Contents

ALIGNMENT RELIABILITY CENTER 4.0

Operating Instructions and Online Help

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Software version 1.2

Welcome to ALIGNMENT RELIABILITY CENTER 4.0

What is the ALIGNMENT RELIABILITY CENTER 4.0?

ALIGNMENT RELIABILITY CENTER 4.0 (in short: ARC 4.0) is a specifically developed database and software that you can use to professionally manage your measurement data from rotating machines and assets on a PC.

ARC 4.0 offers a series of options for the configuration and preparation, processing and analysis, and the exchange of measurement data via the Cloud. A Cloud-capable measuring device is required.

With ... ARC 4.0 the entire **machinery** [1] of a company can be depicted and managed. Maintenance service providers can ARC 4.0 configure and prepare their jobs separated by area/location and deployment using ...

Measurement data is stored for the respective assets only. This ensures that all measurements performed can be reviewed at any time as measurement history (trend) and as overview for every asset. Further information, such as photos or reports, supplements the measurement data as needed.

New functions in version 1.2

Data exchange

- Automatic Cloud connection, displaying updates, synchronized uploads, automatic marking of the relevant assets
- Exchange measurement files via the desktop and via the menu
- Copy measurement results to measuring devices (only ... ROTALIGN touch and ROTALIGN Ultra iS Expert...)
- Merge the measurement results of different assets

Shaft alignment - New functions for evaluating the results

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[1] Collection of assets

- Display tolerance values and measurement information
- View the measurement video
- Edit the ellipse measurement
- Average the measurement data
- Display the machines to scale
- Display the specifications

Live Trend

- Display the trend chart as a full-screen image
- Export the trend chart as a csv
- Adopt the calculated coupling values and thermal growth values as specifications for shaft alignment
- Display the most recently measured coupling values as initial values for the trend chart

User interface and online help

- Select the language

ARC 4.0 is currently suitable for the "Shaft Alignment" and "Live Trend" applications. Further applications will be added later.

Supported PRUFTECHNIK measurement devices

- ROTALIGN touch
- ROTALIGN Ultra
- OPTALIGN smart
- SHAFTALIGN
- OPTALIGN smart EX
- ROTALIGN smart EX

Copyright

Data security

The information and data in these instructions are exclusively for informational purposes and subject to change.

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PRÜFTECHNIK Condition Monitoring GmbH accepts no responsibility for consequential damage arising from errors or inaccuracies that can occur in these instructions.

Using Online Help

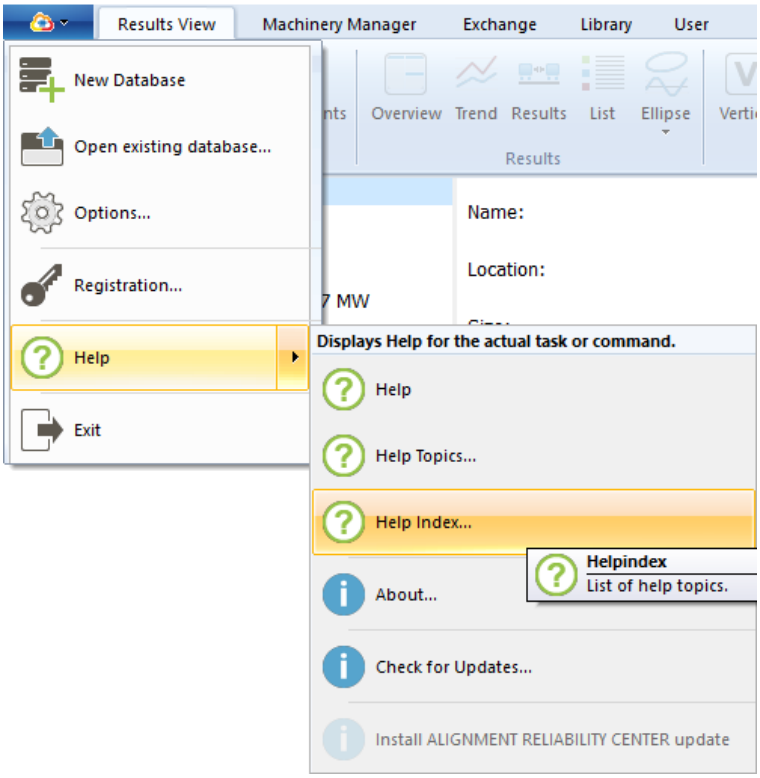
Comprehensive information regarding software operation is provided in the ARC 4.0 online help. In this section, the structure of the online help is discussed as well as the efficient use of the help system.

This help system contains the complete user documentation.

Call up help using the question mark in the toolbar

OR via the F1 key

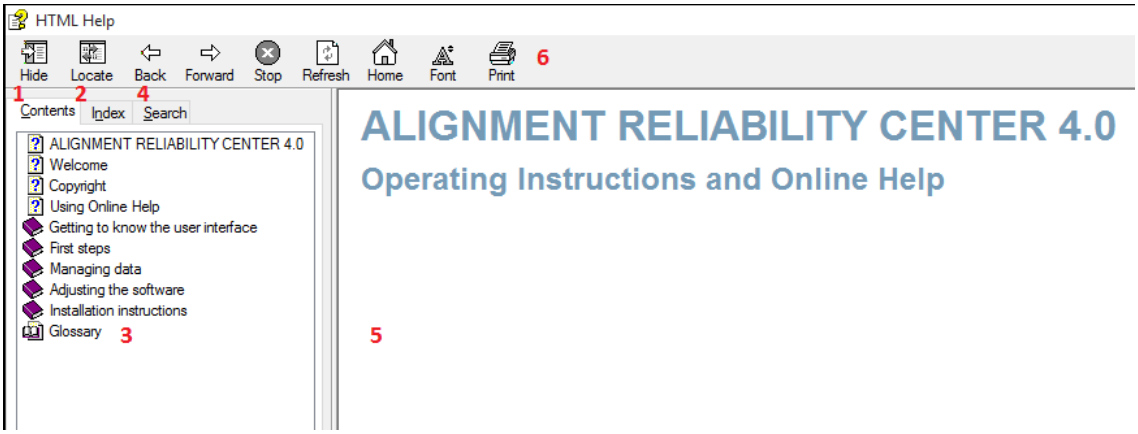
OR via the  Icon and the help sub-menu.



