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N-EXPERT

ANALYSIS SOFTWARE
USER MANUAL

Rev. 06/2020 IT

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Chapter 1

General description

Data saved inN130, N130-GL and N330 devices can be easily imported on a PC, organized and saved on hard disk and subsequently analyzed, compared, printed.

These operations are possible thanks to the CEMB N-Expert (*Professional Environment for N-Instruments*) software, available for Microsoft Windows 10 operating system.
N-Expert's interface has been carefully studied to make its use intuitive and therefore extremely simple even for inexperienced users.

Note:
In this manual the generic expressions of "instrument N" or "device N" are referred only to the models N130, N130-GL and N330 that can be used with the CEMB N-Expert software (communication, data organization in archive, print, ...). However, it is not possible to use the CEMB N-Expert software with other CEMB tools, even if they are of the N family.

System requirements

Installation and use of the CEMB N-Expert program require:

- Windows 10 **64 bit** operating system
- RAM memory: minimum 8 GB
- Disk space: minimum 40 GB free
- Display resolution: minimum 1366x768 (1920x1080 recommended)

Software installation

Caution:

Complete the software installation before connecting the license key (dongle) to the PC. Connecting the key before completing the driver installation could compromise its operation.

Installation of CEMB N-Expert software must be carried out by launching the *NExpert-setup.exe* software, located on the CD-ROM or USB stick, after logging in with an administrator account of the PC and running it with the option "Run as administrator ", selectable with the right mouse button and then clicking on the button Next >> without changing any option.

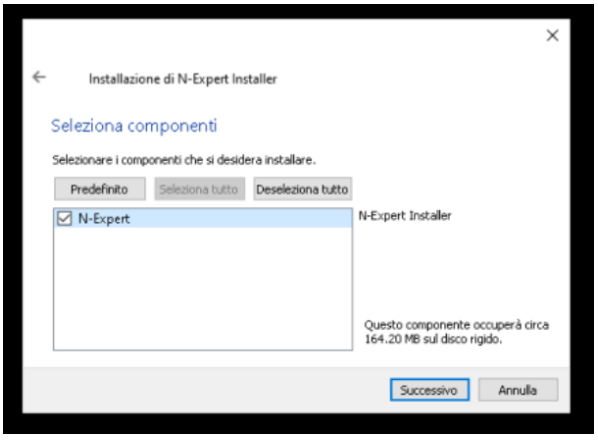
Caution:

Do not use the "Run as another user" option, but log in with an administrator user.

This procedre will install the software in the default program directory.

Caution:

At the step shown in the image below, check that the N-Expert component is selected.



Once the installation wizard is finished, restart your PC.

It is now possible to run the N-Expert program for all users of the PC, even if not administrators.

Updating the software from an already installed version

Caution:

Verify that the license key (dongle) is not connected to the PC before proceeding.

The installation of an update of the CEMB N-Expert software must be carried out by launching the program *mantainancetool.exe*, present in the folder of the program installed on the PC (default path *C:\Program Files\CEMB\N-Expert*), after having done the login with an administrator account of the PC and running it with the "Run as administrator" option, selectable with the right mouse button and then clicking on the button

without changing any option.

Caution:

Do not use the "Run as another user" option, but log in with an administrator user.

Note:

This procedure leads to the uninstallation of the software version present on the PC.
All saved data will **not** be lost.

Once the uninstallation procedure is finished, you can proceed with the installation of the updated program according to the procedure described in the previous chapter (***Software installation***).

License key

The software license is contained in the supplied protection key (dongle), which must be connected to a USB port.

N-Expert can be installed on multiple computers, but can only be used when the protection key (dongle) is connected to the PC.

Note:

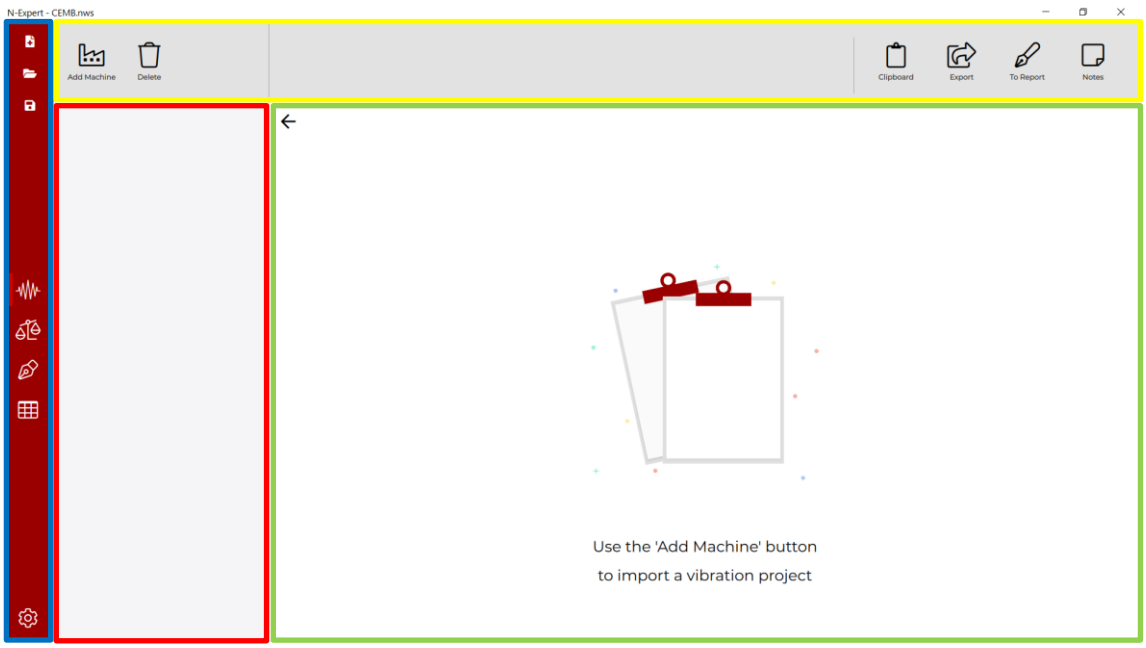
The license key is an advantage compared to protection based on a license file linked to the single computer, as you can move the license between PCs simply by moving the protection key (dongle).

Chapter 2

User interface

The user interface of all N-Expert windows consists of four main areas:

- Ribbon area (blue outline)
- Multifunctional area (yellow outline)
- Data selection area (red outline)
- Graph area (green outline)



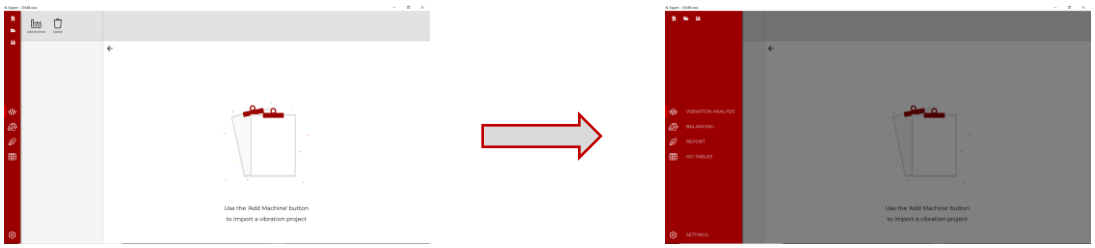
The *ribbon area* remains unchanged in any section of the program you are working on, while the other *macro areas* change according to the work tabs.

Ribbon area

This part of the program allows you to *Create, Open, Save* new analysis (workspace) or report files, enter the program settings menu and select the four different work tabs:

- Vibration analysis
- Balancing
- Report
- Iso tables

By keeping the cursor on this area for more than 3 seconds, it will expand.

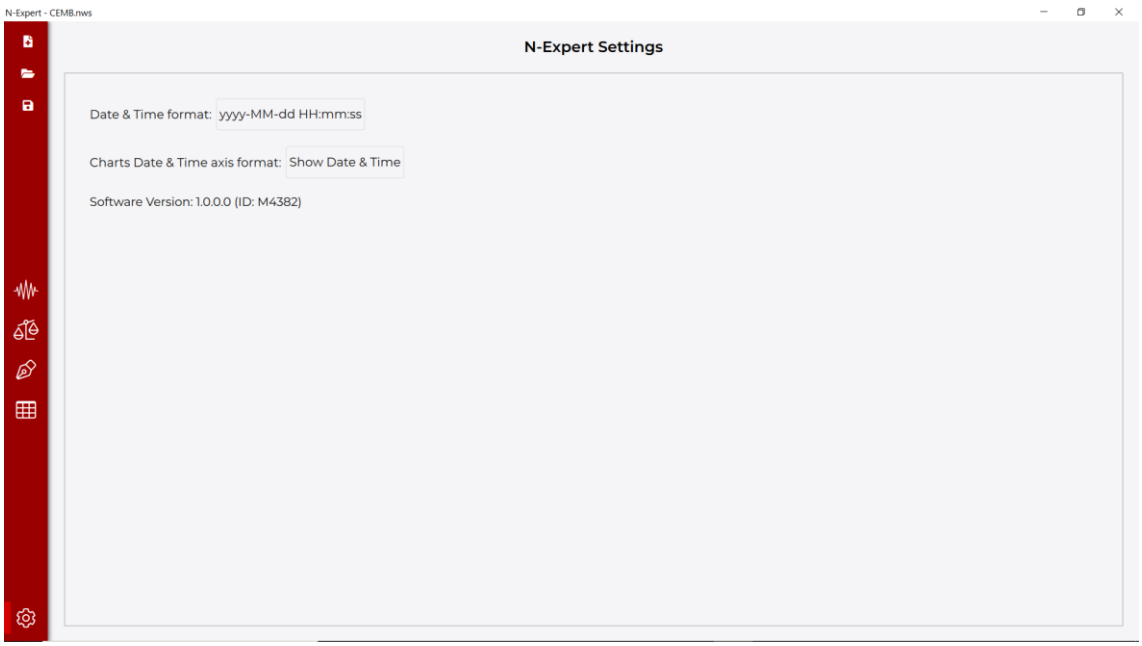


Functions

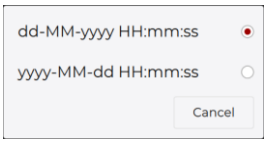
- create a new workspace
- open a previously created workspace
- save the current workspace
- *Vibration analysis* work tab
- *Balancing* work tab
- *Report* work tab
- *ISO tables* work tab
- software settings

Software settings

Clicking the button opens the N-Expert software setting tab where you can select the display format of the date and time information (*Date & Time format*) according to the Italian / English standard, choose whether to display the acquisition time on the graphs data or only the date (*Charts Date & Time axis format*), information regarding the installed version of N-Expert (*Software Version*).



