VIDIA Cloud

INSTRUCTION MANUAL

version 1.0.0.0

IMPORTANT INFORMATION FOR THE USER

Safety symbols used in this manual:

Note! For safe operation of the VIDIA compatible device, read the relevant notes and recommendations in its manual.

Under no circumstances shall Alitec be liable for any damage, in particular direct, indirect or consequential, including lost profits, additional costs, or the inability to use the product resulting from the operation or failure of the device, even if such damage has been reported.

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1. VIDIA ENVIRONMENT

The VIDIA CLOUD™ diagnostic cloud is a fully functional tool for condition assessment and diagnostics of machines. Its task is to receive information from measuring devices and collect it in a database.
Once the signals have been processed and analysed, their results are presented in a legible form. The analyses built-in to the VIDIA CLOUD™ allow for vibration signal to determine the following:

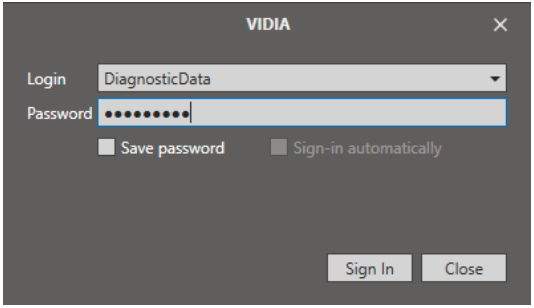
- rms value (RMS),
- peak value (0-p),
- kurtosis,
- crestfactor,
- obliquity,
- Bearing damage factor (BWI),
- Bg and Bv factors of bearing damage,
- spectrum (0.0625 Hz resolution in a full 25.6 kHz band),
- envelope spectra.

All the parameters are determined from the signal's time waveforms. Such a solution ensures the highest accuracy of conducted analyses, in comparison with programs determining vibration parameters from the spectrum image. Built-in filter design mechanism (AFD™) allows to determine all parameters in any user-specified frequency range.
The above set of analyses enables to assess the technical condition of machine components, such as bearings, gears (gearing, belt), including geared motors, motors, compressive stages of compressors, fans, as well as structural elements.
Detectable damages include unbalance, misalignment, eccentricity, bearing damage, slide bearing damage, unstable oil film in the bearing, cavitation, bearing mounting clearance, gear damage, turbine and fan damage, rotor friction, motor electrical damage, critical speeds, and resonances.
Original signal waveforms are saved in database, allowing to add necessary analyses later on.
The data can be viewed and analysed on a mobile basis using the separately offered mVIDIA software installed on Android smartphones.

2. CONNECTION TO THE CLOUD

In order to connect to the Alitec VIDIA Cloud diagnostic tool, the client software must be installed. For this purpose, enter the address provided by the software manufacturer in the address field of your web browser.

After installing the software, the user name and password must be entered in the login window:

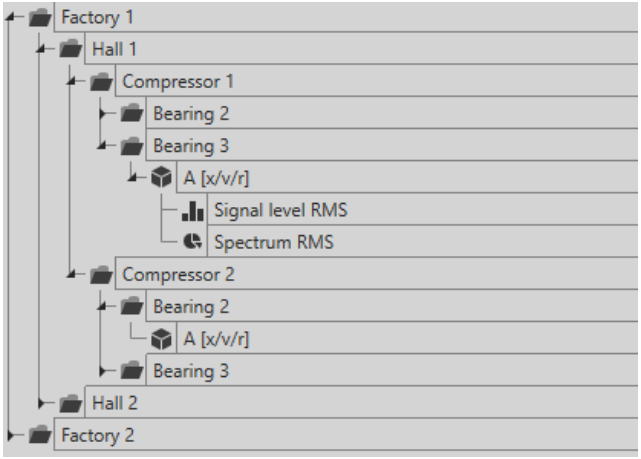


Pressing the *Login* button starts the VIDIA client program.

3. BASICS OF USING THE VIDIA ENVIRONMENT

3.1. Measurement route and source data

The VIDIA software constitutes a user interface to the diagnostic cloud. The environment using the cloud offers a possibility of organizing measurement data and analysis results in tree structure, similar to folder structure in the operating system. In industrial plants, it can create a measurement route. Folders can take the name of plant, hall, department, production field, machine, sub-assembly, etc. This enables to create a plant structure with any number of nests. An example of measurement route is shown below.



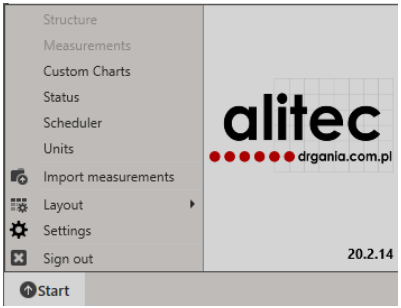
It is necessary to have at least one measuring point in the structure. This is an element of the structure, which in practice corresponds to the location of sensor installation. If you measure vibrations in 3 directions (three-axis sensor) at a given location, you must define three separate measuring points.

The analyses are determined from the source data. They are transferred to the program database:

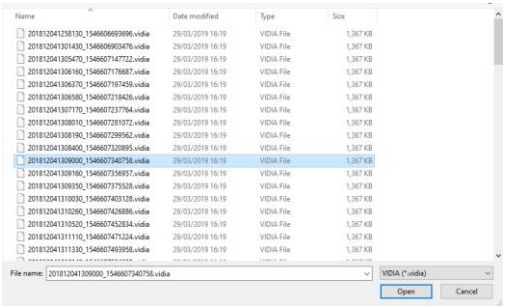
- from a file saved in .vidia format loaded by the user,
- directly from the measuring devices via the Ethernet interface,
- with mVIDIA software over a common network (e.g. Wi-Fi).

Information on the data based on which analyses can be determined and their parameters are available in the Measurements window, described further in this manual.

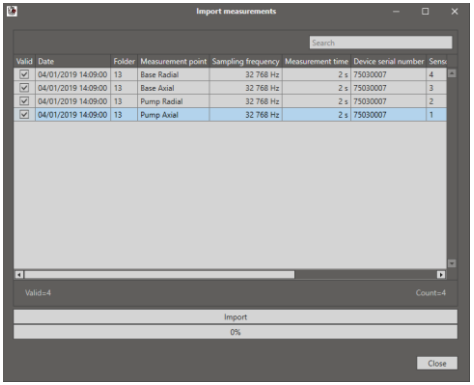
3.2. Importing measurements from files *.vidia*



In order to load measurement files from the VIDIA Start menu, select *Import Measurement*.