A separate help window opens that can be placed next to the open software window.

You can find a PDF version of the complete online help and separate software installation instructions on your USB stick. If needed, both files can be printed as manual.

Screen description of the help



All help topics can be accessed via the table of contents. Click on an entry in the tree structure to display the content. Use **Back** and **Next** to navigate in already opened help topics.

You can also find the topic in question using the search function or via the index. Within the help topics, links and cross-references lead to relevant information or related topics.

Often used topics can be marked using a bookmark and stored under Favorites.

The glossary offers a definition of technical terms.

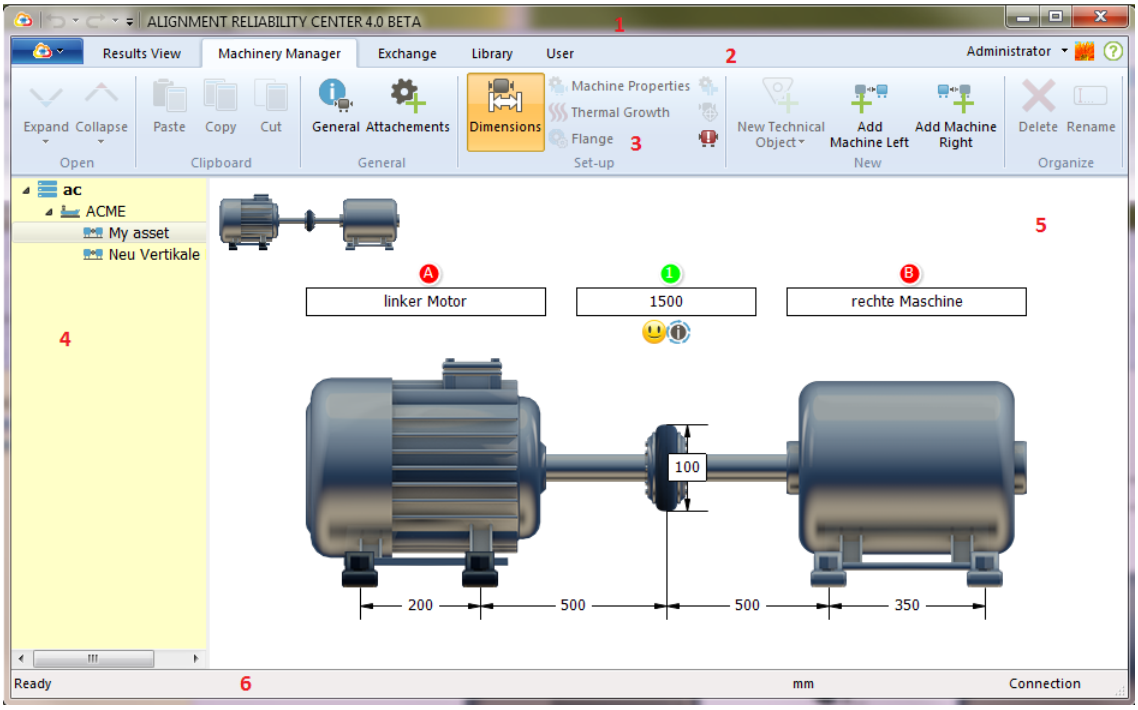
The help window contains the following elements:

1. Contents
2. Index
3. Glossary
4. Input field for search inquiries
5. View
6. Print

No.	Element	Meaning
1	Contents	Table of contents with content structuring of the help topics
2	Index	Alphabetical keyword index
3	Glossary	Technical term directory with short definitions
4	Input field for search inquiries	Manual keyword/topic search
5	View	View of the selected/found help topics
6	Print	Output the displayed help page on the standard printer

Getting to know the user interface

Description of the software screen



The screen is divided into six areas:

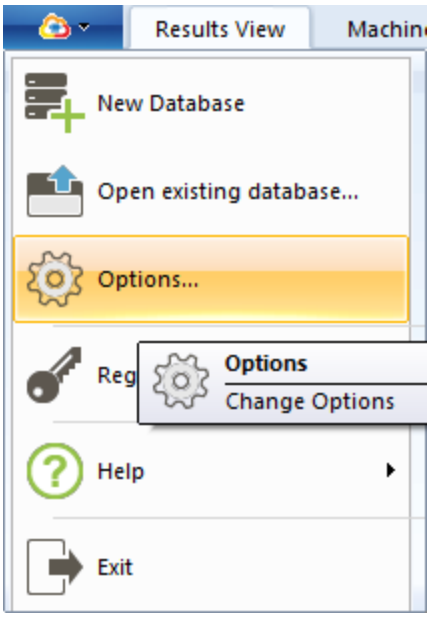
1. Title bar
2. Menu bar
3. Toolbar
4. Left window
5. Right window
6. Status bar

No.	Element	Meaning
1	Title bar	The software version appears here
2	Menu bar	Here the type of action to be executed can be selected
3	Toolbar	Bar with buttons for fast access to menu options and other commands
4	Left window	Presentation of the created database structure in the form of a tree. Database elements can here be selected for viewing or editing.
5	Right window	Details of the selected elements are shown here.
6	Status bar	Information regarding the loading process and the connection appear here
	Context menu	When clicking the right mouse button, an additional menu appears that you can use to quickly access suitable options.