To change the settings it is necessary to click the box (e.g.) under the item of interest (e.g. *Date & Time format*) and then select the format you want from the window that opens, simply with a click.

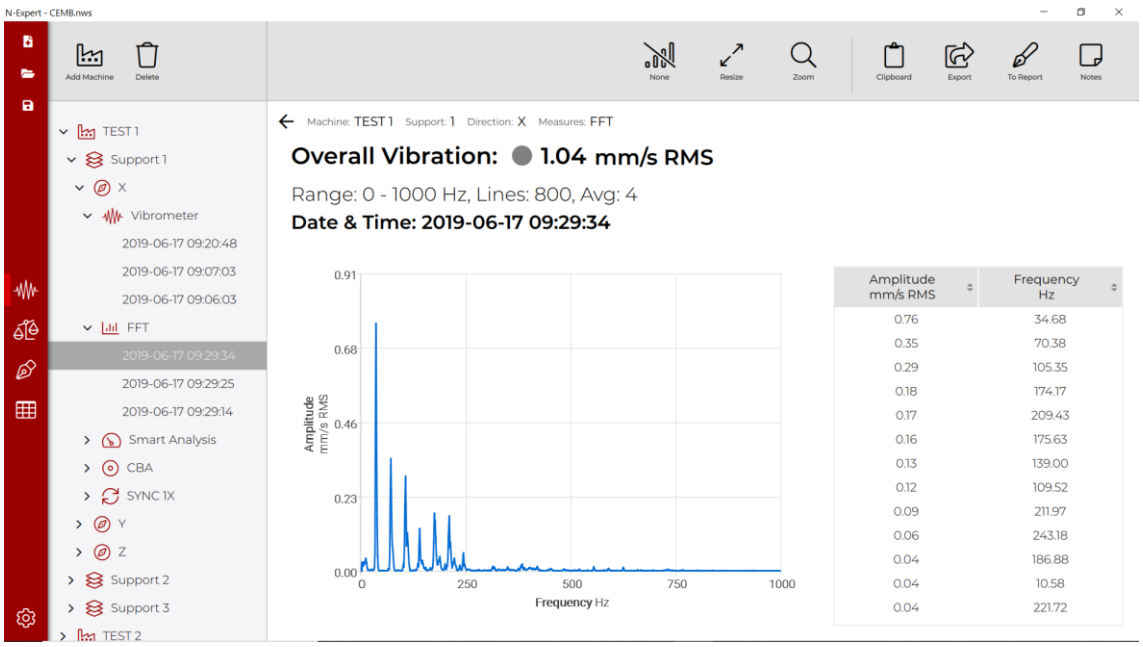


Note:
The settings are automatically saved.

Chapter 3

Vibration analysis

The *Vibration analysis* tab, which can be selected from the ribbon via the dedicated button , allows the display and processing of the data acquired and saved using portable N130, N130-GL and N330 instruments.



Loading measurements

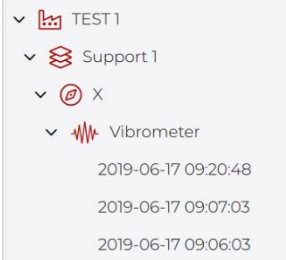
In order to be able to view the data tree structure, it is necessary to load the *.json* files containing the measurements to be processed. For this purpose it is necessary to click on the *Add Machine* button and then select the desired file.

Note:
The *.json* files can be selected indifferently from the instrument memory or from a folder on the PC.

Data structure

Once the *.json* files are loaded, it is possible to surf in a tree diagram containing the measurements made. The tree structure is composed of 4 levels:

1. Machine
2. Support/bearing
3. Measurement diection (X, Y, Z)
4. Type of measurement
    a. Measure



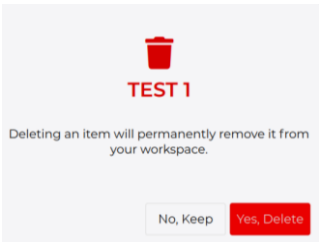
To expand / reduce the branches of the tree diagram just click › / ⌄ or alternatively double click.

Common functions

In the *multifunction* and *graphic area* there are functions that are repeated for all levels. These are described in this chapter in detail.

Delete

The *Delete* function is used to remove the selected level and all the underlying levels. Once the button is clicked, a confirmation window will open to delete the selected one and all the underlying layers.



Caution:

Once data are deleted, they are permanently removed from the workspace. If it is necessary to recover the data, it is required to load the *.json* file again.

Clipboard

The *Clipdboard* function is used to capture the screen of the graphics area and to be able to import it into an external editor (e.g. *Microsoft Word*).

Export

The *Export* function allows you to save the graphics area screen in *.png* format, in any folder on your PC.

To Report

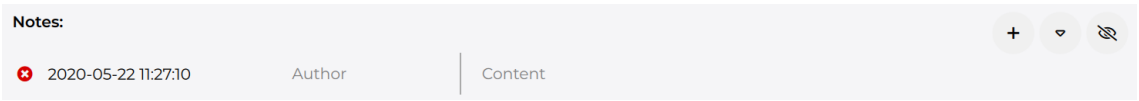
The *To Report* function allows you to capture the graph screen and the notes entered (see next chapter) and import it into the *Report* tab.

Caution:

In order to use this function, it is first necessary to create a report in the appropriate tab (see dedicated *Report* chapter).

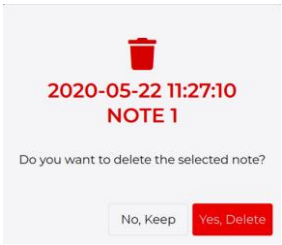
Notes

The *Notes* function allows you to open a window in the graphics area allowing you to insert notes of interest and see the notes previously entered / saved.



Clicking + inserts a new note, identified by the date and time creation. In the provided space Author, you can write the author of the note and in the adjacent box Content it is possible to write the body of the note.

Notes can be deleted by clicking and confirming the operation on the pop-up that appears.



Caution:

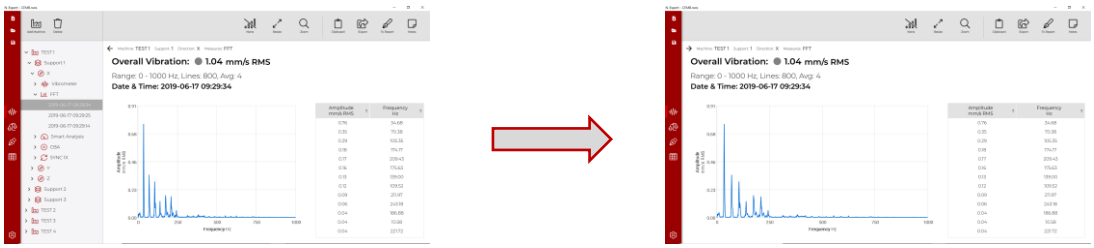
Notes are permanently deleted. They cannot be recovered once deleted.

It is possible to expand the notes area by clicking (e.g. to see more notes) and return it to the original size by clicking .

To close the notes window, click or *Notes* button .

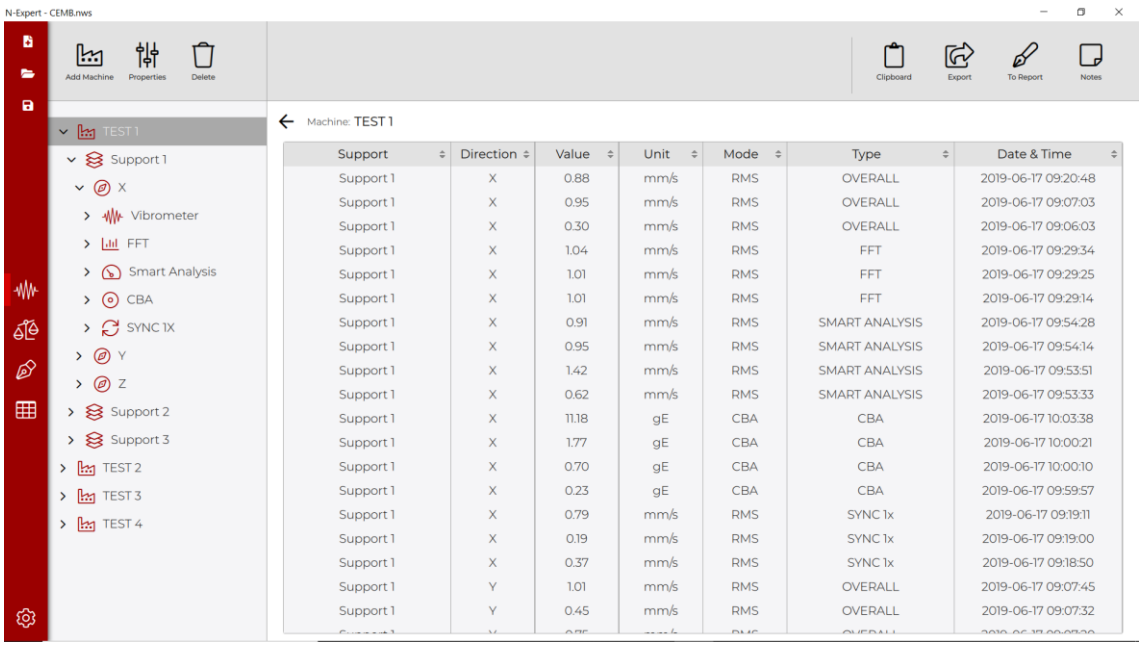
Full screen

Using the *Full screen* function it is possible to expand the *graph area* by hiding the tree diagram. To go back to the tree diagram, just click →.