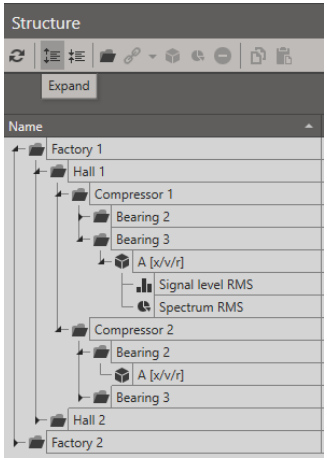


In *Open* window, indicate the location containing the measurement source files. File names consist of the date and time the file was saved when exporting from the measurement device and a unique identifier.
Select the desired file and press *Open* button.

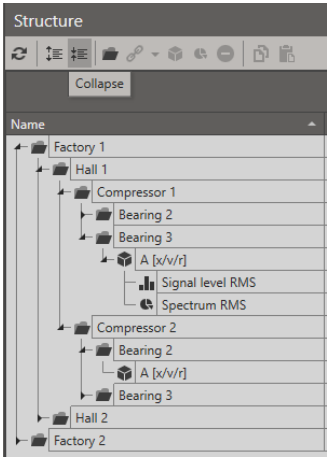


This opens a window for selecting specific measurements. After selecting the ones you want to load into the program, press *Import* button and then *Close*.

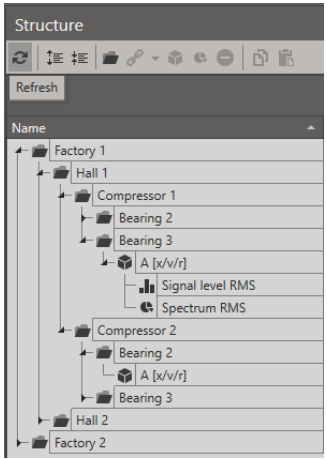
3.3. Expand, collapse, refresh the measurement routes



Press *Expand* button to expand the entire measurement route structure.
You can also expand individual elements by left-clicking on the symbol ▸ next to the name of selected structure element.

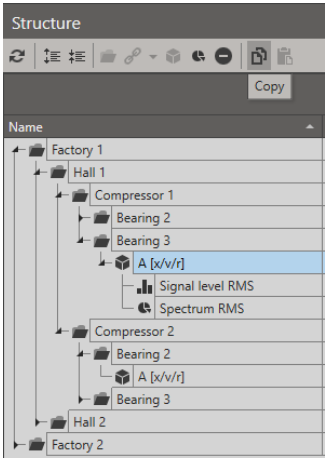


To collapse the measurement route structure press *Collapse* button.
If you want to collapse a single structure element, left-click on the symbol ▸ next to the name of selected structure element.

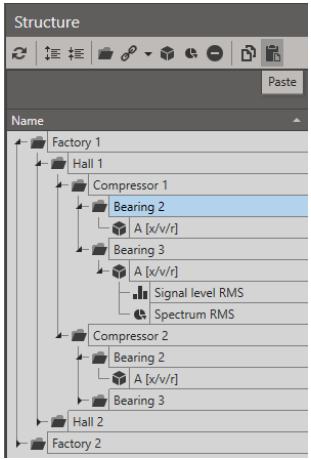


While viewing the plant structure, another person can edit it. To refresh the structure view press *Refresh* button.

3.4. Copying, pasting and deleting of items

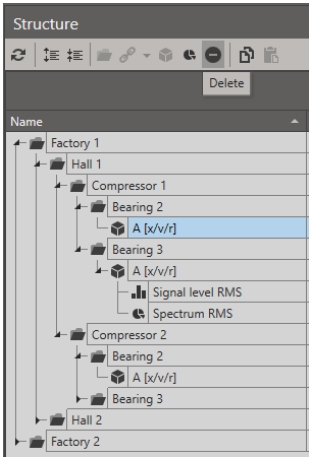


To copy any of the measurement route elements, select this element by left-clicking on it. Press *Copy* button to confirm the operation.
You can perform each operation using the pop-up menu available by right-clicking on the selected item.



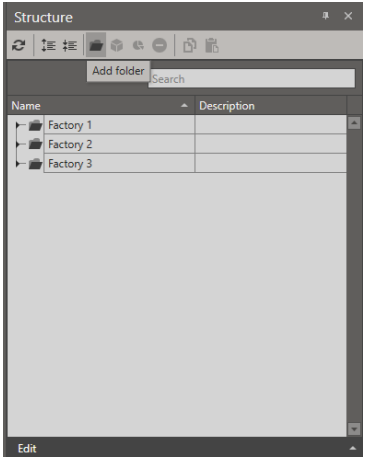
To paste the copied item, set the active folder to indicate the location and then press *Paste* button.

You can copy plants, halls, machines, as well as individual measuring points or analyses.

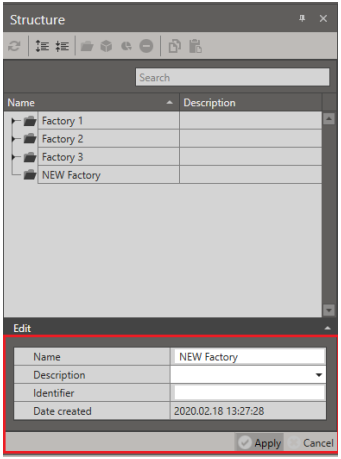


To delete an item, select it and press *Delete* button.

3.5. Plant structure and its edition

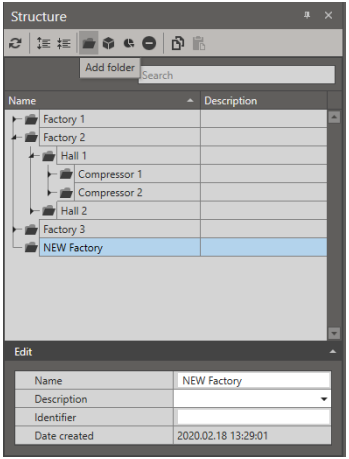


In order to add a new element of the plant structure (machine, construction) on which measurements will be conducted, select *Add Folder* button. You can perform each operation using the pop-up menu available by right-clicking on the selected element.



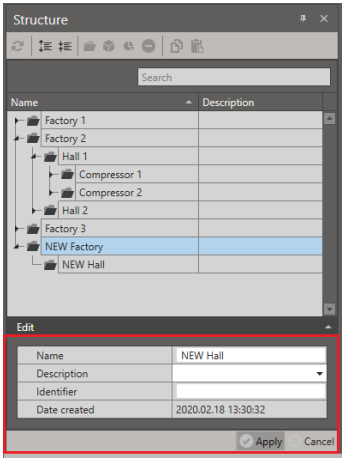
Fill in the visible fields and confirm by pressing *Apply* button.

The labels of mandatory fields to be filled in are highlighted in bold.