Selecting the language

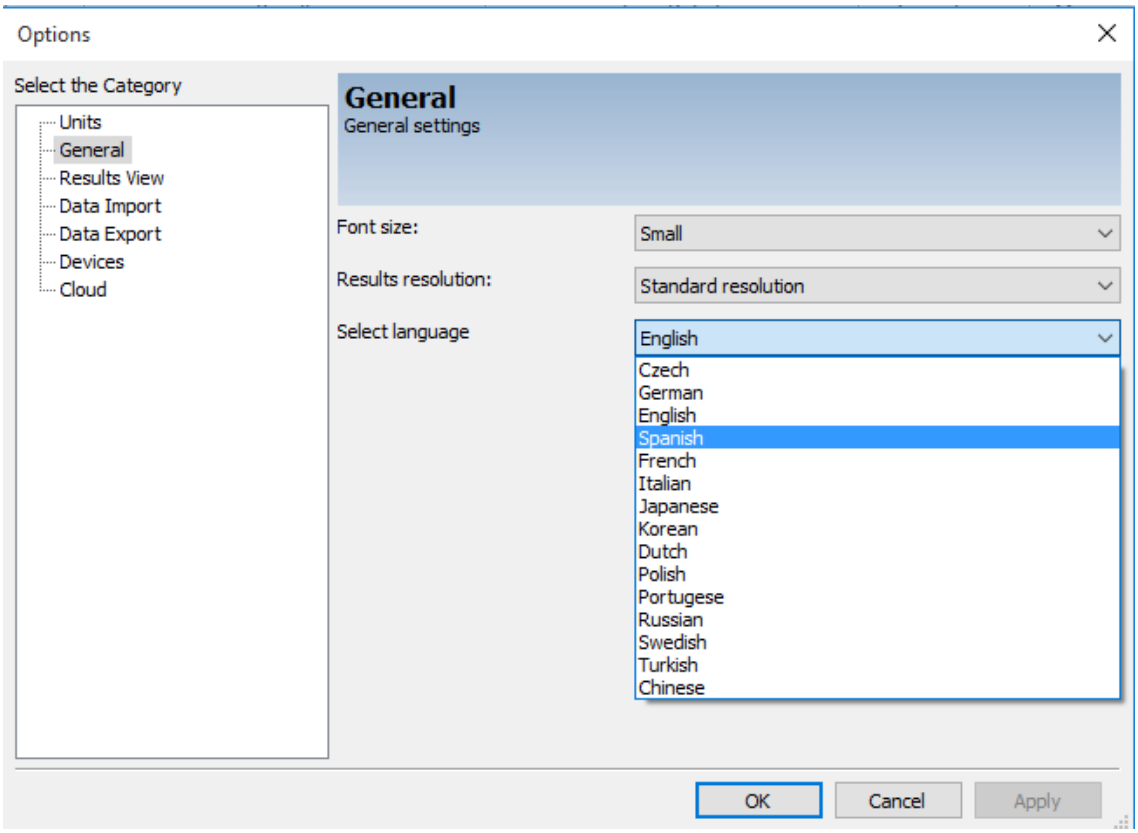
In this ARC 4.0 version, 1.2 the language for the user interface including the online help can be selected:

1. Select the ARC 4.0 icon in the left corner of the menu bar.



2. Select the "Options..." menu item.

The "Options" window appears.



3. Select the "General" menu item.

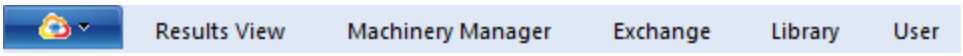
4. Select the desired language in the "Select language" menu.

5. Confirm the selection with "Apply".

Following a brief software restart, the user interface and online help appear in the chosen language.

Overview of the menu bar

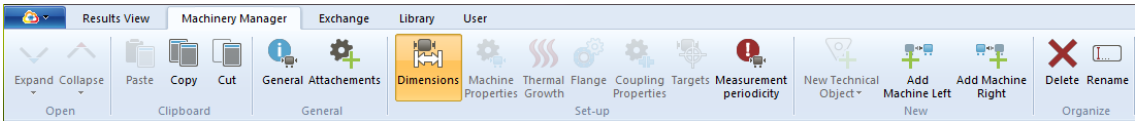
The type of action to be executed is selected in the menu bar (e.g., whether measurement data should be displayed or edited).



Tab	Meaning
ICON	Open and manage databases, display software information
Results View	Display measurement results and additional information (display function only)
Machinery Manager	Configure machinery and assets, edit additional information
Exchange	Exchange measurement data between software, measurement data (and Cloud for ROTALIGN touch)
Library	Create and manage templates
User	Manage users, assign password

Overview of the toolbar

Almost all program functions can be found in the toolbar. Active icons appear in color, inactive icons in gray.



Example of the toolbar with inactive and active icons

Icon groups with similar topics, e.g., "Open", "Clipboard", "General", can be found in the lower area of the toolbar for better orientation.

The toolbar adjusts to the respectively selected tab. Icons become only active, after an object was selected.

For example, if no measurement file is selected under the "Results View" tab, the icons in the "Result" group are displayed, however, they are inactive.

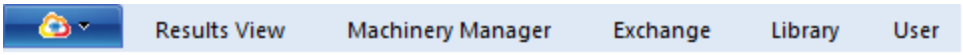
The other way around, only icons suitable for your marked object are displayed and active. This can be compared to the context menu of the right mouse button, which automatically and meaningfully adjusts to the clicked object.

Left window

The database structure created is displayed in the left window in the form of a tree. Here, database elements can be created, edited, or displayed, or additional databases created.

Icon	Meaning	Explanation
	Database	Self-contained unit with specified hierarchy. The database name is user-defined, e.g. the name of the company, industry, author, etc. The database design is user-defined, as long as the hierarchy rules described below are met.
	Location	Subdirectory under the database After a location is created, the location type can be selected, e.g. company, plant, division, directory, machinery, station, ship, or production line. A user-defined number of additional locations of different types can be created under a location. The location names are user-defined. The different types feature suitable icons.
	Asset	Machine train A new machine train can be created either as subdirectory directly under database or under location. An asset is always the lowest element in the hierarchy. No further database elements can be created under an asset.
	Shaft alignment	Collection of all shaft alignment measurements that were performed at an asset. The measurement results are always stored with reference to an asset, and represented as subdirectory of the respective asset.
	Live Trend	Collection of all Live Trend measurements that were performed at an asset. The measurement results are always stored with reference to an asset, and represented as subdirectory of the respective asset.