Machine level

By selecting a *machine level*, the typical screen that appears is the following:



Support	Direction	Value	Unit	Mode	Type	Date & Time
Support 1	X	0.88	mm/s	RMS	OVERALL	2019-06-17 09:20:48
Support 1	X	0.95	mm/s	RMS	OVERALL	2019-06-17 09:07:03
Support 1	X	0.30	mm/s	RMS	OVERALL	2019-06-17 09:06:03
Support 1	X	1.04	mm/s	RMS	FFT	2019-06-17 09:29:34
Support 1	X	1.01	mm/s	RMS	FFT	2019-06-17 09:29:25
Support 1	X	1.01	mm/s	RMS	FFT	2019-06-17 09:29:14
Support 1	X	0.91	mm/s	RMS	SMART ANALYSIS	2019-06-17 09:54:28
Support 1	X	0.95	mm/s	RMS	SMART ANALYSIS	2019-06-17 09:54:14
Support 1	X	1.42	mm/s	RMS	SMART ANALYSIS	2019-06-17 09:53:51
Support 1	X	0.62	mm/s	RMS	SMART ANALYSIS	2019-06-17 09:53:33
Support 1	X	11.18	gE	CBA	CBA	2019-06-17 10:03:38
Support 1	X	1.77	gE	CBA	CBA	2019-06-17 10:00:21
Support 1	X	0.70	gE	CBA	CBA	2019-06-17 10:00:10
Support 1	X	0.23	gE	CBA	CBA	2019-06-17 09:59:57
Support 1	X	0.79	mm/s	RMS	SYNC 1x	2019-06-17 09:19:11
Support 1	X	0.19	mm/s	RMS	SYNC 1x	2019-06-17 09:19:00
Support 1	X	0.37	mm/s	RMS	SYNC 1x	2019-06-17 09:18:50
Support 1	Y	1.01	mm/s	RMS	OVERALL	2019-06-17 09:07:45
Support 1	Y	0.45	mm/s	RMS	OVERALL	2019-06-17 09:07:32

Specific functions

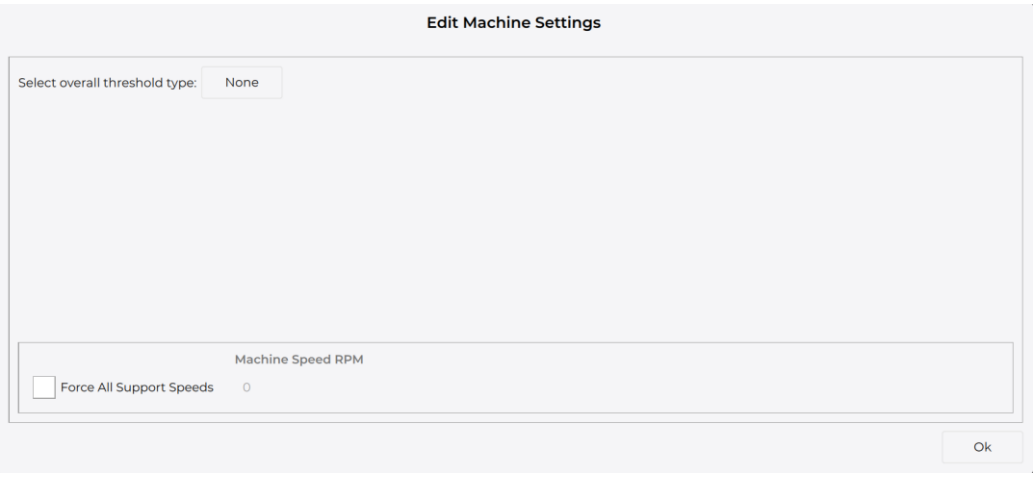
In the *multifunction area*, at the machine level, the new *Properties* function appears.

Properties

Properties function opens a window in the *graph area* that allows you to:

- set control thresholds according to ISO standards and allows you to create customized ones.
- enter the rotation speed, making it uniform on all the machine supports.

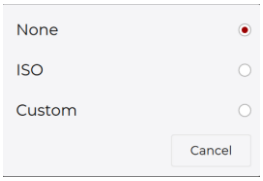
To save the desired settings it is necessary to click Ok.



By default, the *machine level* setting is as in the image above: no threshold set and no speed.

Note:
All the options in the *Properties* window are made by a simple click on the choice you want to make in the dialog pop-ups.

By clicking on the button None under *Select overall threshold type*, it is possible to select the type of control threshold to be inserted according to ISO standards or customized thresholds (*Costum*).



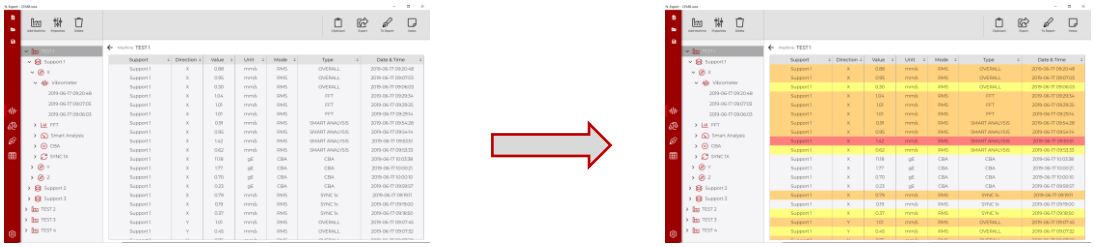
By selecting ISO, the option to choose from **13** ISO standards will appear in the dialog box via the button Press to choose under *Select Target ISO*.
Based on the ISO standard selected, the group to which the machine belongs will be requested and (if the standard requires it) the type of base on which it is positioned. The choice of these options takes place via the button Press to choose in the respective *Select group* and *Select basement* items.

By selecting Custom, the option to choose from the previously created custom thresholds via the option Press to choose or to create new ones via the button New will appear. Once you have entered the name you want to assign and have confirmed, with the button + you can choose the unit of measurement for the threshold: once you have chosen the unit of measurement, you can set up to 4 control values.

Note:
For the same group of thresholds, several control values can be added in different units of measurement.

In order to eliminate the control values it is necessary to click .

Once the control values (*ISO/Costum*) have been set, the measurements shown in the *graph area* will be highlighted according to the thresholds.
An example is below.



To add the rotation speed information, it is necessary to flag the *Force all support speed* option and enter the speed in the appropriate box.

Caution:

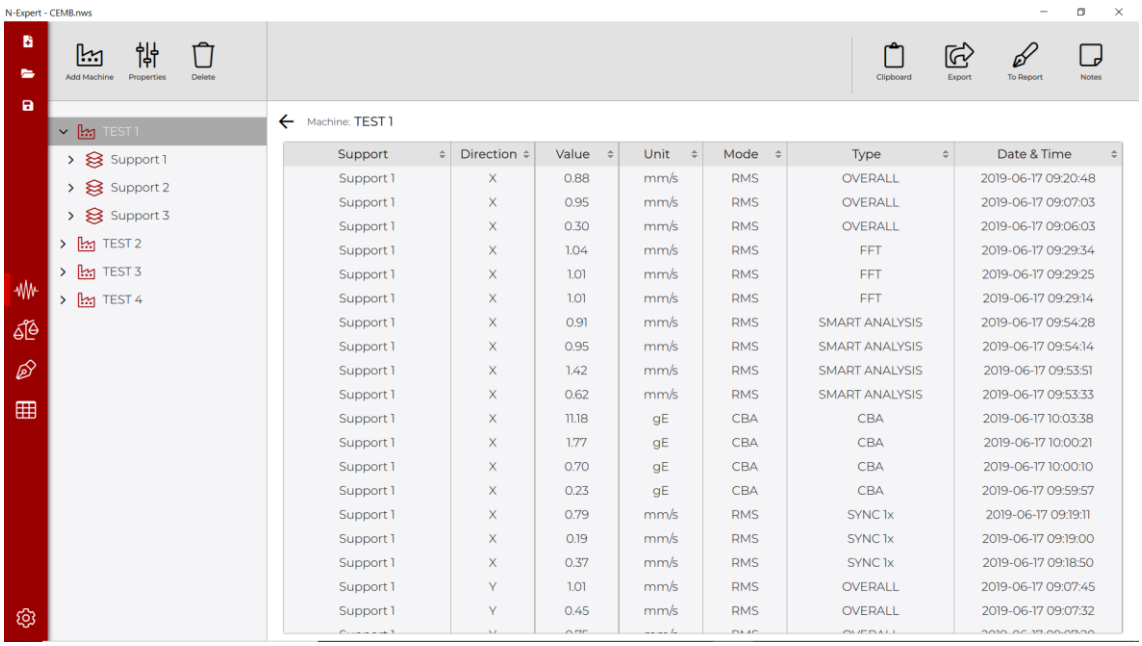
Once the rotation speed information has been added, it will only be possible to modify and not delete it.

Below is an example of adding speed (e.g. 3600 rpm) as information on the display of *Vibrometer* data.

Graph area

Inside the *graph area*, at the *machine level*, you will find all the saved measurements, categorized in a convenient table based on:

- support / bearing
- direction of measurement
- vibration value
- unit of measurement
- measurement mode
- type of measurement
- date and time