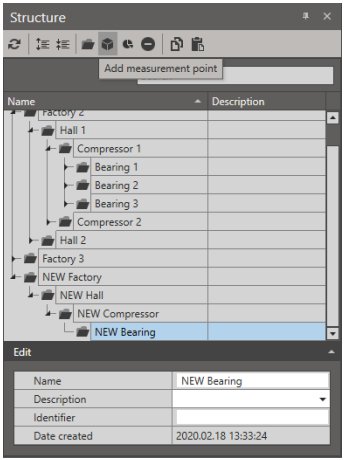


To add a new device component on which measurements will be conducted, select *Add Folder* with the active machine folder.

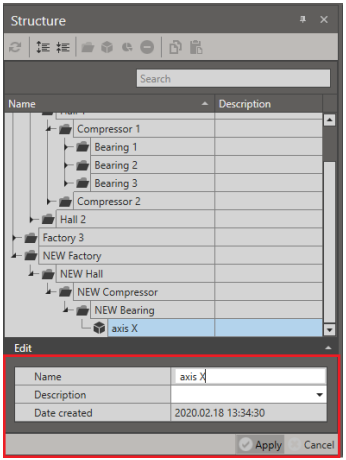
If you want to add another machine, uncheck the folder of previously created machine and repeat the add machine operation.



Fill in visible fields and confirm by pressing *Apply*.



To create a measurement point, press *Add Measurement Point* button.



Fill in visible fields and confirm by pressing *Apply*.

4. ANALYSES AND SETS OF ANALYSES

4.1. Types of analysis

In VIDIA programme, the process of determining a diagnostic parameter (level, spectrum, etc.) is called analysis.

Any number of analyses can be defined at each measurement point. The registration data parameters of tested signals are selected in a way that guarantees the possibility of performing all analyses during one measurement. Contrary to traditional solutions, the user does not waste time to perform an individual measurement for each defined analysis at each measurement point on the machine.
VIDIA software remembers the results of all measurements. This means that new analyses can use historical data. If a new analysis is added for component, the results for previous analysis period will also be displayed. The necessary condition for analysis is recording sufficiently long waveforms, in the appropriate frequency band, which the added analysis requires. For example, it will not be possible to determine the analyses later:

ANALYSIS	SOURCE WAVEFORM PARAMETERS	
	duration [s]	limit frequency [Hz]
signal level: RMS, 1 Hz to **10 kHz**	1	**3200**
time waveform: 0.5 Hz to **10 kHz**, 1 s	1	**3200**
time waveform: 0.5 Hz to 1 kHz, **4 s**	**1**	3200
spectrum: 1 Hz to **10 kHz**, resolution 2 Hz	1	**3200**
spectrum: 1 Hz to 1 kHz, resolution **0.25 Hz**	**1**	3200

Not mentioned parameters can take any value. The blue color indicates contradictory parameters.

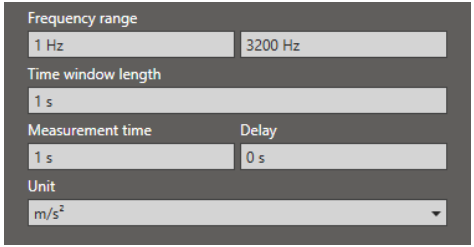
If it is planned to add analyses later, it is worthwhile to consider adding a 4-second time waveform with an upper frequency limit of 10 kHz (alternatively 20 kHz). Such an analysis will force the source data to be saved, which will allow the definition of accurate analyses of the most common defects. Unfortunately, the data will take up relatively much space in memory.

The following analysis types and subtypes can be selected in VIDIA programme.

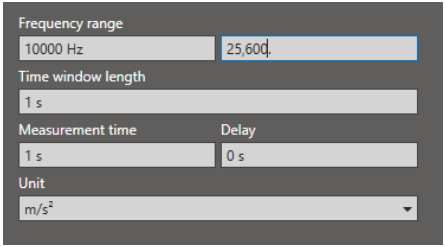
TYPE	SUBTYPE	DESCRIPTION
Signal level Level parameters determined from the time waveform of vibration signal	RMS	RMS value (determined from the time waveform)
	RMS envelope	RMS value of envelope signal (determined from the time waveform)
	Peak	Peak value (determined from the time waveform)
	Peak-to-Peak	Peak value (determined from the time waveform)
	Crest	
	BWI	Bearing damage factor using information about its size and rpm.
	Obliquity	
	Bg	Bearing damage factor defining the vibration acceleration level in the higher frequency range.
	Bv	Bearing damage factor defining the vibration acceleration level in the higher frequency range.

Spectrum level Level parameters determined from the vibration signal spectrum	RMS bands	RMS value of the vibration signal in specified frequency range
	Peak bands	Peak value of the vibration signal in specified frequency range (equivalentpeak)
	Peak-to-Peak bands	Peak-to-peak value of the vibration signal in specified frequency range (equivalentpeak-peak)
	Harmonic RMS	RMS value of the selected harmonic rpm. The rpm is automatically determined from the spectrum.
	Harmonic peaks	Peak value of the selected harmonic rpm. The rpm is automatically determined from the spectrum.
	Harmonic Peak-to-Peak	Peak-to-peak value of the selected harmonic rpm. The rpm is automatically determined from the spectrum.
Spectrum	Amplitude RMS	RMS value spectrum of frequency components of the vibration signal
	Amplitude Peak	Peak values spectrum of frequency components of the vibration signal
	Amplitude Peak-to-Peak	Peak-to-peak values spectrum of frequency components of the vibration signal
	Phase	Phase spectrum
	Envelope	Time waveform envelope spectrum
Time waveform	Time waveform	Time waveform
	RMS	Change of rms value of the signal over time
	Envelope	Time waveform envelope