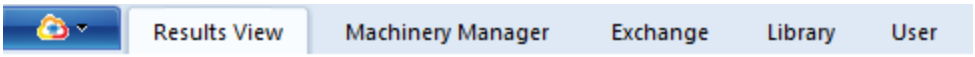
ICON menu



The following menu items appear in the pull-down menu:

Icon	Menu item	Meaning
	New database	Create new database
	Open existing database	Open existing database
	Options…	Set units, font size, result resolution, device setting, Cloud connection
	Registration	Register communication with PRÜFTECHNIK Condition Monitoring GmbH measuring devices
	Help	Call up the online help start page, topics, or index
	About…	Display manufacturer's address, contact data, software information, legal information, and license information
	Exit	Exit program

Results View menu



Open group

Icon	Menu item	Meaning
	Expand	Show subdirectories
	Expand one level	Show the first substructure only
	Expand all levels	Show all available subdirectories
	Collapse	Hide subdirectories
	Collapse one level	Hide the first substructure only
	Collapse all levels	Hide all subdirectories of the marked element

General group

Icon	Menu item	Meaning
	General	View entered object properties (ID, name, type, comment, image)
	Attachments	View stored files (e.g., PDF, photos)

For stored alignment measurements (Shaft Alignment) only:

If a measurement file is marked in the left window, additional icons become active in the toolbar:

Result group

Icon	Menu item	Meaning
	Overview	Display all result views
	Trend	Display result trend
	Results	Display vertical and horizontal coupling and foot results, display result vector
	List	Display measurement table with all measurement details, e.g. measurement method, standard deviation, quality factor, measurement date and time
	Ellipse	Display ellipse and elongated ellipse
	Ellipse	Display ellipse only
	Elongated ellipse	Display elongated ellipse only

Train details group (active only if "Results" is active)

Icon	Menu item	Meaning
	Vertical	Display vertical coupling and foot results only, display result vector
	Horizontal	Display horizontal coupling and foot results only, display result vector
	Vertical/horizontal	Display vertical and horizontal coupling and foot results, display result vector

Corrections group

Icon	Menu item	Meaning
	Flange	Display flange corrections (only active if a machine with flange is marked)
	Horizontal	Display bearing corrections (not yet implemented)

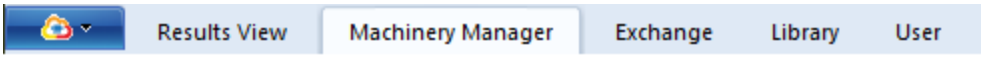
Measurement group

Icon	Menu item	Meaning
	Manual	Display manually entered values
	Dial gage	Display dial gage values

Print group

Icon	Menu item	Meaning
	Print	Output marked measurement file on the standard printer

Machinery Manager menu



Open group		
Icon	**Menu item**	**Meaning**
	Expand	Show subdirectories
	Expand one level	Show the first substructure only
	Expand all levels	Show all available subdirectories
	Collapse	Hide subdirectories
	Collapse one level	Hide the first substructure only
	Collapse all levels	Hide all subdirectories of the marked element

Clipboard group - active only if an object is marked in the left window		
Icon	**Menu item**	**Meaning**
	Paste	Insert location or asset at a different point into the database (active only if an object was stored in the clipboard using "Copy" or "Cut", and a different directory was marked)
	Copy	Copy location or asset (copy)
	Cut	Cut location or asset (move)

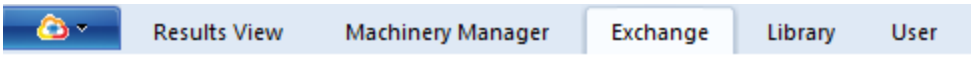
General group		
Icon	**Menu item**	**Meaning**
	General	Edit object properties (ID, name, comment, image)
	Additional	Upload files (e.g., PDF)

Setup group - active only if an asset is marked in the left window		
Icon	**Menu item**	**Meaning**
	Dimensions	Enter machine name, speeds, dimensions
	Machine properties	Define machine name, type, attachment, direction of rotation, bearing type (active only if a machine is marked in the right window)
	Thermal growth	Enter or calculate thermal growth (active only if a machine is marked in the right window. The machine must have the attachment type feet or bearing.)
	Flange	Enter flange data, e.g., form, assembly, number of screws, dimensions (active only if a machine with a flange is marked)
	Coupling properties	Define coupling type, tolerance type, and display mode (active only if a coupling is marked in the right window)
	Specifications	Enter coupling specifications (active only if a coupling is marked in the right window)
	Measurement periodicity	Calculate a recommendation for the measuring frequency based on machine specification, production parameters, and boundary conditions (active only if an asset is selected in the left window)

New group		
Icon	**Menu item**	**Meaning**
	New structure	Create location or asset as subdirectory of the marked object (active only if a database or location is marked in the left window)
	Add machine left	Extend machine train on the left side (active only if an asset is marked in the left window)
	Add machine right	Extend machine train on the right side (active only if an asset is marked in the left window)

Organize group		
Icon	**Menu item**	**Meaning**
	Delete	Delete marked database, location, or asset (active only if an object is marked in the left window) Note: A deletion can be undone using "Ctrl" + "Z".
	Rename	Rename marked database, location, or asset (active only if an object is marked in the left window) Note: The process can be undone using "Ctrl" + "Z".