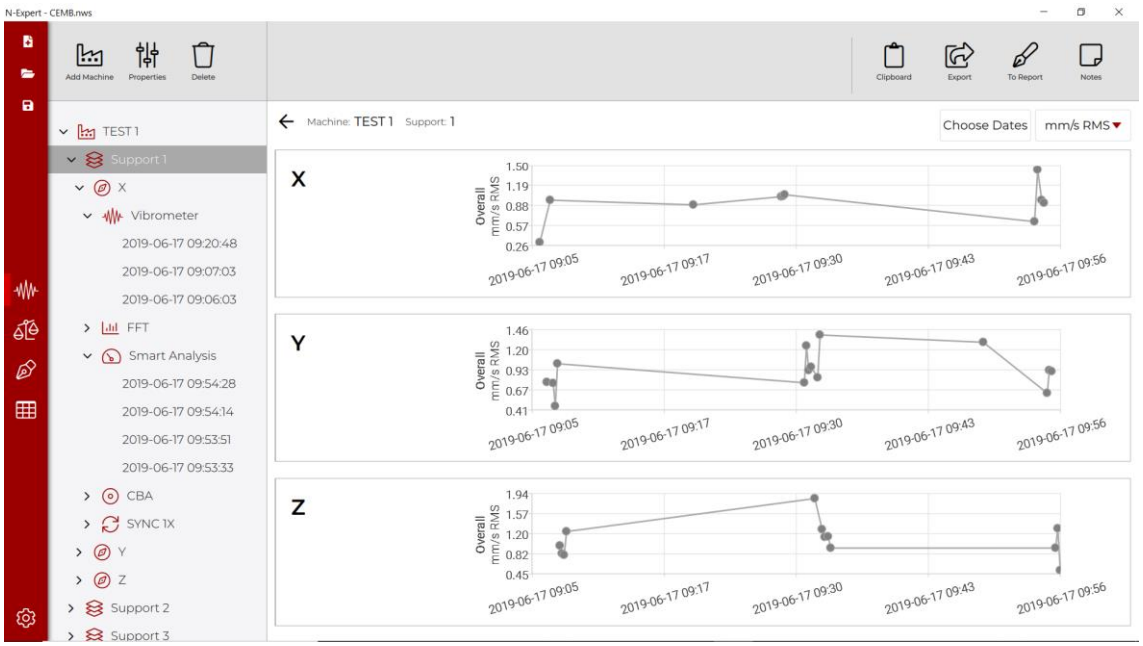
Support	Direction	Value	Unit	Mode	Type	Date & Time
Support 1	X	0.88	mm/s	RMS	OVERALL	2019-06-17 09:20:48
Support 1	X	0.95	mm/s	RMS	OVERALL	2019-06-17 09:07:03
Support 1	X	0.30	mm/s	RMS	OVERALL	2019-06-17 09:06:03
Support 1	X	1.04	mm/s	RMS	FFT	2019-06-17 09:29:34
Support 1	X	1.01	mm/s	RMS	FFT	2019-06-17 09:29:25
Support 1	X	1.01	mm/s	RMS	FFT	2019-06-17 09:29:14
Support 1	X	0.91	mm/s	RMS	SMART ANALYSIS	2019-06-17 09:54:28
Support 1	X	0.95	mm/s	RMS	SMART ANALYSIS	2019-06-17 09:54:14
Support 1	X	1.42	mm/s	RMS	SMART ANALYSIS	2019-06-17 09:53:51
Support 1	X	0.62	mm/s	RMS	SMART ANALYSIS	2019-06-17 09:53:33
Support 1	X	11.18	gE	CBA	CBA	2019-06-17 10:03:38
Support 1	X	1.77	gE	CBA	CBA	2019-06-17 10:00:21
Support 1	X	0.70	gE	CBA	CBA	2019-06-17 10:00:10
Support 1	X	0.23	gE	CBA	CBA	2019-06-17 09:59:57
Support 1	X	0.79	mm/s	RMS	SYNC 1x	2019-06-17 09:19:11
Support 1	X	0.19	mm/s	RMS	SYNC 1x	2019-06-17 09:19:00
Support 1	X	0.37	mm/s	RMS	SYNC 1x	2019-06-17 09:18:50
Support 1	Y	1.01	mm/s	RMS	OVERALL	2019-06-17 09:07:45
Support 1	Y	0.45	mm/s	RMS	OVERALL	2019-06-17 09:07:32

By clicking on each column you can order the measurements according to your need.

Note:
The left columns lead over the right ones.

Level of supports/bearings

By selecting a *supports/bearings level*, the type screen that appears is the following:



Specific functions

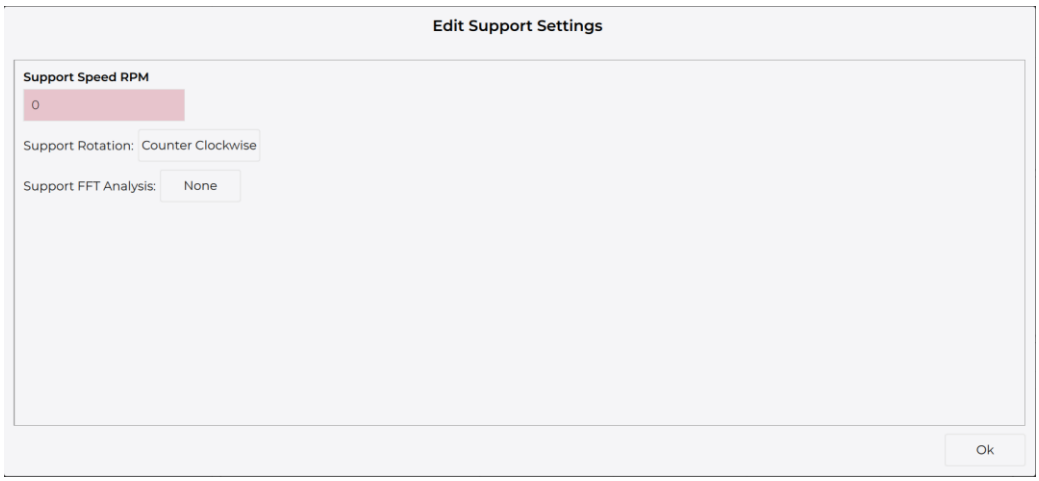
In the *multifunction area*, at the machine level, the new *Properties* function appears.

Properties

The *Properties* function opens a window in the *graph area* which allows you to:

- set a specific rotation speed for the support/bearing
- set the direction of rotation
- enable/disable the advanced analysis of the FFT (available from the next release)

To save the desired settings you need to click Ok.



By default, the setting of the *support/bearing level* is as in the image above: no threshold set and no speed.

Note:
All the options in the *Properties* window are made by a simple click on the choice you want to make in the dialog pop-ups.

To add the rotation speed information, just enter the speed in the appropriate *Support speed RPM* box.

Caution:
Once the rotation speed information has been added, it will only be possible to modify and not delete it.

An example is reported below by adding speed (e.g. 3600 rpm) as information on the display of *Vibrometer* data.

0.89 mm/s RMS
Main Peak
0.81 mm/s RMS - 33.97 Hz
Overall: 0 - 1000 Hz, Lines: 800, Avg: 4
Date & Time: 2019-06-17 09:20:48

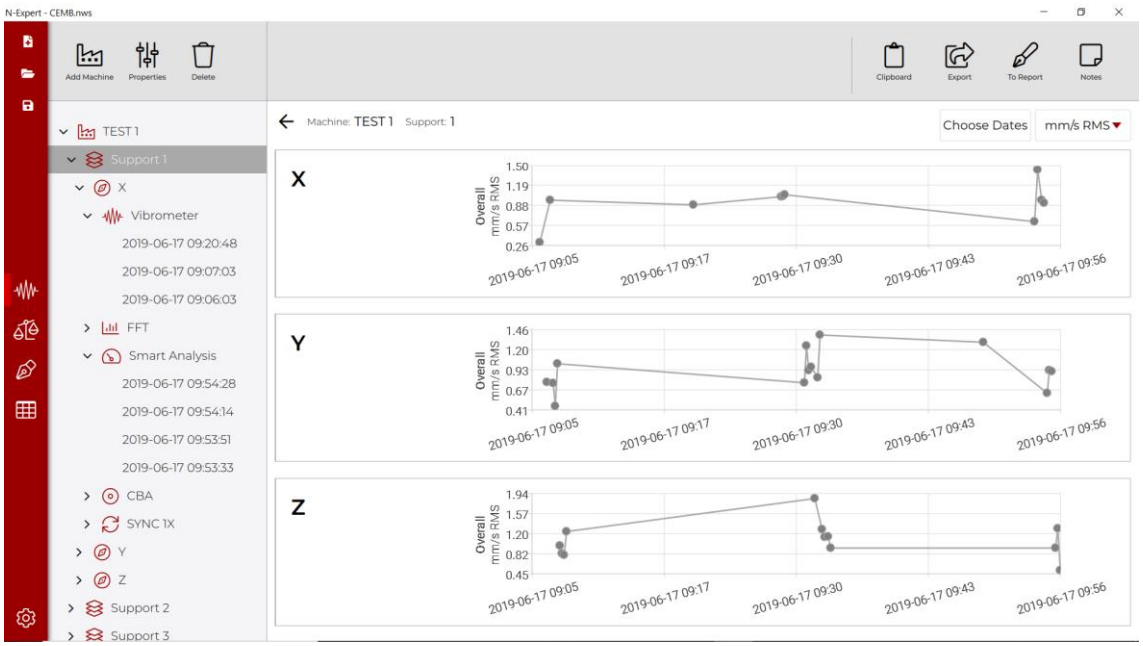
0.89 mm/s RMS
Main Peak
0.81 mm/s RMS - 33.97 Hz
Overall: 0 - 1000 Hz, Lines: 800, Avg: 4
Date & Time: 2019-06-17 09:20:48
Rotation Speed: 3600 RPM

By clicking Counter Clockwise you can change the direction of rotation *Counter Clockwise* or *Clockwise*, displayed in the *SYNC 1X* function.

From the next release, by clicking None it will be possible to activate the advanced analysis in the FFT measurement type.

Graph area

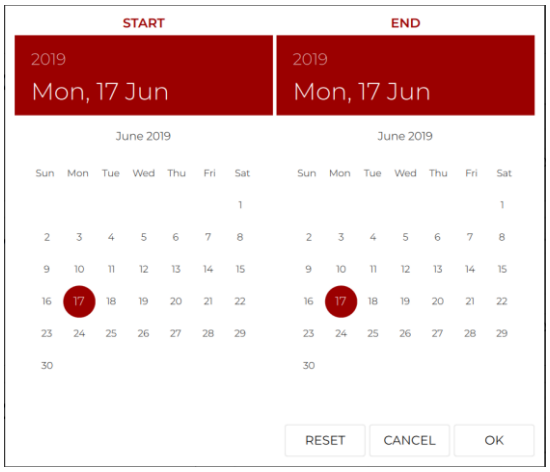
Inside the *graph area*, at the *support/bearing level*, it possible to view the trend of the Overall measurements (*Vibrometer, FFT, Smart Analysis*) made in the three possible directions (X, Y, Z), in the date range and in the desired unit of measurement.



By default the setting of the *support/bearing level* is as in the image above: the measurements in the most numerous unit of measurement (e.g. *mm/s RMS*) are displayed in an autorange of dates so as to include all the measurements made/saved.

Note:
If there are no measures in one direction, no trend graph will appear for that direction of measurement.

By clicking Choose Dates it is possible to choose the date range (*Start* and *End* date) in which to display the measurements. To confirm your choice just click OK. To cancel the selection, click CANCEL. To return to the initial autorange click RESET.

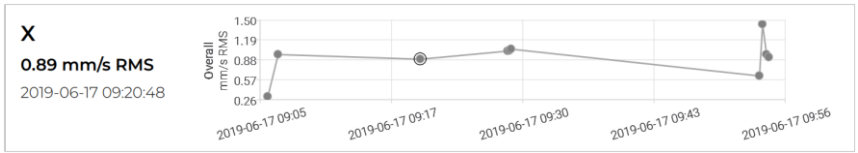


By clicking on the set measurement unit (e.g. mm/s RMS) it is possible to select the other measurement units from a drop-down menu and view their trend.