4.2. Parameters for individual analyses

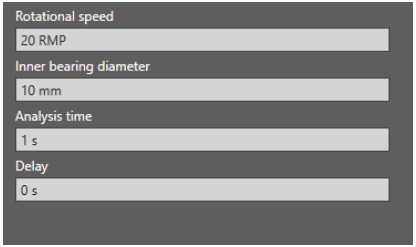


RMS, RMS envelope, Peak, Peak-to-Peak level analysis parameters

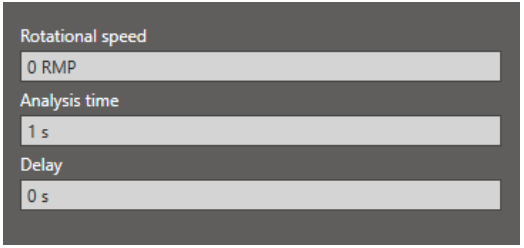


Crest level analysis parameters

CREST analysis requires signal analysis in the higher frequency range

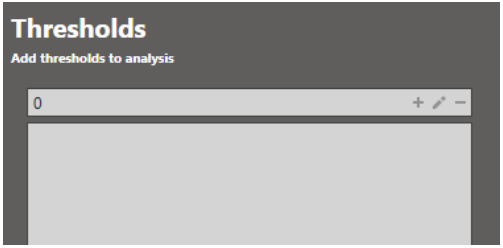


BWI level analysis parameters

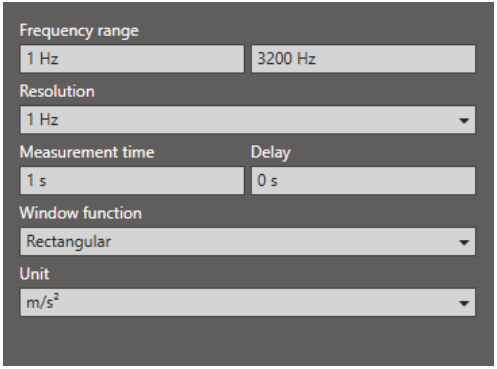


Bg level analysis parameters

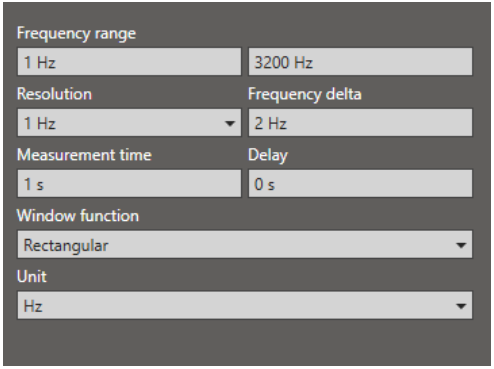
Level analysis parameters



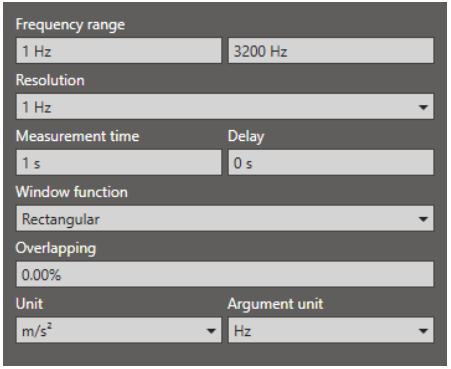
You can define alarm thresholds for each of the levels described when adding the analysis. For this purpose, replace the default threshold value (0.00) with its required value. If necessary, add another threshold with + button. Existing alarm thresholds can be edited and deleted. Press and - buttons accordingly.



Parameters of Band spectral level analysis.

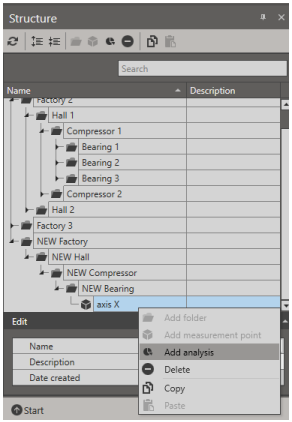


Spectral level harmonic level analysis parameters.

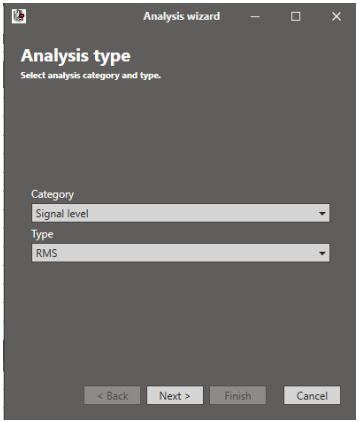


Spectrum analysis parameters.

4.3. Adding and removing individual analysis

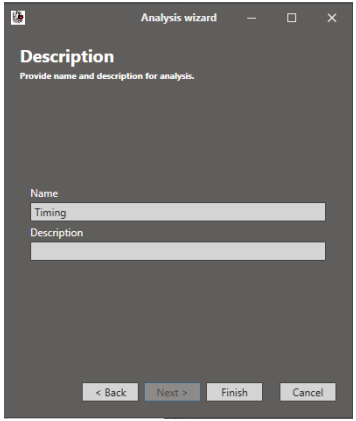


To add a new analysis, right-click the selected measurement and then left-click *Add Analysis* from the pop-up menu.
You can also use *Add Analysis* button.



In the analysis wizard, select the type of analysis and specify its subtype.
Confirm operations with *Next* button.

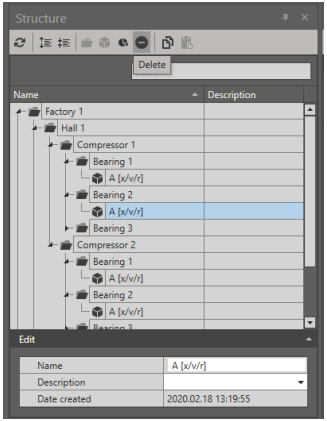
Complete the analysis parameters.
Confirm operations with *Next* button.



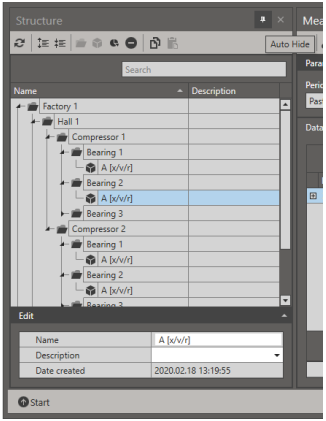
The next step is to name the analysis and optionally add a description identifying it.

To complete the analysis, press *Finish* button.

You can return to the previous analysis wizard window at any time by pressing *Back* button.



To delete an existing analysis, left-click it and then press *Delete* button.

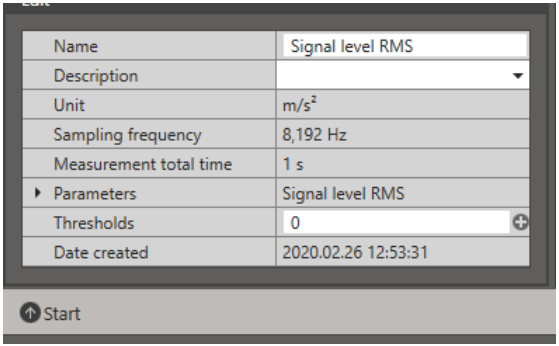


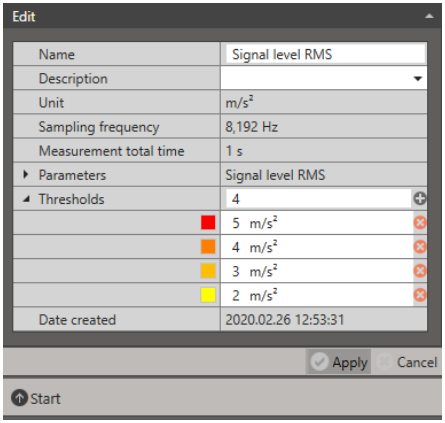
In the program it is possible to enable automatic window hiding. For this purpose, press *Auto Hide* button. To disable the mode after expanding the window press this button again.

