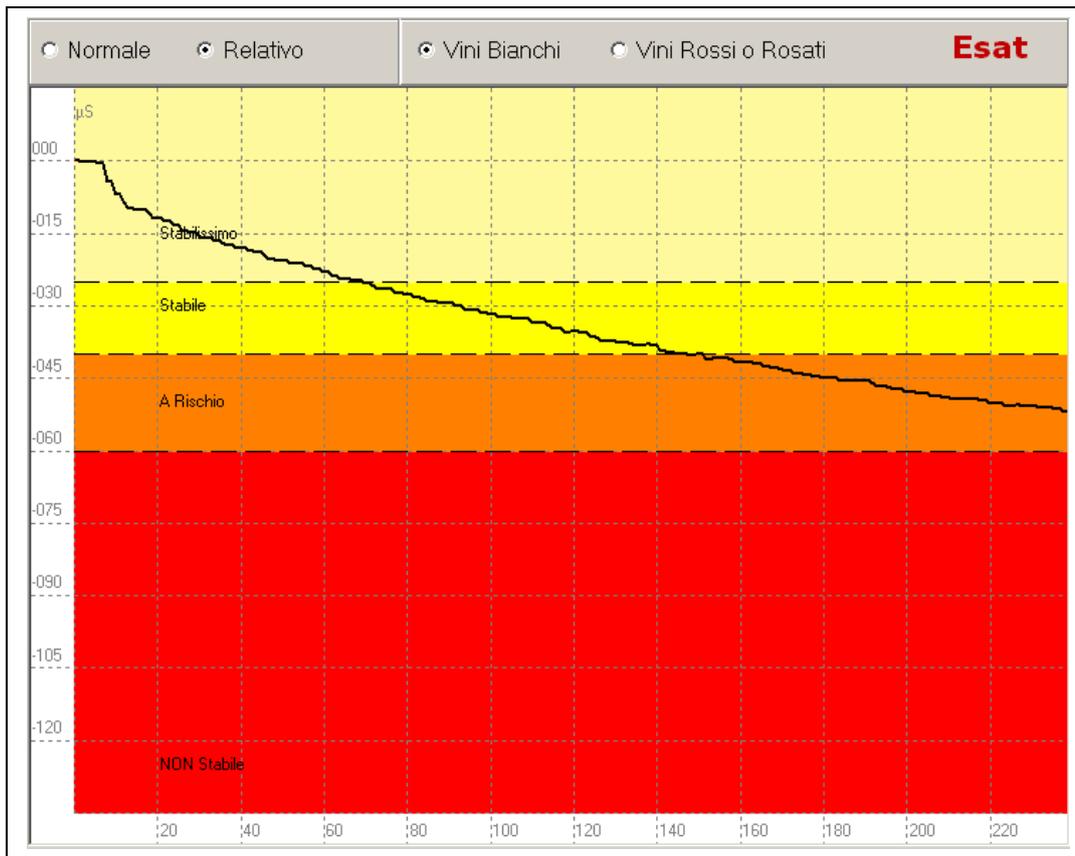
Beginning Conductivity: 1118,4  $\mu\text{S}$

End Conductivity: 1019,4  $\mu\text{S}$

Knock Down Conductivity: 99,0  $\mu\text{S}$

In this case the wine is **completely instable**. The knock down value is **99,0  $\mu\text{S}$**  and the curve has a steep inclination with the tendency to continue to lose more in terms of microsiemens.