Exchange menu



Open group

Icon	Menu item	Meaning
	Expand	Show subdirectories
	Expand one level	Show the first substructure only
	Expand all levels	Show all available subdirectories
	Collapse	Hide subdirectories
	Collapse one level	Hide the first substructure only
	Collapse all levels	Hide all subdirectories of the marked element

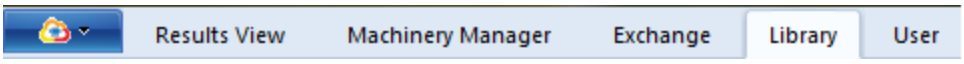
Communication group

Icon	Menu item	Meaning
Pull-down menu	Measuring device	Display and exchange the measurement files stored on the measurement device (active only, if the measurement device is registered, connected, and switched on)
Pull-down menu	Cloud storage	Display and exchange measurement files stored in the Cloud (active only for registered ROTALIGN touch measurement devices)

Multimode group

Icon	Menu item	Meaning
	Paste	Insert location or asset at a different point into the database (active only if an object was stored in the clipboard using "Copy" or "Cut", and a different directory was marked)
	Copy	Copy location or asset (copy)
	Cut	Cut location or asset (move)
	Refresh	Refresh screen display
	Delete	Delete marked object

Library menu

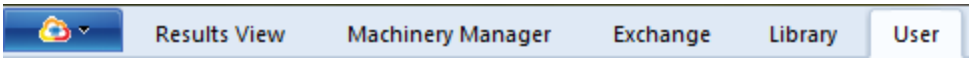


Setup group (active only if an asset is marked in the left window)		
Icon	**Menu item**	**Meaning**
	Dimensions	Enter machine name, speeds, dimensions
	Machine properties	Define machine name, type, attachment, direction of rotation, bearing type (active only if a machine is marked in the right window)
	Thermal growth	Enter or calculate thermal growth (active only if a machine is marked in the right window. The machine must have the attachment type feet or bearing.)
	Coupling properties	Define coupling type, tolerance type, and display mode (active only if a coupling is marked in the right window)
	Specifications	Enter coupling specifications (active only if a coupling is marked in the right window)
	Measurement periodicity	Calculate a recommendation for the measuring frequency based on machine specification, production parameters, and boundary conditions (active only if an asset is selected in the left window)

New group		
Icon	**Menu item**	**Meaning**
	Adjust template	Adjust a general template to specific conditions (active only, if a general (generic) template is marked in the left window)
	New structure	Create location or asset as subdirectory of the marked object (active only if a database or location is marked in the left window)
	Add machine left	Extend machine train on the left side (active only if an asset is marked in the left window)
	Add machine right	Extend machine train on the right side (active only if an asset is marked in the left window)

Organize group		
Icon	**Menu item**	**Meaning**
	Delete	Delete marked object (e.g., delete third machine in machine train)
	Rename	Rename marked object (e.g., change machine name)

User menu



User group

Icon	Menu item	Meaning
	New user	Create new user
	Delete user	Delete existing user

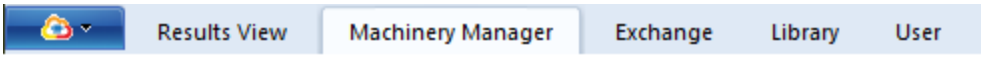
Menu item	Meaning
User Name	Currently "admin" allowed only
User role	Currently "Administrator" possible only
Full name	Enter full user name
E-mail	Enter e-mail address of the user
Password	Enter desired password
View password	View password confirmation
Confirm password	Confirm desired password
Define password	Apply desired password for the future

First steps

The next pages explain how to create and structure your own database. Next, configure your machines with all information required for an alignment measurement, such as dimensions, speed. specifications, and tolerances. Go to "Managing data" to learn, how to transfer the prepared files to your alignment measuring device and import them into the database after the measurement.

Creating machinery

1. Select the "Machinery Manager" tab in the menu bar.



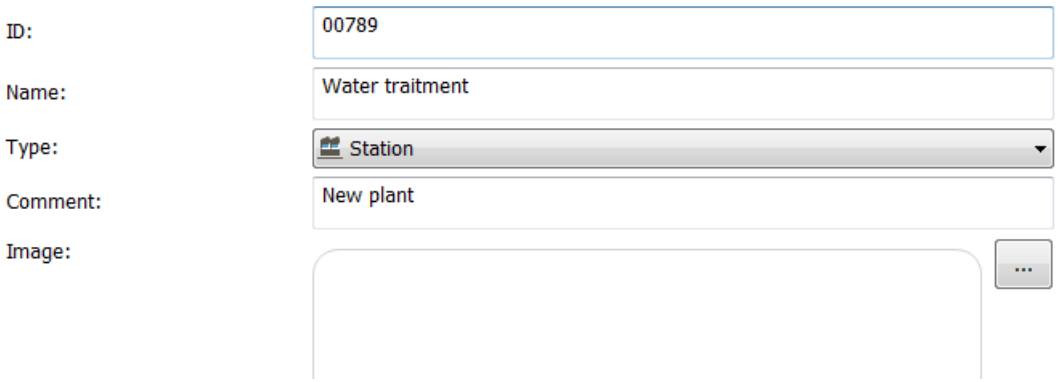
2. Select the database icon in the left window.

3. Select the "New structure" button in the toolbar and select "Location".

The new object appears as icon in the left window.

4. Click the new object in the left window.

5. Enter the ID and name for the new object in the right window and select the suitable object property from the "Type" pull-down menu. Here, a comment and a photo can be optionally stored.



6. Select the "New structure" button and select "Location" or "Asset".

Note: A new subdirectory is always created under the marked element or the element created last. If needed, click a different element in the left window first to ensure that the subdirectory is created at the right location. Locations and assets can also be created at the same level.