For all windows in the program this function is identical.

4.4. Defining alarm thresholds in level analyses

For all analyses of *Signal Level* and *Spectrum Level* type it is possible to define criteria values, which allow for general assessment of technical condition of tested machine components. These levels are defined by standards and machine manufacturers. They may also result from experience with the operation of a given machine.



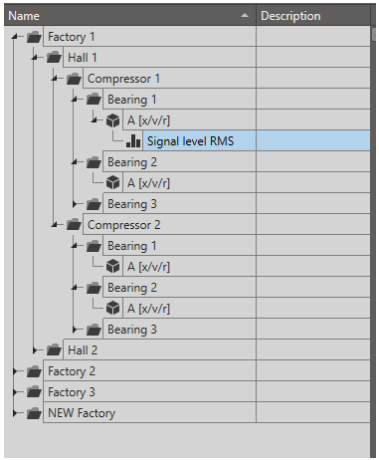


The VIDIA program allows to define criteria levels, marked with different colors.

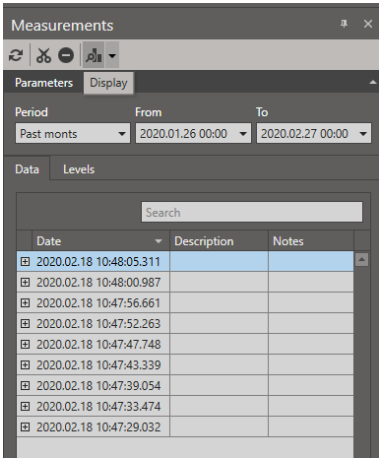
In order to add a new criterion for assessing the technical condition of a component, after defining the analysis parameters, in *Alarm Thresholds* field select add. Press *Add* button as many times as you want to add criteria levels.

When *Alarm Thresholds* tab is expanded, enter the values of created thresholds and then press *Apply* button. When defining the analysis, it is possible to delete defined criteria levels by pressing *Delete* button.

5. VIEWING MEASUREMENT RESULTS SAVED IN THE DATABASE

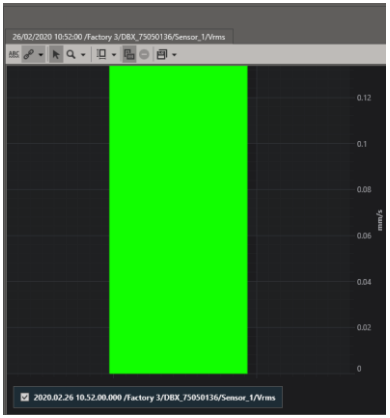


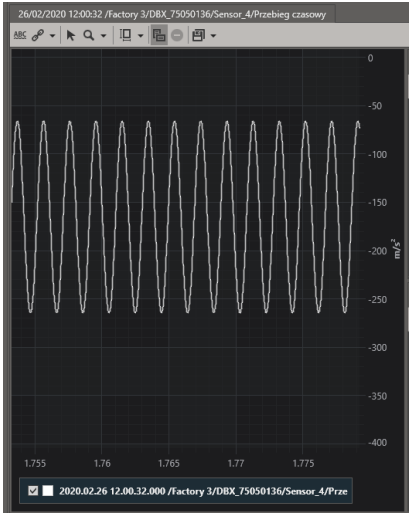
From the list of defined analyses select the analysis which results you want to see.

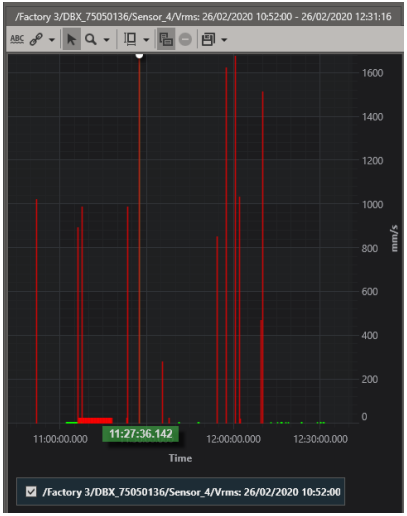


From measurements available in the list, select the one you want to display, and then press *Display* button at the top of window. The waveforms do not meet the criteria of a given analysis.

You can limit the number of displayed measurements by criteria: From – measurements from the set date; To – measurements to the set date; Limit – define the number of displayed measurements. Two criteria can be used simultaneously.





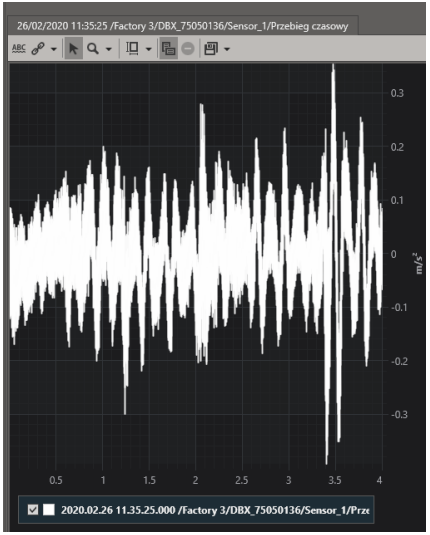


Depending on the type of analysis, the data will be presented as a linear or bar chart.

In the bar chart, the colors are determined by a given ranges.

To show all series measurements on the bar chart, go from the data tab to the results tab, then click Display button.

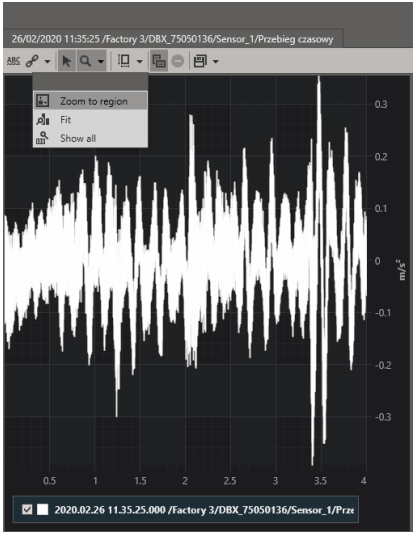
5.1. Viewing time waveform charts



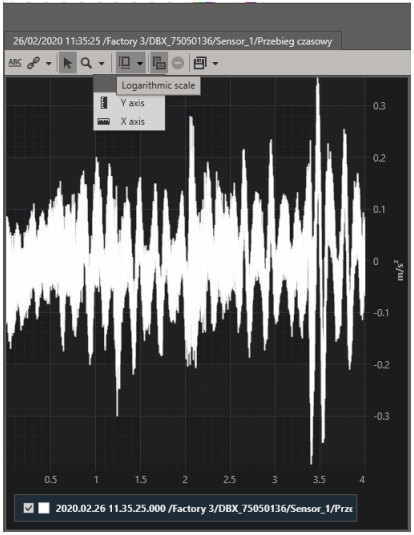
One of the basic charts is time waveform of changes in the value of designated parameter.