## 15.4 Mini Contact – White Wine (at risk)

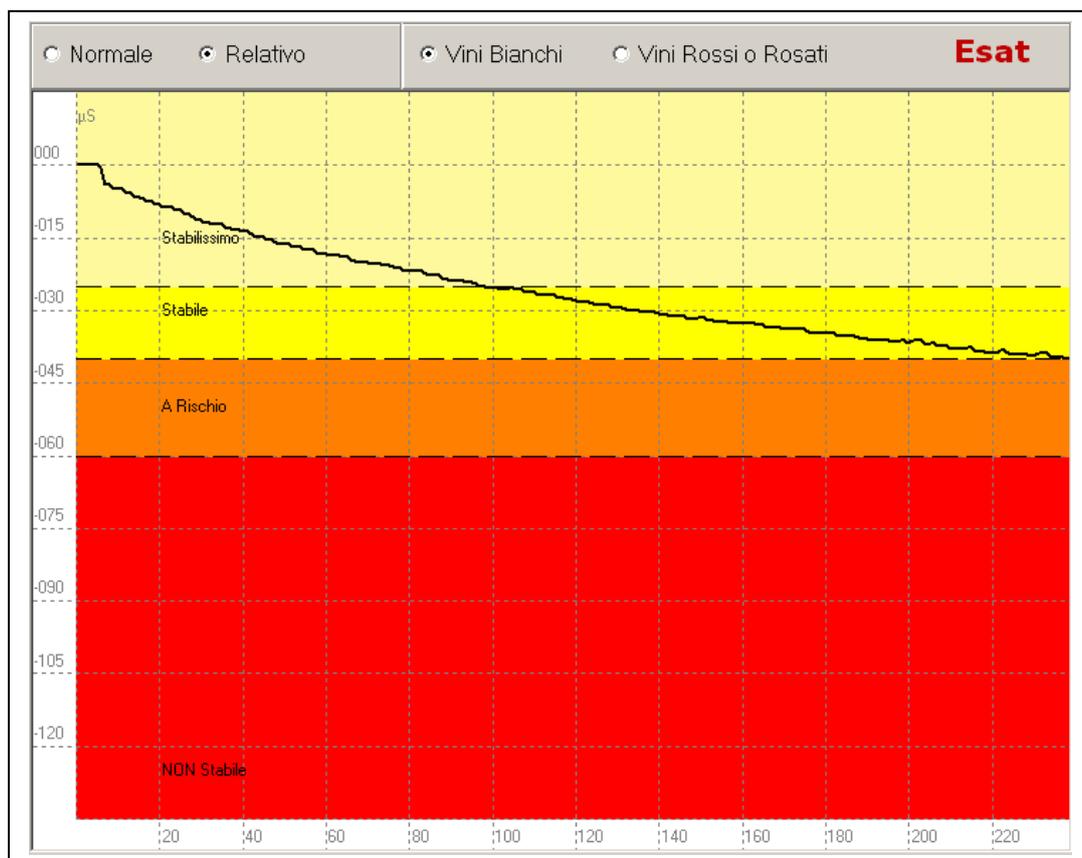


Mini Contact Analysis of a sample of white wine:

Beginning Conductivity: 1191,5  $\mu\text{S}$   
End Conductivity: 1140,2  $\mu\text{S}$   
Knock Down Conductivity: 51,3  $\mu\text{S}$

This is a common graph of wine that is **at risk**. The knock down value is **51,3  $\mu\text{S}$** . In this case the curve, as we see in the graph, terminates in the risk zone. Having a very evident inclination towards the “Not Stable” Zone, we can interpret that by following the direction of the curve, it is rapidly moving towards the Instable Zone. In this case, we can consider this wine **Not Stable**.