Caution:

The units of measurement available in the drop-down menu are those used in the field when measurements have been made / saved in the *Vibrometer, FFT* and *Smart Analysis* modes.

By clicking on a point on the graph , the info of the selected measurement will appear on the left of the graph (vibration value and date on which it was acquired).



Measurement direction level (X, Y, Z)

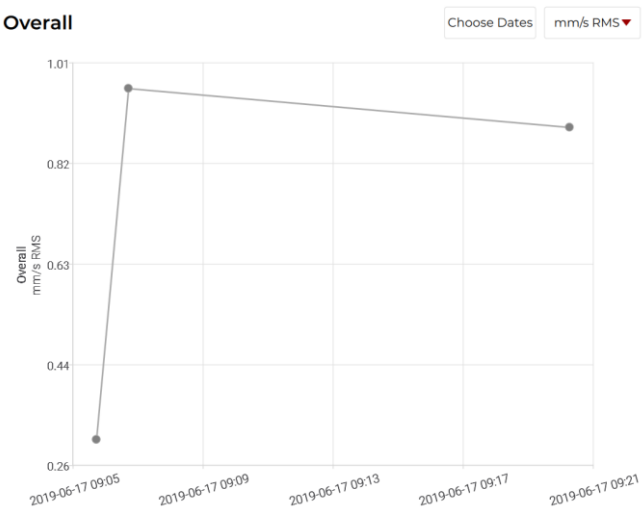
In the tree diagram, by expanding the *measurement direction*, it is possible to display what type of measurements were made among:

- Vibrometer
- FFT
- Smart Analysis
- CBA
- Sync 1x

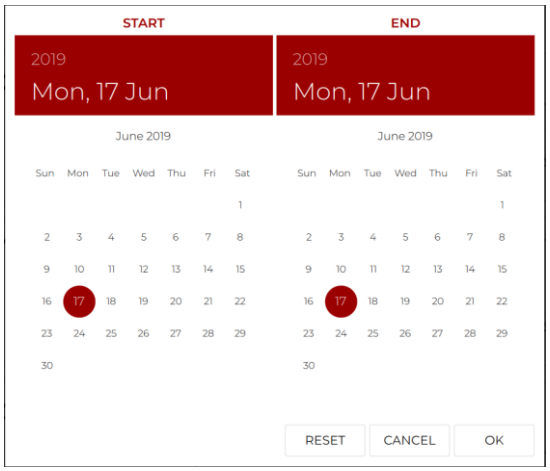
> ***Caution:***
>
> The types of measurements available in the tree diagram are those used in the field when measurements were made/saved.

Type of measurement level

At the *Type of measurement level*, the measurements in the most numerous unit of measurement (e.g. *mm/s RMS*) and in an autorange of dates are displayed so as to include all the measurements, in the type of measurement selected.



By clicking Choose Dates it is possible to choose the date range (*Start* and *End* date) in which to display the measurements. To confirm your choice just click OK. To cancel the selection, click CANCEL. To return to the initial autorange click RESET.



By clicking on the set measurement unit (e.g. mm/s RMS) it is possible to select the other measurement units from a drop-down menu and view their trend.

Caution:

The units of measurement available in the drop-down menu are those used in the field when measurements have been made / saved in the *Vibrometer, FFT* and *Smart Analysis* modes.

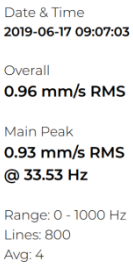
By clicking on a point on the graph, the info of the selected measurement will appear on the left of the graph (vibration value and date on which it was acquired).

Vibrometro

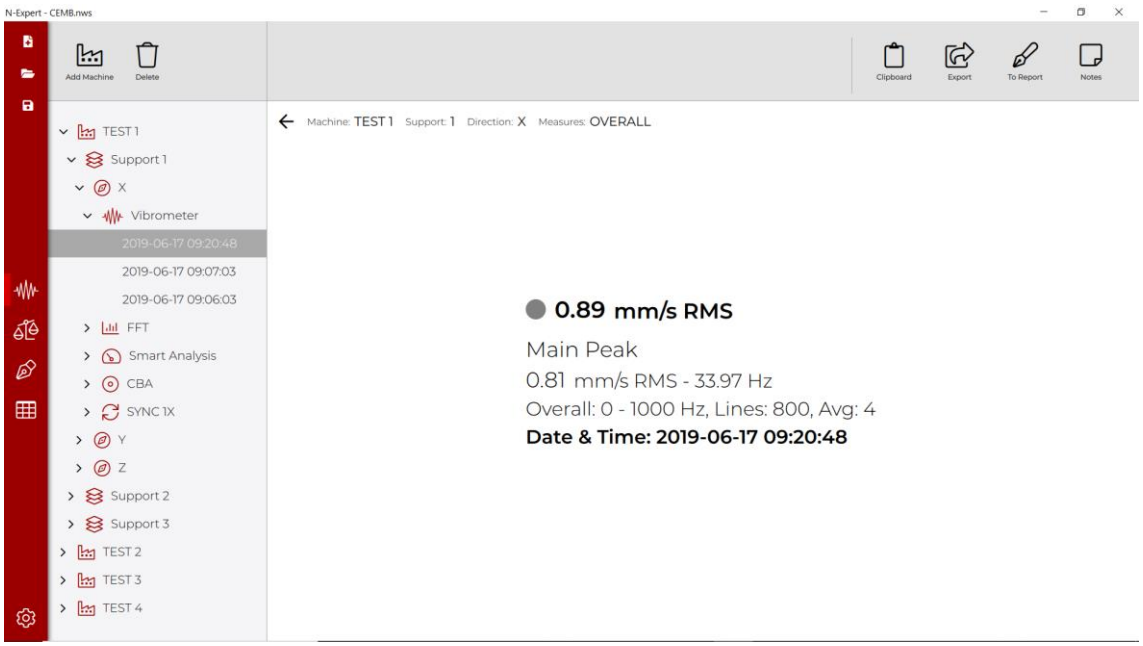
The trend of the *Vibrometer* function is displayed as described in the *Level of measurement type* chapter.

The information that appears by clicking on a point on the graph is:

- Date and time
- Overall value
- Main peak (amplitude, phase and frequency)
- Measurement settings (range, lines, averages)



By clicking on a measurement (e.g. 2019-06-17 09:06:03) the information displayed is the same as above but in stand alone for the specific measurement.



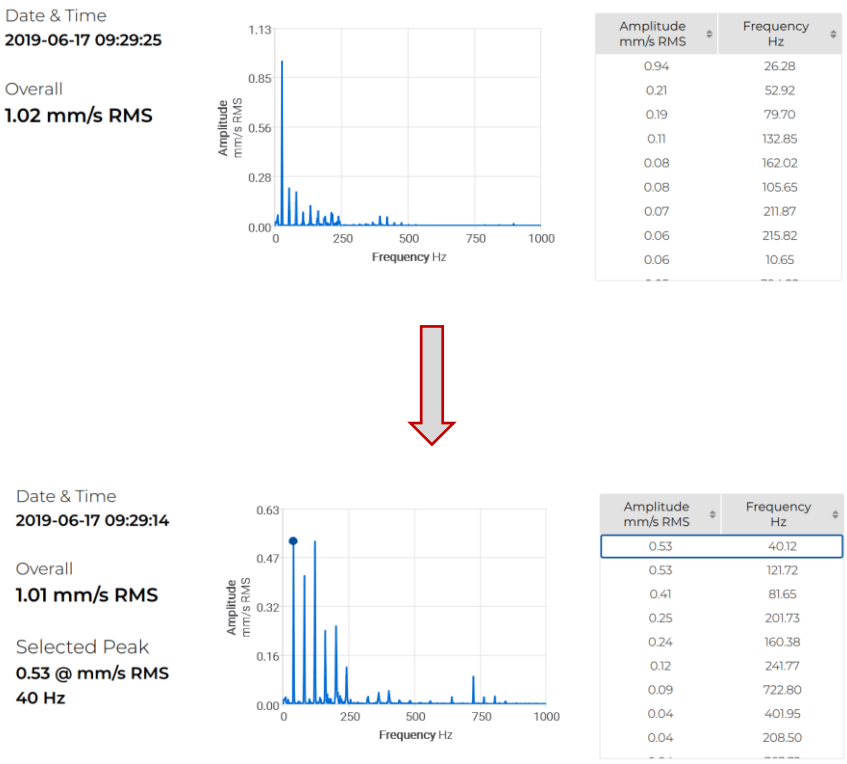
FFT

The trend of the *FFT* function is displayed as described in the *Measurement type level*.

The information that appears by clicking on a point on the graph ● are:

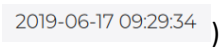
- Date and time
- Overall value
- Measurement spectrum (FFT)
- List of main peaks

By clicking an amplitude or a frequency on the peaks list, an indicator appears on the graph and to the left of it is added to the information the selected peak (Selected Peak).