The waveforms are displayed in their entirety and can be zoomed in and scrolled vertically and horizontally.

You can scroll through the chart by pressing **Shift** or **Ctrl** key and **moving the mouse roll**.

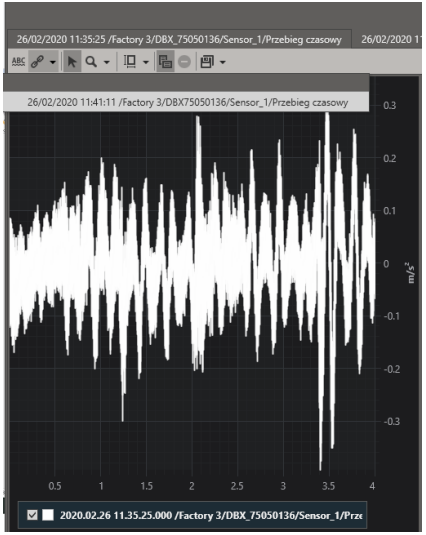


You can zoom in and out the charts with mouse roll or with *Zoom In To Region* function. After selecting, checking a section of the graph will show its zoom in. The default zoom can be restored by selecting *Show All* from the zoom menu.

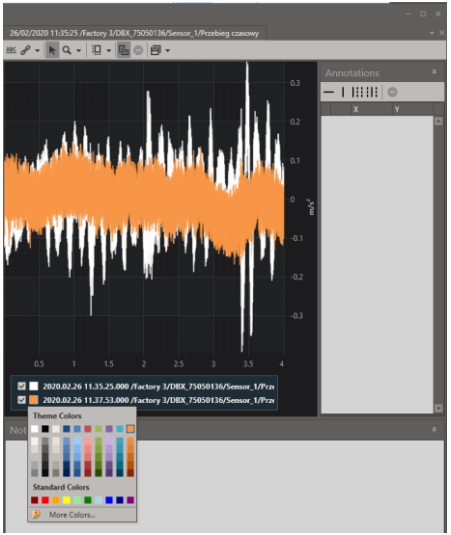


You can change the scale on a logarithmic scale while viewing the chart. For this purpose, expand the *Logarithmic Scale* menu and select the axis or axes on which you want to apply it.

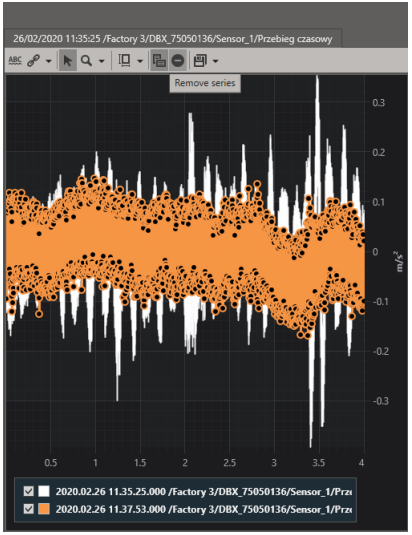
5.2. Time waveform settings



In the program, it is possible to present several signal time waveforms on one chart. For this purpose, open two or more charts and after pressing *Merge* button, select the chart that you want to merge into.



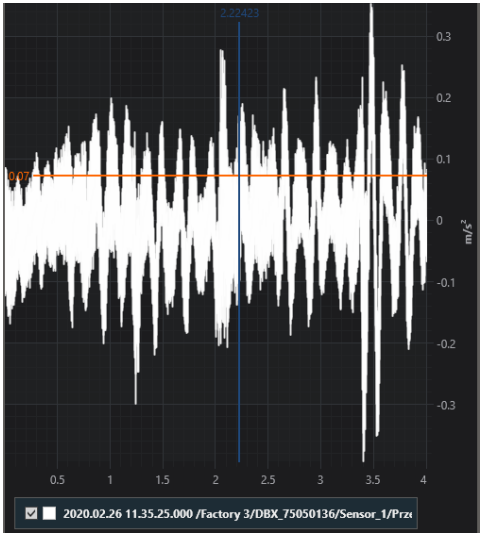
To change the color of graphs, click on the square next to waveform name and select the appropriate color from the expanded window.



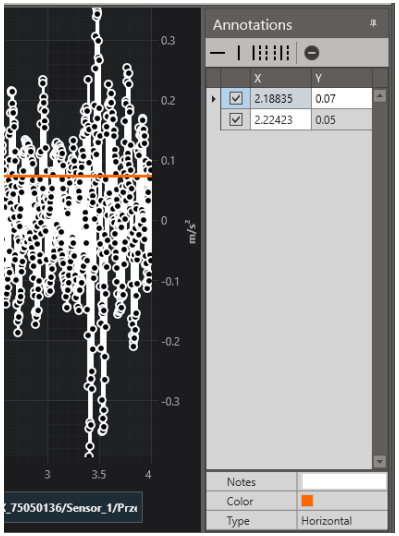
To delete one of merged charts, activate it by clicking on it and then press *Delete Series* button.

6. CHART MARKERS

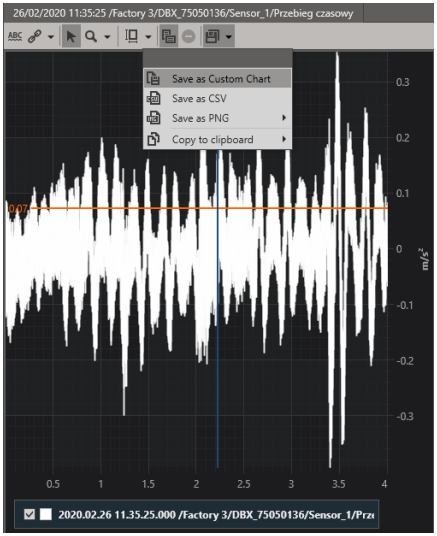
6.1. Adding chart markers



Precise parameters of a given point in the chart can be determined using the markers.