## 15.5 Mini Contact – White Wine (at risk)

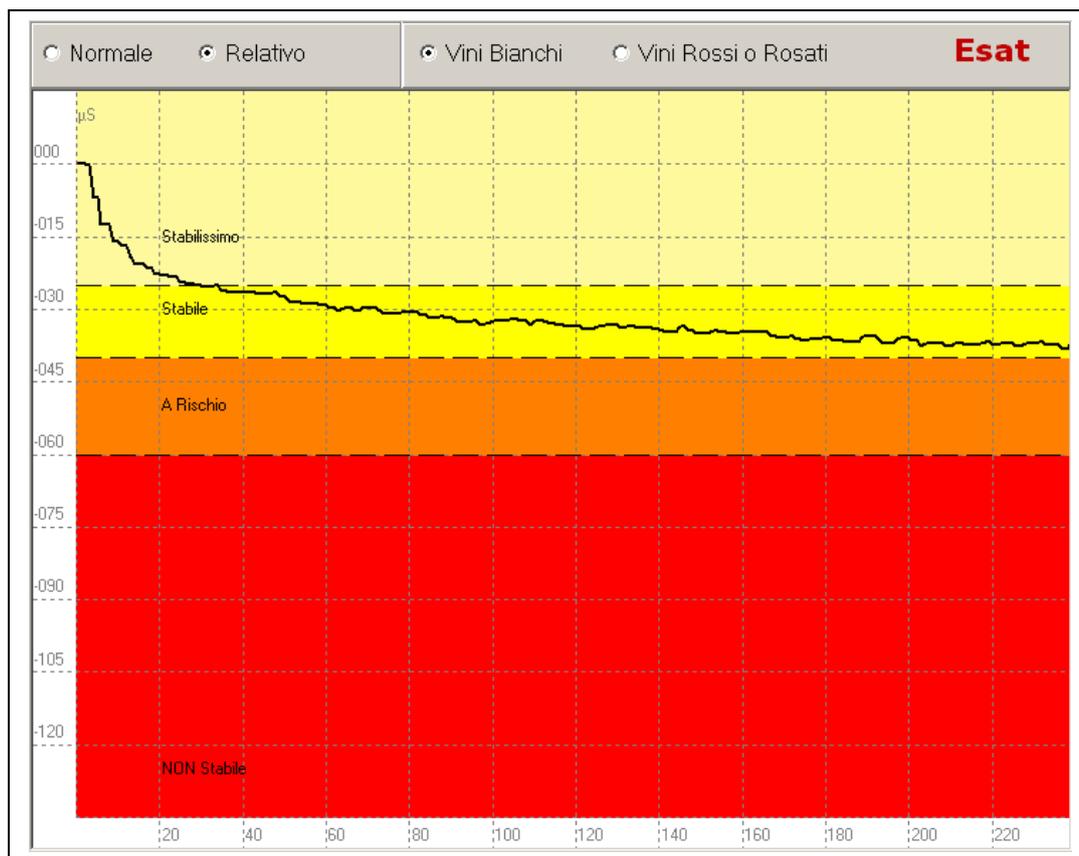


Mini Contact Analysis of a sample of white wine:

Beginning Conductivity: 757,3  $\mu\text{S}$   
End Conductivity: 717,5  $\mu\text{S}$   
Knock Down Conductivity: 39,8  $\mu\text{S}$

This case is similar to the preceding case. The knock down value is **39,8  $\mu\text{S}$**  and the curve terminates in the Stable Zone. Observing this curve, we can see, that the inclination is pretty steep and is tending to move to the Risk Zone. We can conclude that this wine is to be considered not completely stable. Quite probably, this wine will **not** precipitate crystals at **first contact** with a cold environment. **However**, if this wine is kept in a cold temperature for a longer period of time it **will have the tendency to precipitate crystals**. It would be wise, in this case, to consider a stabilization treatment of this wine before bottling.