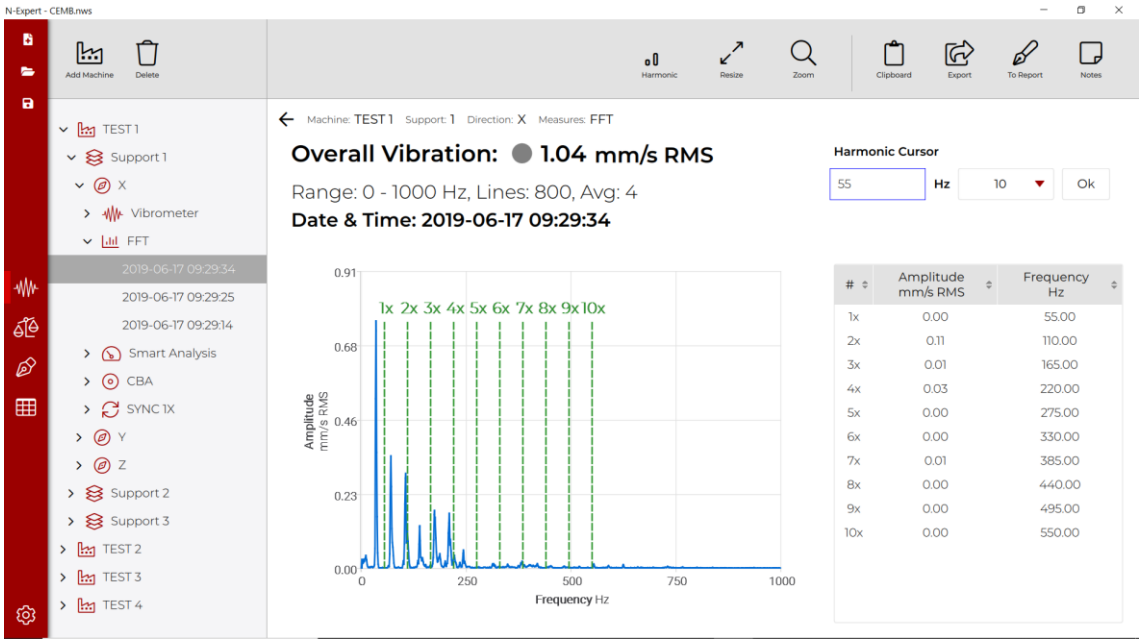


Two new commands appear in the *multifunction area*:

- *Zoom*: indicates that on the graph, clicking with the mouse and dragging, it zooms into the selected area. By clicking on the button you change the mode (see next point).
- *Pan*: indicates that on the graph, clicking with the mouse and dragging, the graph itself moves. By clicking on the button you change the mode (see previous point).
- *Resize*: by clicking the *Resize* function, the graph self-regulates, as in the default condition when you click on the graph point.

By clicking on a measurement (e.g. ) the information displayed is the same as above but in stand alone for the specific measurement with the addition of the measurement parameters (range, lines, averages) and the possibility of inserting a cursor on the graph for the peaks search:

- *None*: by default the graph is set without cursor for the peak search. Click on the button to change the mode (see next point).
- *Single*: when this indicator appears, you can enter the frequency to be searched in the *Single Cursor* space and then pressing a cursor will appear on the graph. Click on the button to change the mode (see next point).
- *Harmonic*: when this indicator appears, you can enter the frequency to be searched in the appropriate *Harmonic Cursor* space and in the specific box indicate the number of harmonics to search (from a minimum of 2 to a maximum of 10). By clicking , the harmonic cursors will appear on the graph and in the peak list only the searched frequency and its harmonics will be shown. Click on the button to change the mode (see first point).

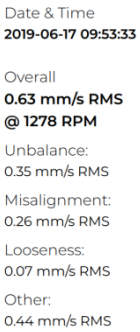

N-Expert - CEMB.nws
Add Machine
Delete
Harmonic
Resize
Zoom
Clipboard
Export
To Report
Notes
TEST 1
Support 1
X
Vibrometer
FFT
2019-06-17 09:29:34
2019-06-17 09:29:25
2019-06-17 09:29:14
Smart Analysis
CBA
SYNC 1X
Y
Z
Support 2
Support 3
TEST 2
TEST 3
TEST 4
Machine: TEST 1 Support: 1 Direction: X Measures: FFT
Overall Vibration: 1.04 mm/s RMS
Range: 0 - 1000 Hz, Lines: 800, Avg: 4
Date & Time: 2019-06-17 09:29:34
Harmonic Cursor
55
Hz
10
Ok
1x 2x 3x 4x 5x 6x 7x 8x 9x 10x
Amplitude mm/s RMS
0.91
0.68
0.46
0.23
0.00
0
250
500
750
1000
Frequency Hz
Amplitude mm/s RMS Frequency Hz
1x 0.00 55.00
2x 0.11 110.00
3x 0.01 165.00
4x 0.03 220.00
5x 0.00 275.00
6x 0.00 330.00
7x 0.01 385.00
8x 0.00 440.00
9x 0.00 495.00
10x 0.00 550.00

Smart Analysis

The trend of the Smart Analysis function is displayed as described in the *Measurement type level*.

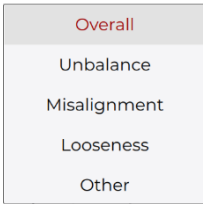
The information that appears by clicking on a point on the graph are:

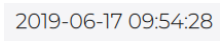
- Date and time
- Overall value
- Unbalance
- Misalignment
- Looseness
- Other causes

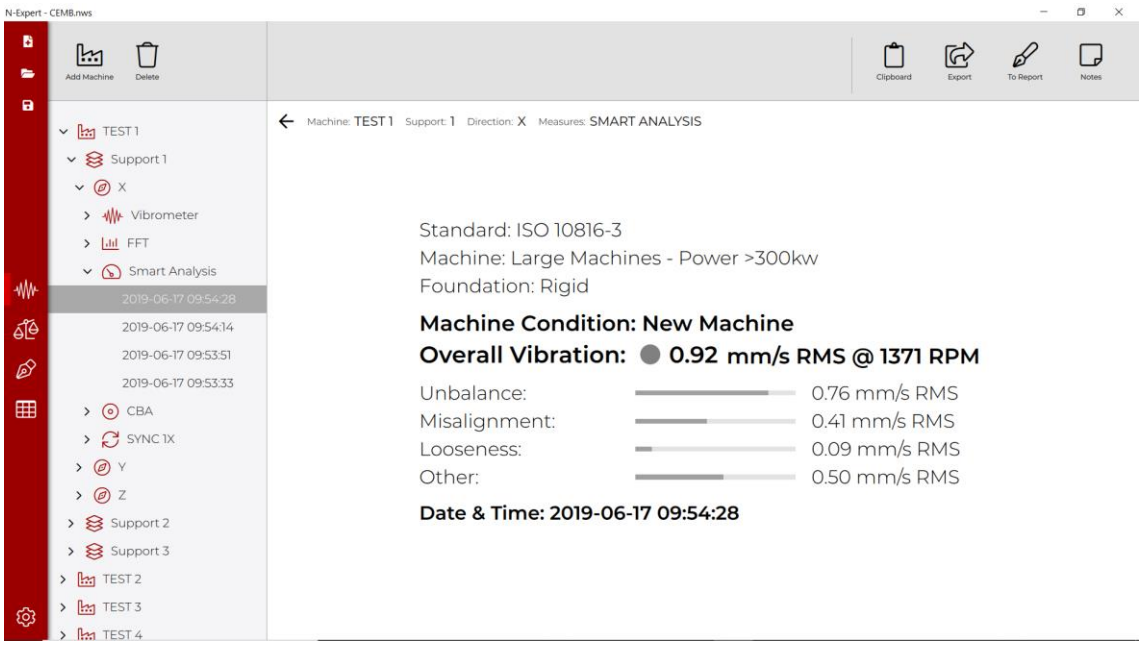


It is also possible to choose the type of trend to be displayed by clicking the drop-down menu among:

- Overall
- Unabalance
- Misalignment
- Looseness
- Other



By clicking on a measure (e.g. ) the information displayed is the same as above and in addition the ISO standard and the category to which it belongs are specified. The screen also shows the condition of the machine, assessed according to the criteria of the legislation.


N-Expert - CEMB.nws
Add Machine
Delete
Clipboard
Export
To Report
Notes
TEST 1
Support 1
X
Vibrometer
FFT
Smart Analysis
2019-06-17 09:54:28
2019-06-17 09:54:14
2019-06-17 09:53:51
2019-06-17 09:53:33
CBA
SYNC 1X
Y
Z
Support 2
Support 3
TEST 2
TEST 3
TEST 4
Machine: TEST 1 Support: 1 Direction: X Measures: SMART ANALYSIS
Standard: ISO 10816-3
Machine: Large Machines - Power >300kw
Foundation: Rigid
Machine Condition: New Machine
Overall Vibration: 0.92 mm/s RMS @ 1371 RPM
Unbalance: 0.76 mm/s RMS
Misalignment: 0.41 mm/s RMS
Looseness: 0.09 mm/s RMS
Other: 0.50 mm/s RMS
Date & Time: 2019-06-17 09:54:28

CBA

The trend of the *CBA* function is displayed as described in the *Measurement type level*.

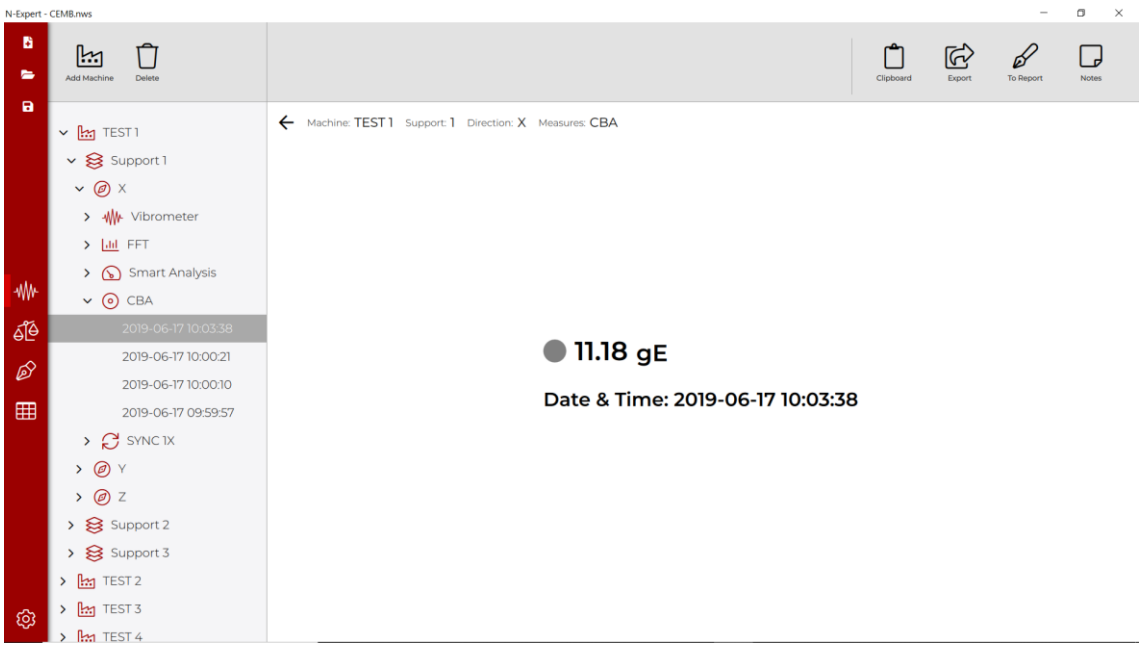
The information that appears by clicking on a point on the graph ● are:

- Date and time
- CBA value

Date & Time
2019-06-17 10:00:21

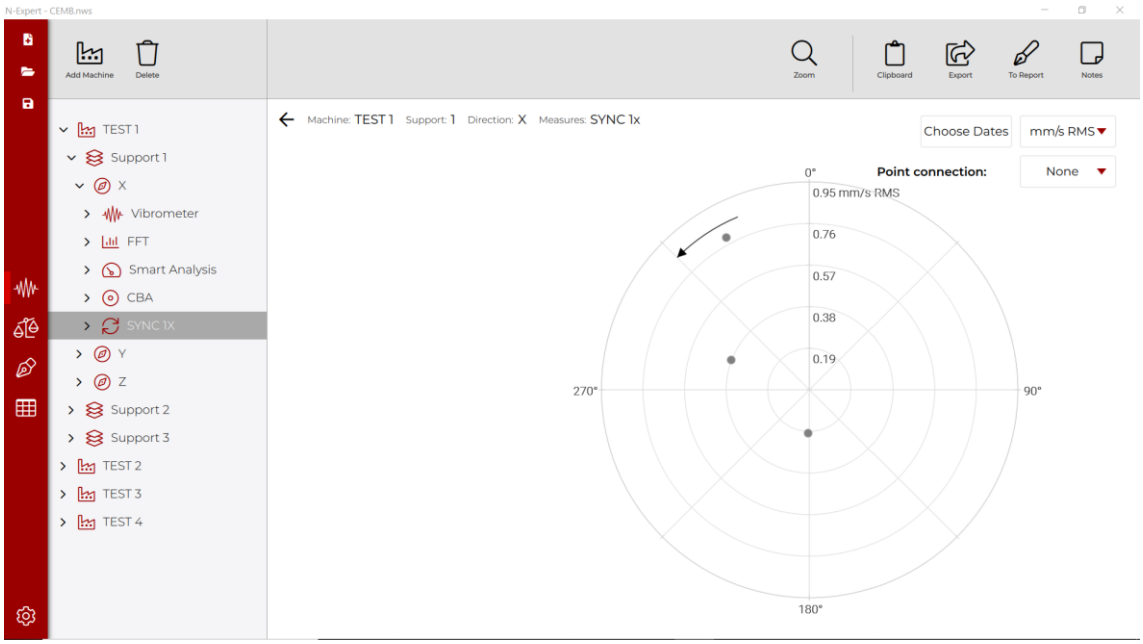
Value
1.78 gE CBA

By clicking on a measurement (e.g. 2019-06-17 10:03:38) the information displayed is the same as above but in stand alone for the specific measurement.



SYNC 1X

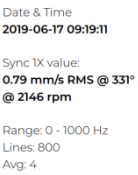
Within the *Sync 1X* function, the main graph is no longer a trend but a polar diagram, with the direction of rotation highlighted (set with *Properties* as described in the chapter *Supports/bearings level*).



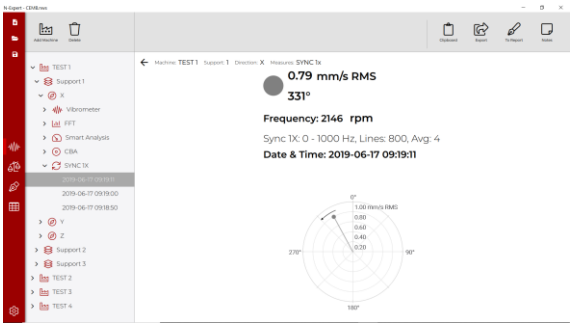
Using the button None under *Point connection*, it is possible to connect the points to each other through broken lines (Lines) or curves (Splines).

The information that appears by clicking on a point on the graph are:

- Date and time
- 1x measurement value (amplitude, phase and frequency)
- Measurement settings (range, lines, averages)



By clicking on a measurement (e.g. 2019-06-17 09:19:11) the information displayed is the same as above but in stand alone for the specific measurement.

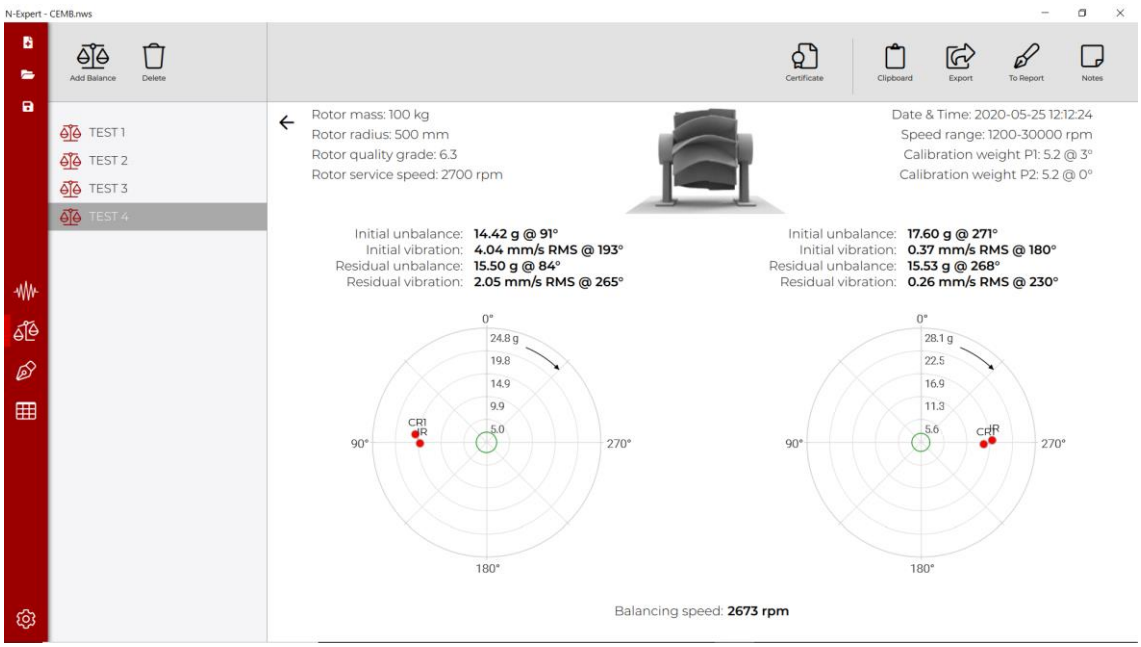


38- Vibration analysis

Chapter 4

Balancing

The *Balancing* tab, selectable from the ribbon via the dedicated button , allows the display and processing of the balances acquired and saved by N330 instrumentation.



The information shown on this screen is:

- initial state information (*Initial unbalance/Initial vibration*)
- final state information (*Residual unbalance/Residual vibration*)
- polar graph showing the information
- direction of rotation of the machine
- balancing speed
- weight and position of the test mass
- date and time
- if the rotor settings mode was activated during balancing, the information on dedicated function is also reported.

Loading measurements

In order to be able to view the data, you need to load the *.json* files containing the balances you want to view. To do this, you need to click on the *Add Balance* button and then select the file you want to analyze.

> ***Note:***
> The *.json* files can be selected indifferently from the instrument memory or in a folder on the PC.

Data structure

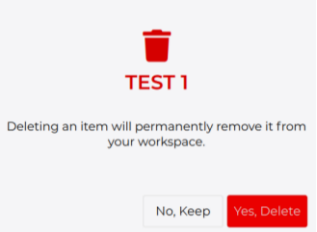
Once the *.json* files have been loaded, you can navigate in a diagram containing the balances made.

Functions

In this chapter are described the *Balancing* tab function.

Delete

The *Delete* function is used to remove the selected level and all the underlying levels. Once the button is clicked, a confirmation window will open to delete the selected one and all the underlying layers.



Caution:

Once data are deleted, they are permanently removed from the workspace. If it is necessary to recover the data, it is required to load the *.json* file again.

Clipboard

The *Clipdboard* function is used to capture the screen of the graphics area and to be able to import it into an external editor (e.g. *Microsoft Word*).

Export

The *Export* function allows you to save the graphics area screen in *.png* format, in any folder on your PC.

To Report

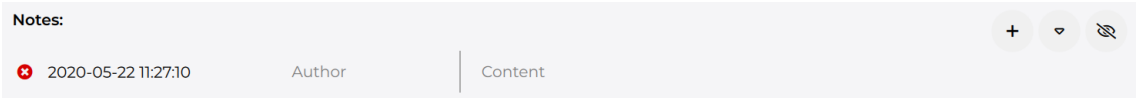
The *To Report* function allows you to capture the graph screen and the notes entered (see next chapter) and import it into the *Report* tab.

Caution:

In order to use this function, it is first necessary to create a report in the appropriate tab (see dedicated *Report* chapter).

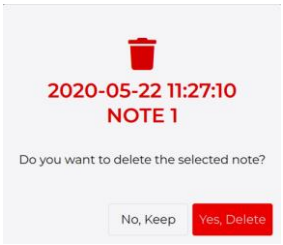
Notes

The *Notes* function allows you to open a window in the graphics area allowing you to insert notes of interest and see the notes previously entered / saved.



Clicking + inserts a new note, identified by the date and time creation. In the provided space Author, you can write the author of the note and in the adjacent box Content it is possible to write the body of the note.

Notes can be deleted by clicking and confirming the operation on the pop-up that appears.



Caution:

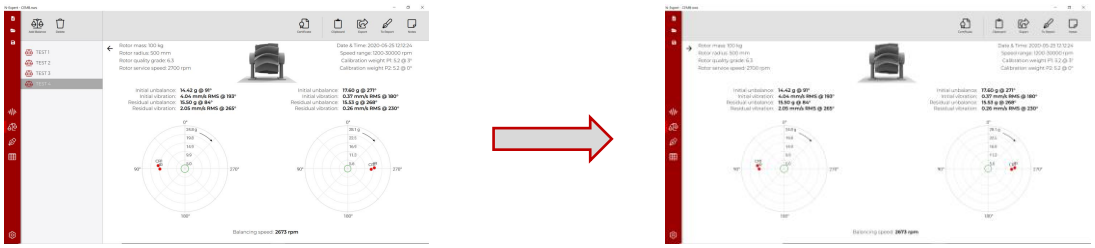
Notes are permanently deleted. They cannot be recovered once deleted.