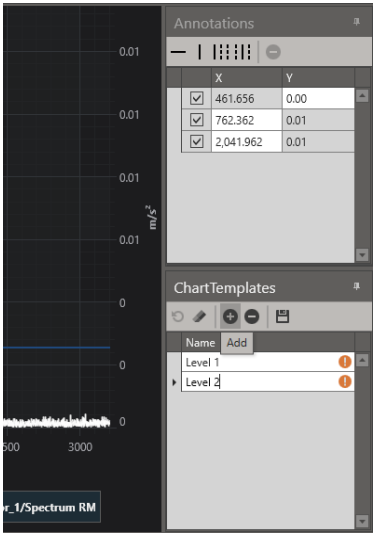
To add or edit a pointer, place the cursor in annotation section and then select its type. There are 4 types of indicators: *Horizontal*, *Vertical*, *Harmonic* and *Side Ribbons*. After adding the indicator it is possible to edit it.



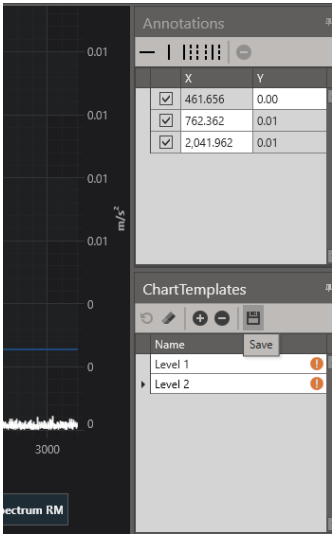
Once you have finished working with the chart, you can save it in different formats. For this purpose, press *Export* button and select the appropriate save form.

For easier later access to the chart you can save it as a user chart.

6.2. Chart templates

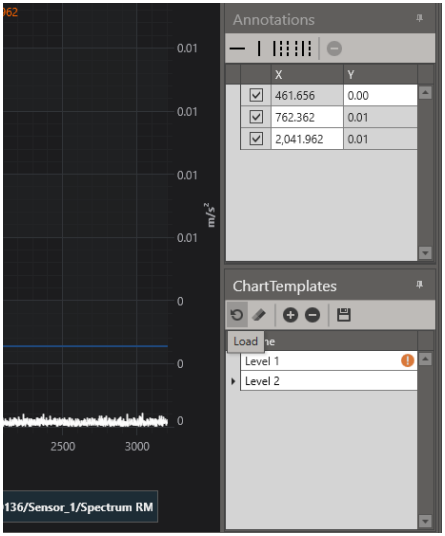


To save the chart template, move your mouse to *Chart Templates* and then press *Add* button.



Enter a name for the template and press *Save* button.

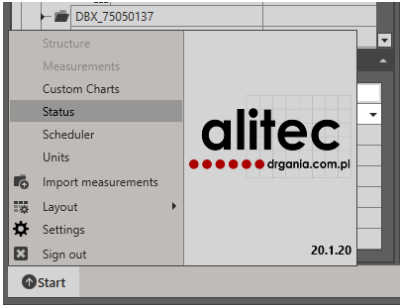
Active template to the left of the name has a character . To delete the template, press Delete button.



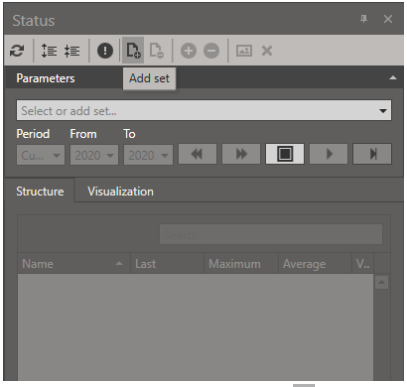
To load a previously saved template, activate it by left-clicking and then pressing *Load* button.

7. STATUS

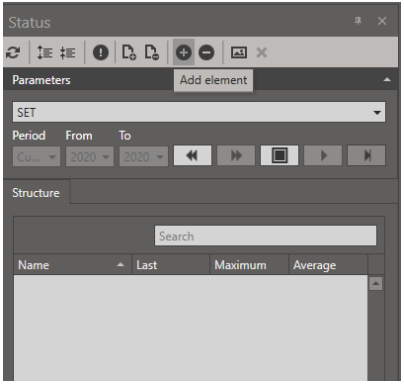
7.1. Adding, removing and defining status



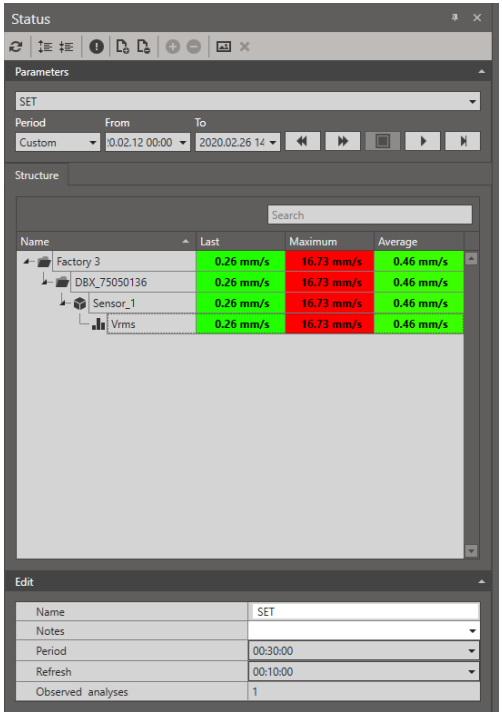
To go to the status window, select *Status* in the main menu.



To add a new set, press *Add Set* button. Then enter a name at the bottom of window and press *Apply*. To delete a set, press *Delete Set* button.



The measurement data must be added to the created set. For this purpose, in the *Structure* of appropriate device, select the measurement point or analysis. Make sure that the device or point has a defined analysis. Then confirm your selection by clicking on *Add Item* button. To remove an item from the status structure, select it and then press .



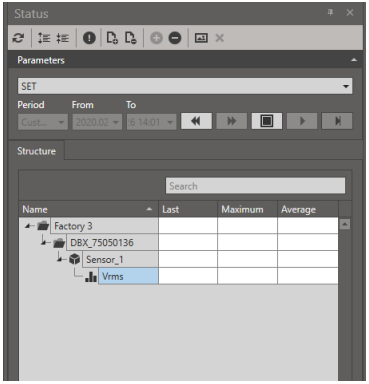
To refresh the structure tree, press . Buttons and are used to expand and collapse the status structure tree accordingly. Pressing means that only those items in the structure tree will be displayed where the alarm thresholds have been exceeded.

P*eriod* field at the bottom of screen indicates the interval from which the average value of analysis levels in the status structure is calculated. R*efresh* field indicates the time interval that new measurement data is loaded.

The *last, maximum* and *average* columns indicate the last, maximum and average respectively of the levels of analysis over a given period of time.