Database (example)

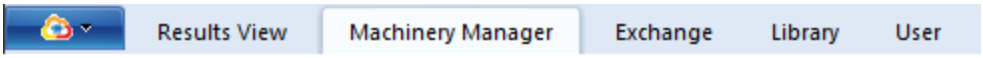
- Asset (no subdirectories possible, storage location for measurement data)
- Location (subdirectories possible)
  - Asset
  - Location
    - Asset

Create the structure of your machinery as described and add the indicated (optional) information in the right window. The "Asset" element (asset, machine train) always forms the smallest unit. No further directories can be created under an asset. If you prefer a pronounced structure, use the "Location" element when creating subdirectories.

Machine setup

In order to set up a machine, a machine park with at least one asset must be created. The machine details are defined in more detail with the following step.

1. Activate the "Machinery Manager" tab in the menu bar.



2. Mark an asset in the left window.

3. Activate the "Dimensions" button in the toolbar.

4. The asset is graphically displayed in the right window. Add additional machines to create a **machine train**[1]. Use the "Add Machine Left" *() or "Add Machine Right" () buttons in the toolbar, until the number of machines matches your machine train.

The machine train is displayed as miniature image in the upper left corner of the right window. This view is used as overview and for easy marking of machine train elements.

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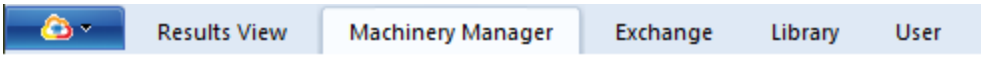
[1] Three or more machines that must be aligned to one another

Defining machine properties

In order to define machine properties, at least one asset must be created.

1. Activate the "Machinery Manager" tab in the menu bar.



2. Mark an asset in the left window.

3. Mark a machine in the right window. The marked machine appears with a blue frame and the "Machine Properties" button in the toolbar becomes active.

4. Activate the "Machine Properties" button.

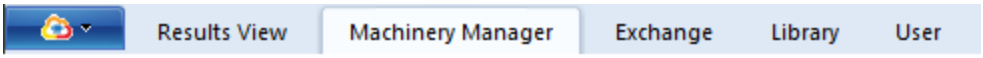
5. A new input screen appears in the right window. Define the properties of the marked machine (name, type, attachment, direction of rotation, bearing type).

6. Repeat the procedure for all other machines. Use the "Dimensions" () button to display all machines and check the configuration. The selected machine types (motor, pump, etc.) are graphically shown in the Dimensions window.

Vertically arranged machines

The best way of configuring vertically arranged machines is creating a new asset.

1. Activate the "Machinery Manager" tab in the menu bar.



2. Mark a database or a location in the left window.

3. Activate the right mouse button in the left window.

4. Create a new asset using the "New Structure"\"Asset" context menu item.

5. Mark the new asset in the left window.

6. Complete the input fields in the right window and select the "Vertical Pump" template as type.

7. Activate the "Dimensions"  button to graphically display the asset.

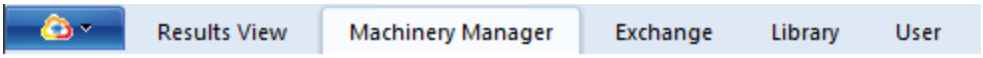
8. Define the machine and coupling properties as for horizontally arranged machines.

9. Activate the "Flange"  button and enter the flange data.

Defining coupling properties

In order to define coupling properties, at least one asset must be created.

1. Activate the "Machinery Manager" tab in the menu bar.



2. Mark an asset in the left window.

3. Mark a coupling in the right window. The marked coupling appears with a blue frame and the "Coupling Properties" button in the toolbar becomes active.

4. Activate the "Coupling Properties" button in the toolbar.

3. A new input screen appears in the right window. Define the properties of the marked coupling (type, tolerance type, display mode). General and user-defined templates that are stored in the library are available for selection in the pull-down menus. Add the coupling speed and the displayed dimensions.

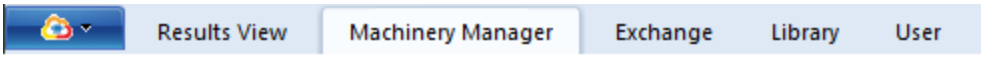
4. Repeat the procedure for all other couplings. Use the "Dimensions" () button to display all machines and check the configuration. The selected coupling types (Cardan, intermediate shaft, etc.) are graphically shown in the Dimensions window.

Note: Machine and coupling properties can be defined in any order. The respective input screen can also be opened directly by double-clicking on the element with the left mouse button.

Entering dimensions

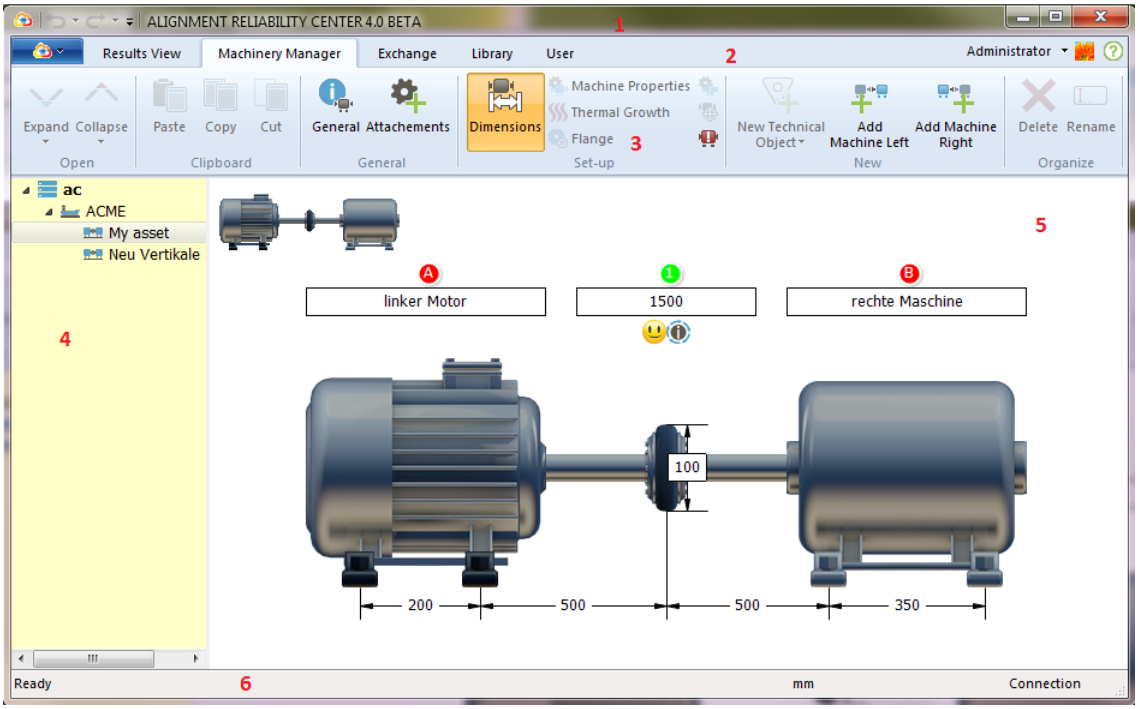
Entering dimensions is the easiest, if machine properties and coupling properties have already been defined for the asset, as the dimensions to be entered depend on the selected machine and coupling types. However, all data can also be edited retroactively. In this case, dimensions may have to be added.