It is possible to expand the notes area by clicking (e.g. to see more notes) and return it to the original size by clicking .

To close the notes window, click or *Notes* button .

Full screen

Using the *Full screen* function it is possible to expand the *graph area* by hiding the tree diagram. To go back to the tree diagram, just click →.



Certificate

By clicking , a dialog box requires the path where to find the balance reports *Certificate Template File* Path (default:*Program Files**CEMB**N-Expert*) and the path after saving the pdf of the report *Print Out Pdf* Path (default :*Program Files**CEMB**N-Expert*). Press Print certificate to save the file in the established path.

By default there are 2 report templates in the program: one for static balancing (*static_balancing_report.html*) and one for dynamic balancing (*dynamic_balancing_report.html*).

To create customized report templates, HTML editors (e.g. *KompoZer*) must be used. The following are the numeric codes that the *N-Expert* software automatically replaces with the corresponding information.

Caution:

For the replacement to take place correctly, use only the codes shown below.

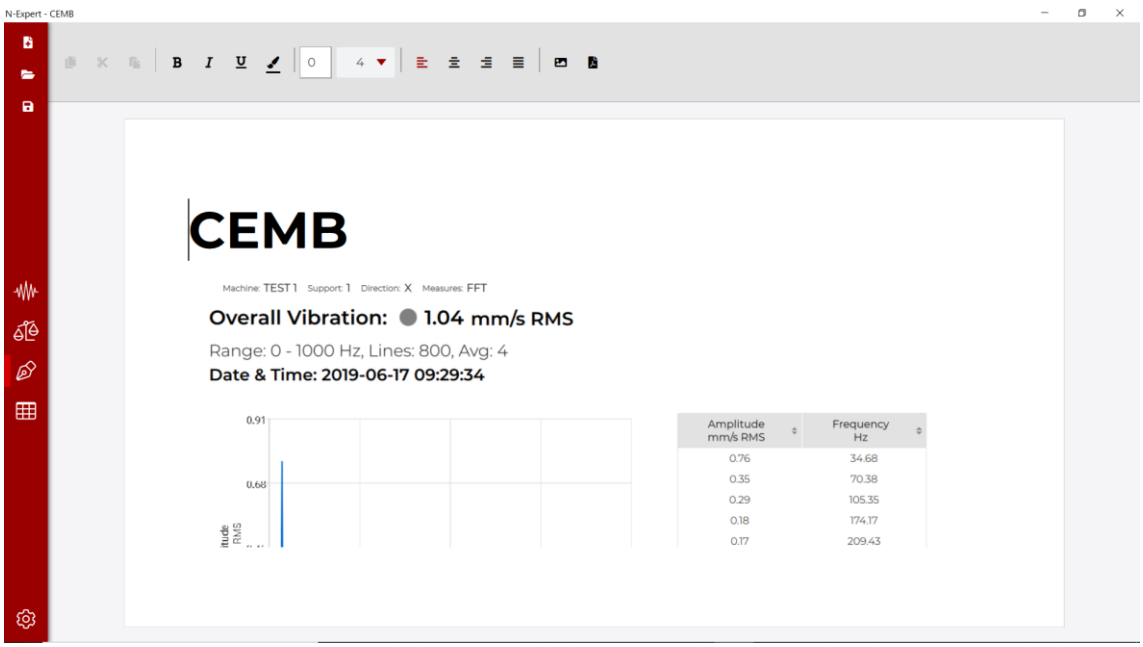
#1#	Current date
#2#	Current time
#3#	Note number 1 added to the measure
#6#	Name of the measure (it is the name of the project in the list)
#11#	Vibration unit mode
#19#	Note number 2 added to the measure
#20#	Note number 3 added to the measure
#50#	Speed measurement unit
#51#	Date on which the measurement was made
#61#	Time at which the measurement was made
#100#	Rotating mass
#101#	Rotating radius
#102#	Balancing degree
#103#	Service speed
#104#	Tolerance P1

#105#	P2 tolerance
#311#	Residual vibration on P1
#312#	Residual vibration on P2
#321#	Remaining vibration phase on P1
#322#	Residual vibration phase on P2
#351#	Vibration measurement unit
#601#	Initial unbalance value in the P1 plane (in U units)
#602#	Phase of initial unbalance on the P1 plane (in degrees °)
#603#	Value of the initial vibration in the P1 plane
#604#	Phase of the initial vibration on the P1 plane (in degrees °)
#605#	Current (final) imbalance value on the P1 plane (in U units)
#606#	Current (final) imbalance phase on the P1 plane (in degrees °)
#607#	Value of the initial unbalance on the P2 plane (in U units)
#608#	Initial unbalance phase on the P2 plane (in degrees °)
#609#	Value of the initial vibration in the P2 plane
#610#	Initial vibration phase on the P2 plane (in degrees °)
#611#	Current (final) imbalance value on the P2 plane (in U units)
#612#	Current (final) imbalance phase on the P2 plane (in degrees °)
#613#	Balancing speed

Chapter 5

Report

The *Report* tab, selectable from the ribbon via the dedicated button , allows the creation of customizable reports.



Functions

The possible functions of the *Report* tab correspond to those of any editor. Below are the functions created specifically for the *N-Expert* software.

- create a new report
- open a previously created report
- save the current report
- save the report in *.pdf*
- load an image into the report

As widely described in the *Functions/To Report* chapters, the graph screens (in the form of an image) and the notes can be imported into the report by the button .

By selecting an image, two other functions will be available:

- increases the size of the image
- decreases the size of the image

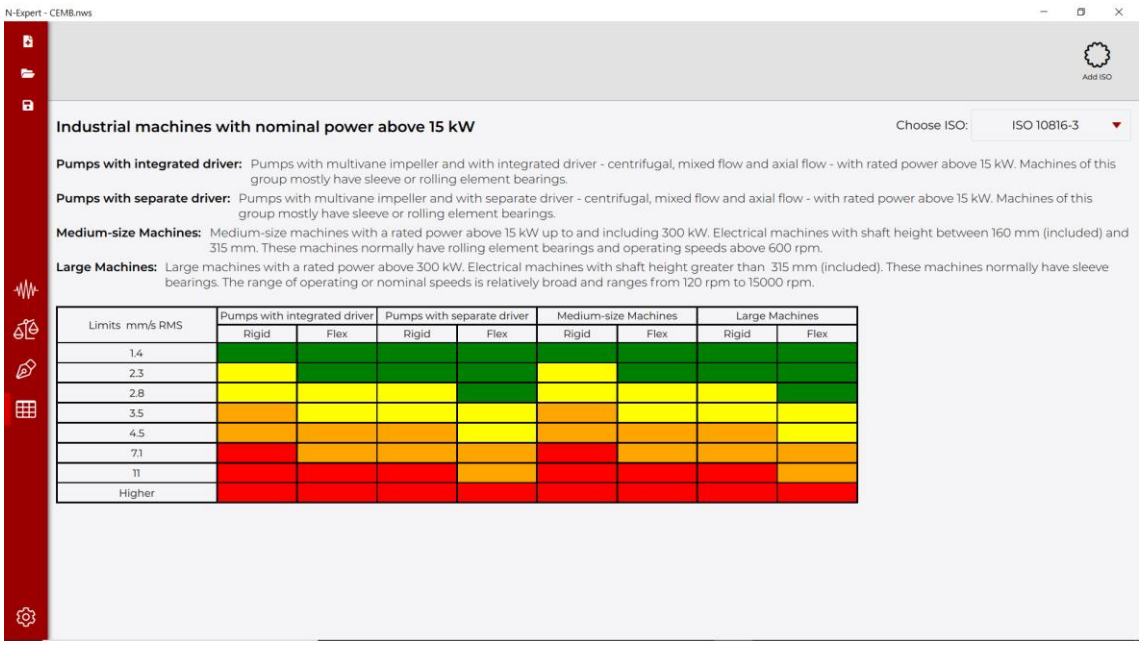
Chapter 6

ISO Tables

The *ISO Tables* tab, selectable from the ribbon via the dedicated button , allows the tabular display of the following ISO standards:

- ISO 10816-1
- ISO 10816-2
- ISO 10816-3
- ISO 10816-4
- ISO 10816-5
- ISO 10816-6
- ISO 10816-7
- ISO 10816-8
- ISO 14694
- ISO 17243-1
- ISO 17243-2

In order to identify the classification of the machine analyzed, it is necessary to read the classifications briefly reported at the top of the page, and then enter the table: in the columns there are the classifications and in the rows the vibration limits.



To choose the ISO standard of interest it is necessary to select it from the drop-down menu under *Choose ISO* (e.g.

).

If it is necessary to navigate within the table to find the machine group or the necessary limits, within the table will appear horizontal and vertical movement bars moved by dragging the mouse (in the image below in dark gray).

Functions

In the *ISO Tables* tab it is possible to integrate the ISO standards in a tabular form through the *Add ISO* button . The file to be uploaded must be in .cvs format and must comply with the table format below:

	A	B	C	D	E	F	G
1	Machine Type	N Groups	Group 1 Description	Group 2 Description	Limits mm/s RMS	Group 1	Group 2
2	Land-based steam turbines and generators in excess of 50 MW	2	Low speed	High speed	2.8	A	A
3			Land-based steam turbines and generators in excess of 50 MW with normal operating speeds of 1500 or 1800 rpm.	Land-based steam turbines and generators in excess of 50 MW with normal operating speeds of 3000 or 3600 rpm.	3.8	B	A
4					5.3	B	B
5					7.5	C	B
6					8.5	C	C
7					11.8	D	C
8					Higher	D	D
9							

Example of filling in the Excel sheet is reported below:

- A1 write *Machine Type*
- A2 write standard description
- B1 write *N Groups*
- B2 write the number of groups / classes of the standard (e.g. 2)
- C1 write *Group 1 Description*
- C2 write the name of group 1
- C3 write the description of group 1
- D1 write *Group 2 Description*
- D2 write the name of group 2
- D3 write the description of group 2
- E1 write *Limits mm/s RMS* (or other unit of measurement)
- E2, E3; etc. write the threshold values
- F1 write *Group 1*
- F2, F3, etc. write the classification values (*A, B, C or D*)
- G1 write *Group 2*
- G2, G3, etc. write the classification values (*A, B, C or D*)

Note:
The standards add manually, they will then be selectable in *Vibration analysis / Machine level / Properties / ISO.*