## 15.6 Mini Contact – White Wine (Stable)



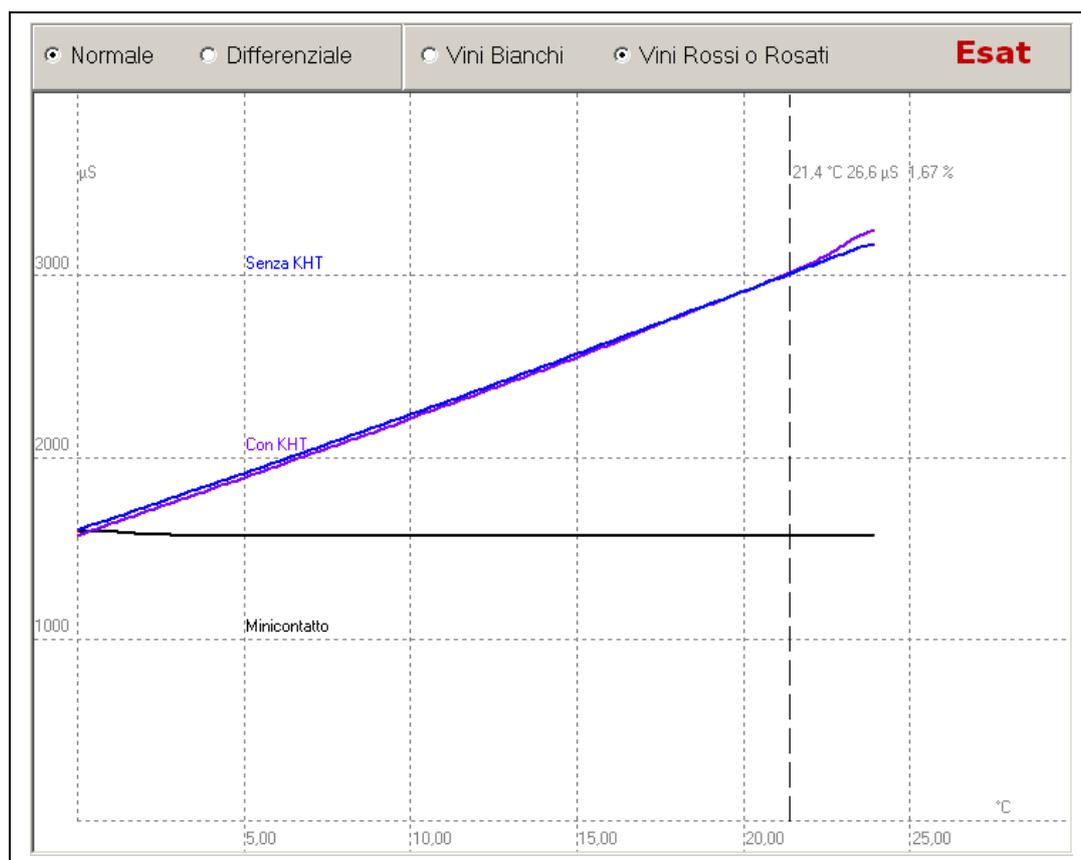
Mini Contact Analysis of a sample of white wine:

Beginning Conductivity: 765,5  $\mu\text{S}$   
End Conductivity: 729,0  $\mu\text{S}$   
Knock Down Conductivity: 36,5  $\mu\text{S}$

This case is similar to the preceding case. The knock down value is **36,5  $\mu\text{S}$**  and the curve terminates in the Stable Zone. Observing this curve, we can easily see that the inclination is moving in a much more linear manner with respect the preceding example graph. We can say in conclusion that in this situation the wine is considered **Stable**.

Examining this analysis and the one before it, we can see that even though the knock down values are similar (39,8  $\mu\text{S}$  and 36,5  $\mu\text{S}$ ) the wines are in different states of stabilization. It is therefore, very important to evaluate the movement (and shape) of the precipitation curve over time and not to base the interpretation only on the knock down values of conductivity.

## 15.7 Saturation Temperature – Red Wine (Stable)



Saturation Temp Analysis of a sample of red wine:

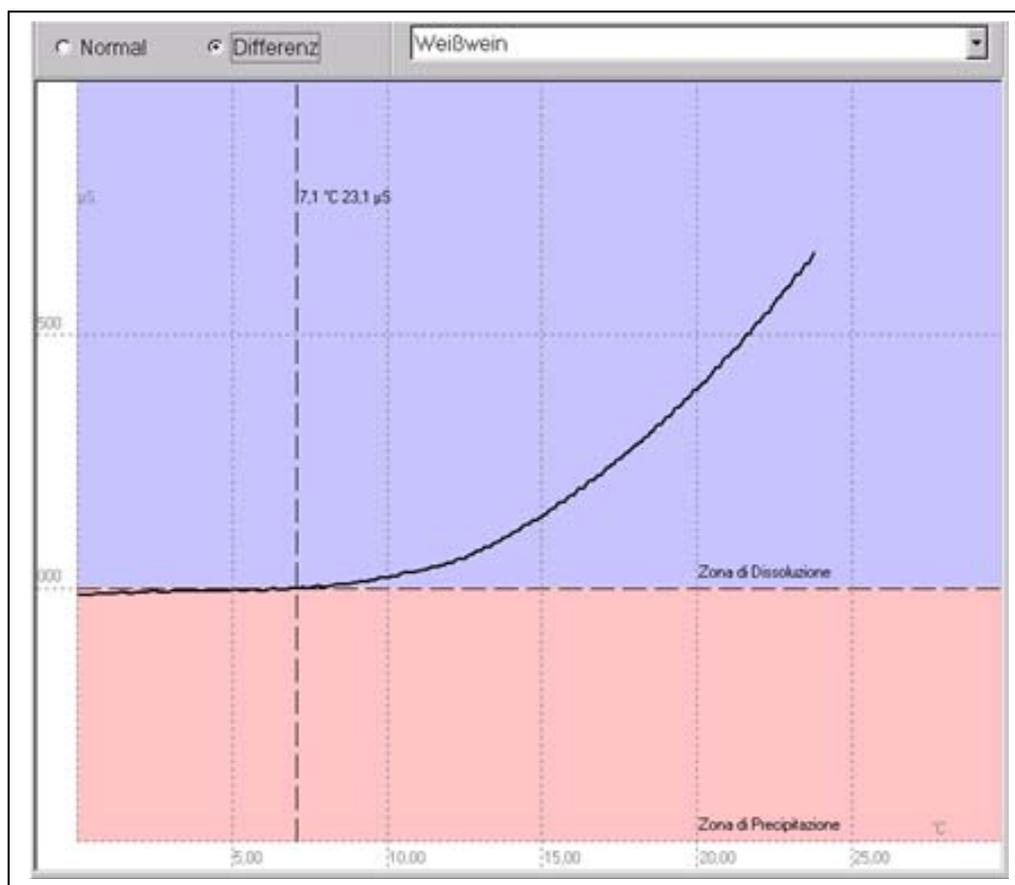
Beginning Conductivity:	1591,8 µS
End Conductivity:	1565,2 µS
Knock Down Conductivity:	26,6 µS
Saturation Temperature	21,40 °C

The saturation point analysis indicates results both in knock down conductivity in micro siemens and the temperature at which there will be the beginning formation of crystals in the crystalization process.

In the example above we have a Saturation temperature of **21,40°C**. This case indicates that at **21,40°C** the wine will begin to form the first crystal formations. To visualize crystals with the naked eye, one must subtract **10°C** from the saturation temperature obtained by the instrument. In the example analysis above, one will see precipitated crystals in the bottle at around **11°C**. But, in this case, having a relatively low knock down value in micro siemens **26,6 µS**, there will be very few precipitated crystals in the wine (not visible). We can therefore say this wine is **Stable**.

In conclusion, generally speaking, we can interpret saturation temperature results by saying that the temperature of saturation will tell us the temperature at which crystals will begin to form, while the knock down value in micro siemens will indicate the quantity of precipitate we will have in the bottle.