1. Activate the "Machinery Manager" tab in the menu bar.



2. Mark an asset in the left window.

3. Activate the "Dimensions" button in the toolbar.

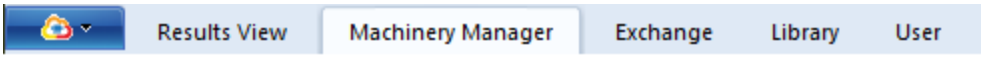


Input fields with red letters	Enter or edit machine name
Input fields with green numbers	Enter or edit coupling speeds
Dimension arrow heads	Enter distances and coupling diameters

Enter all required data. Data can be entered in any sequence. In the case of a longer machine train, scroll through the display using the scrollbars.

Entering thermal growth

1. Activate the "Machinery Manager" tab in the menu bar.



2. Mark an asset in the left window.

3. Activate the "Dimensions" button in the toolbar.

4. The asset is graphically displayed in the right window. Mark a machine in the right window. The marked machine appears with a blue frame.

Values for thermal growth can only be entered, if the attachment type is set to "Feet" or "Bearing". Otherwise, the "Thermal Growth" button is not active. Activate the "Machine Properties" button as needed and change the attachment type first.

5. Activate the "Thermal Growth" button.

6. A new input screen appears. Enter the vertical and horizontal growth for every machine foot.

7. Values are considered only if thermal growth is activated. As soon as you enter and confirm a value, a check mark is set automatically in the "Thermal growth activated for this machine" check box. If the entered values should not be considered, click on the check box to remove the check mark. The entered values remain saved and can be changed later on.

8. Repeat the procedure with all other machines in the train.

Calculating thermal growth

If no thermal growth information is available for the machine, you can calculate the thermal growth. Thermal growth is calculated based on the material properties, the expected temperature difference, and the distance of the foundation from the shaft axis.

1. Activate the "Thermal Growth" button as described under "Entering thermal growth".

2. Activate the button with the calculator icon.

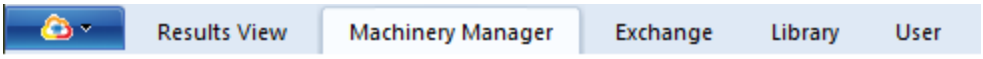
3. Select the machine material and enter room temperature, operating temperature, and the distance of the foundation from the shaft axis.

4. Using the "Calculate" button, the value is displayed in the window. Using "OK", the value is copied into the input field.

5. Values are considered only if thermal growth is activated. As soon as you calculate and confirm a value, a check mark is set automatically in the "Thermal growth activated for this machine" check box. If the calculated values should not be considered, click on the check box to remove the check mark. The values remain saved and can be changed later on.

Entering specifications

1. Activate the "Machinery Manager" tab in the menu bar.



2. Mark an asset in the left window.

3. Mark a coupling in the right window. The marked coupling appears with a blue frame and the "Specifications" button in the toolbar becomes active.

4. Activate the "Specifications" button.

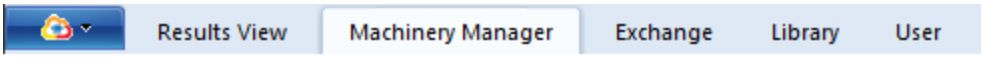
5. A new input screen appears in the right window. Define the display type, reference diameter, as well as vertical and horizontal gap and offset values in the input screen.

6. Values are considered only if specifications are activated. As soon as you enter and confirm a value, a check mark is set automatically in the "Coupling specifications activated" check box. If the entered values should not be considered, click on the check box to remove the check mark. The entered values remain saved and can be changed later on.

Tolerances

Proceed as follows to select suitable tolerances for your coupling:

1. Activate the "Machinery Manager" tab in the menu bar.



2. Mark an asset in the left window.

3. Mark a coupling in the right window. The marked coupling appears with a blue frame and the "Coupling Properties" button in the toolbar becomes active.

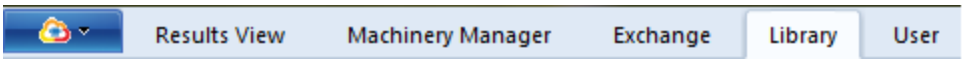
4. Activate the "Coupling Properties" button in the toolbar.