It is possible to disable the status color gradient and fill in the table fields only with colors of the corresponding alarms. For this purpose, select *Settings* from the lower *Start* menu and then uncheck the *Status Color Gradient*.

7.2. Adding status visualization



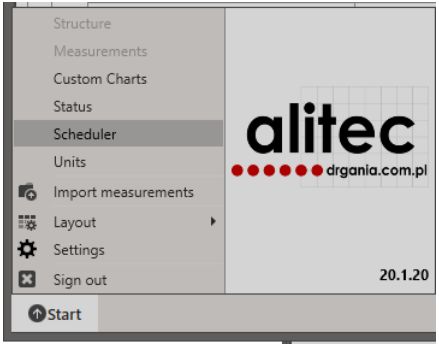
To add a visualization to the set, press *Add Visualization Background* button and then select and confirm the image file. After loading the graphic, select the items to be included in the *Visualization (W.)* column.

To enter the Status visualization, press Visualization tab. The previously selected items will appear in the upper left corner. To move them, double-click and hold down the left mouse button and then move them to the desired location.

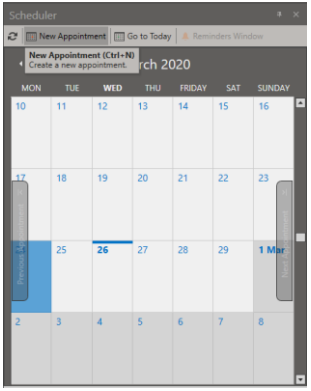
To load historical measurement values for status visualization, select the appropriate time interval from which the parameters are to be displayed. For this purpose, press *Stop* button, then select the appropriate time interval by expanding *Period* field, or manually set the start and end dates of the desired time interval in *From* and *To* fields. The button is used to start the automatic time interval change. Buttons and are used to move between periods. The button moves to the current time.

8. SCHEDULE

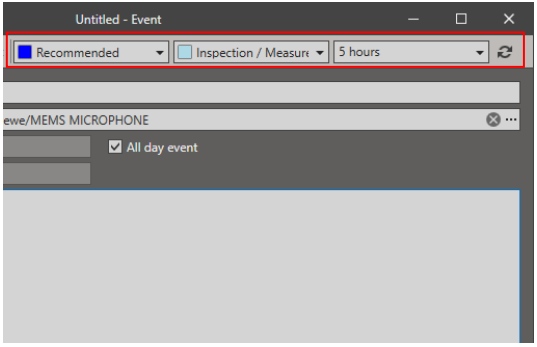
8.1. Adding new events



To enter the Schedule window in the main menu, select *Schedule*.



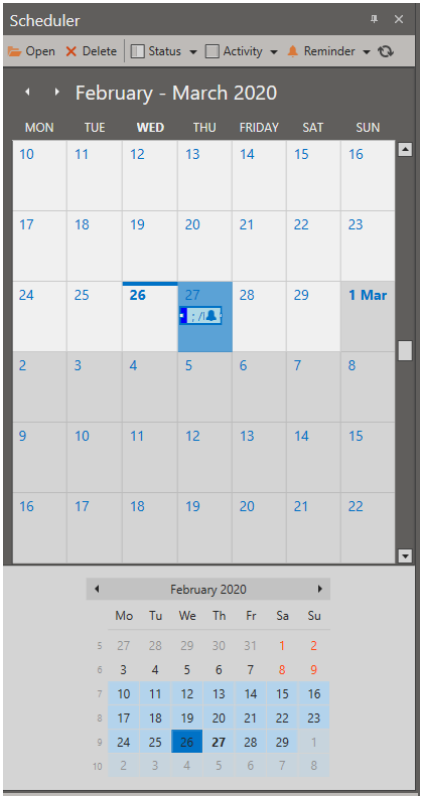
To add a new event to the Schedule window, press New Appointment. To refresh the schedule, press .



In the Event entry window, enter the title, location, start and end time of the event. Then press button.

To make it easier to identify events later, it is recommended to set the status, activity and reminder of the event precisely.

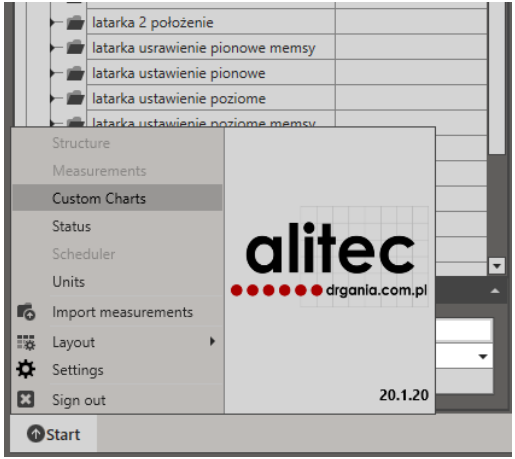
8.2. Editing and removing events from the schedule



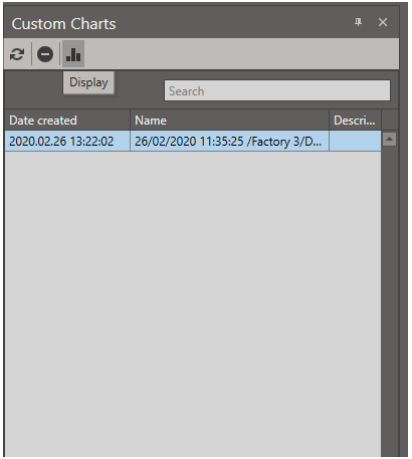
To edit or delete an event, select it and left-click it in the calendar. When the event is active, the white tags will appear and the menu bar above calendar will change. To return to editing from the top menu, select Open. If you want to delete an event, press Delete.

It is possible to change the status, activity and event reminder without opening it. For this purpose, expand the corresponding list in the top menu and make changes.

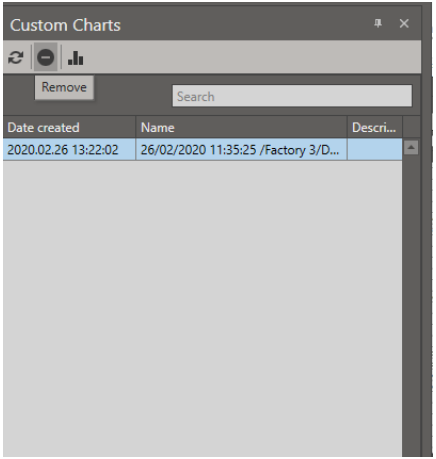
9. OPENING USER CHARTS



To open the graphs saved as user charts, activate its section. For this purpose, open *Start* menu and then select the user charts.



From the list of saved graphs, select the graph to be displayed and then press *Display* button.



To remove a chart from the user's chart list, select the chart and then press *Delete* button.

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