## 15.8 Saturation Temperature – White Wine (Stable)



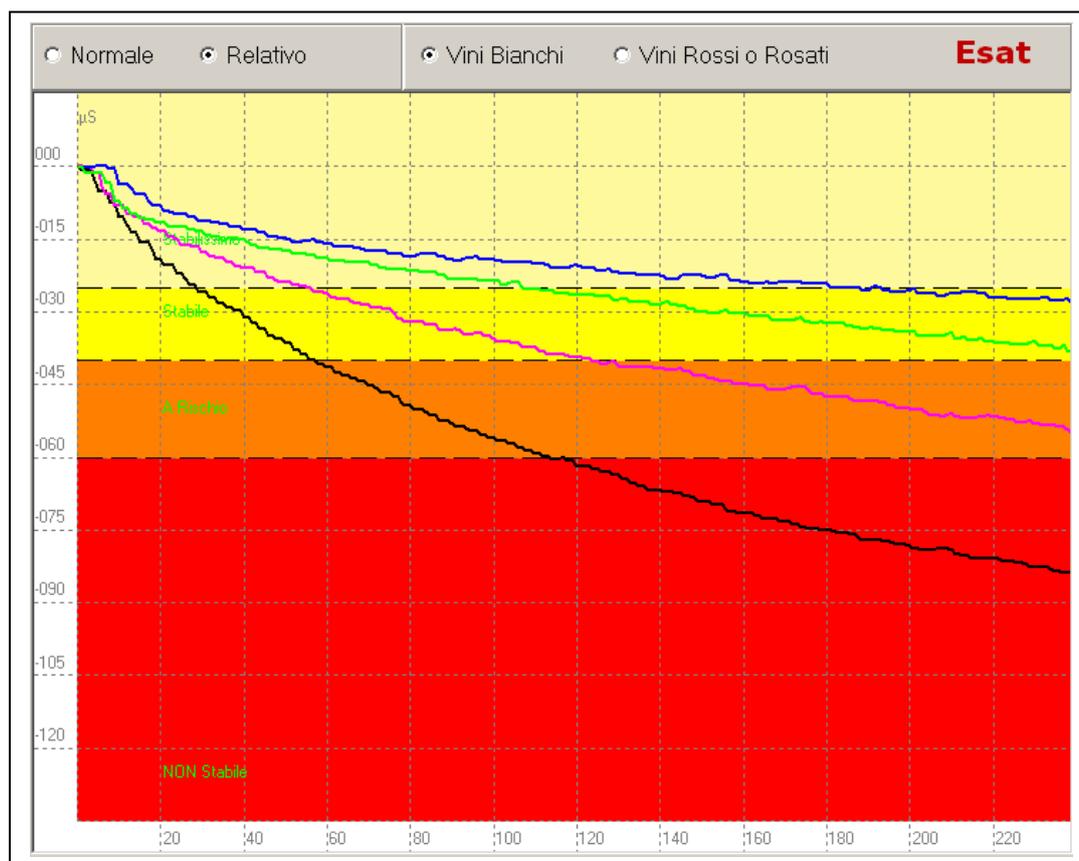
Saturation Temperature analysis of a white wine sample:

Beginning Conductivity:	1683,9 $\mu\text{S}$
End Conductivity:	1660,8 $\mu\text{S}$
Knock Down Conductivity:	23,1 $\mu\text{S}$
Saturation Temperature:	7,1 $^{\circ}\text{C}$

This is a saturation temperature analysis that is visualized in a differential mode.

In this case, we have obtained a saturation temperature of **7,10 $^{\circ}\text{C}$**  and a precipitation value of **23,1  $\mu\text{S}$** . We can say that this wine is stable. In the differential mode, the graph is divided in two areas: the zone in solution and the zone of precipitation. The point where the line crosses the dividing line is the saturation temperature.

## 15.9 Comparing Minicontact results – During stabilisation



Stabilization Process of a white wine:

- Original wine sample                      Knock Down Conductivity: 82,5 µS    Black curve
- After 1 day of stabilization              Knock Down Conductivity: 53,4 µS    Violet curve
- After 2 days of stabilization            Knock Down Conductivity: 36,5 µS    Green Curve
- After 3 days of stabilization            Knock Down Conductivity: 27,5 µS    Blue Curve

This is an example of the use of a Check Stab instrument during the process of stabilization of a wine. We have taking a test white wine that must be bottled.

At the first mini contact analysis we found a knock down value of **82,5 µS** (see the black curve above). It is very obvious that the wine is completely **Instable**.

It has been decided to begin a stabilization treatment.

After a day of stabilization a second mini contact analysis was made. The results show a knock down value of **53,4 µS** but the curve is still dropping very fast and has reached the Risk Zone. It will be necessary to continue the stabilization process.

The third analysis was done at the end of the second day of stabilization and as we can observe, we have a knock down value of **36,5 µS** and the curve is moving in the **Stable Zone**. Having a curve that continues to drop, it was decided to continue another 24 hours of stabilization to be sure the wine is stable.

On the third day of stabilization we obtain a good result, the wine had a knock down value of **27,5 µS** and the curve has little inclination. In this condition, the wine is ready for bottling.

This procedure, if used during stabilization, (especially using the cold refrigeration-type stabilization) will allow the winery to optimize the timing of the bottling process and thereby save energy used in the stabilization process.