5. Select the coupling type from the template list in the "Type" pull-down menu.

6. The suitable tolerance table is automatically inserted for common coupling templates.

Creating own tolerance tables

1. Activate the "Library" tab in the menu bar.

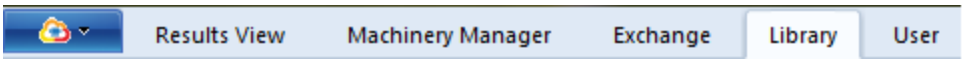


2. Select a tolerance table from the general or industry tolerances in the "Coupling Tolerances" directory.

3. Activate the "Adjust template"  button in the toolbar. A copy of the template is created in the customer-specific directory, which you can then edit.

Using templates

Activate the "Library" tab in the menu bar.



In the right window, the following general templates can be found:

- Generic couplings (standard coupling, single-pivot coupling, intermediate shaft, and Cardan shaft)
- Industrial couplings (selection of additional coupling types)
- Assets (asset with two machines, motor-pump combination, additional common aggregates)
- Tolerance tables depending on coupling type and current frequency (50/60 Hz)
- Measurement modes (continuous, multi-point, etc.)
- Measurement setups (horizontal shaft alignment, vertical shaft alignment, tilt foot measurement, etc.)
- Reports

Generic (=general) and industrial couplings refer to all templates stored in the database that cannot be changed.

Creating own templates

1. Activate the "Library" tab in the menu bar.
2. In the left window, mark a template mapping your specific situation on site the best. The template content is displayed in the right window.
3. Activate the "Adjust template"  button in the toolbar. The marked template is saved as copy in the customer-specific directory (under the respective template directory).
4. In the left window, switch to the customer-specific directory and mark the copied template. You can now edit this template.
5. Adjust the data in the right window.

Example

In the left window, mark the "Assets"\"**Generic** assets"\"A002 - Motor-Pump" directory.

Activate the "Adjust template"  button in the toolbar. A copy of the template is created in the customer-specific directory.

In the left window, mark the "Assets"\"**Customer-specific** assets"\"A1000 - Motor-Pump" directory.

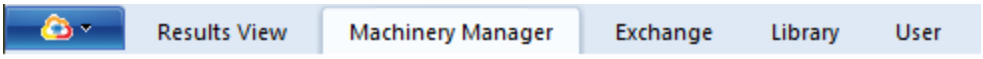
Adjust the template, see "Defining machine properties" on page 37. Save the template for further use.

Another possibility of creating own templates:

1. Activate the "Machinery Manager" tab in the menu bar.
2. In the left window, mark an already configured asset you would like to use as template.
3. Activate the right mouse button in the left window.
4. Select the "In library" context menu item. The configured asset is saved as template for further use under the "Library" tab in the "Assets"\"**Customer-specific** assets" directory.

Defining a machine class

1. Activate the "Machinery Manager" tab in the menu bar.



2. Mark an asset in the left window.

3. Activate the "Measurement Periodicity" button in the toolbar.

4. Select the applicable risk factors and effects for the marked asset from the pull-down menus.

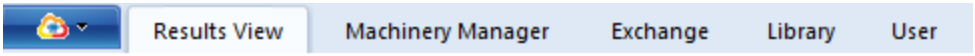
After all data is entered, measurement frequency recommendations appear on top in the right window.

The recommended measurement frequency is separately indicated for the alignment measurements at the shafts and the vibration measurements.

The installation of an online monitoring system may be suggested as well.

Evaluating results

1. Select the "Results View" tab in the menu bar.



2. Click an asset and a measurement file for shaft alignment in the left window.

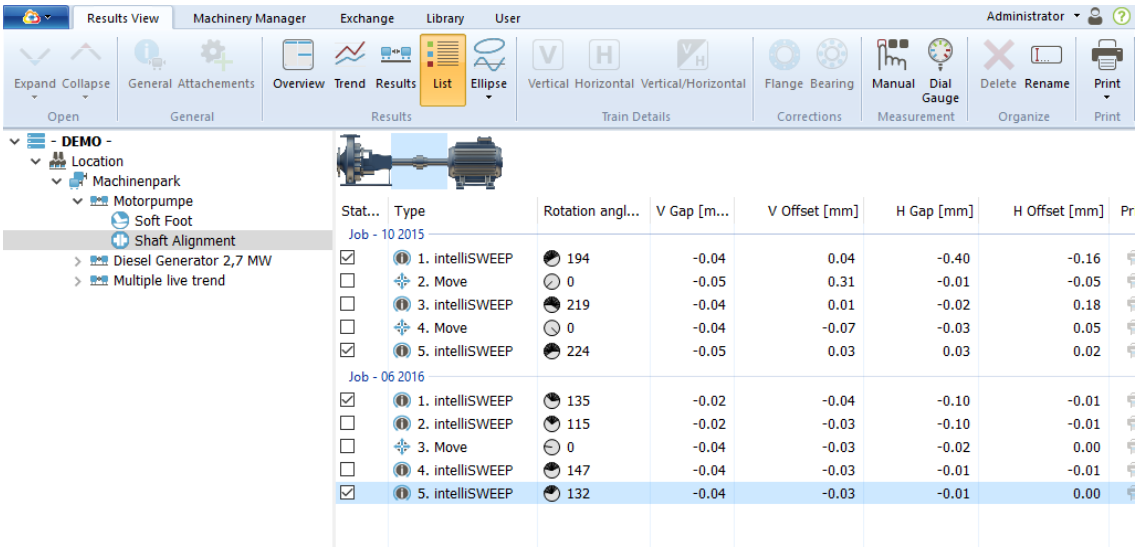
Different result views are available in ARC 4.0 for evaluation:

Icon	Menu item	Meaning
	Overview	Display all result views
	Trend	Display result trend
	Results	Display vertical and horizontal coupling and foot results, display axial view with result vector
	List	Display measurement table with all measurement details, e.g. measurement method, standard deviation, quality factor, measurement date and time
	Ellipse	Display ellipse and elongated ellipse
	Ellipse	Display ellipse only
	Elongated ellipse	Display elongated ellipse only
	Flange	Display flange corrections (only active if a machine with flange is marked)

Trend view: Selecting measurement data

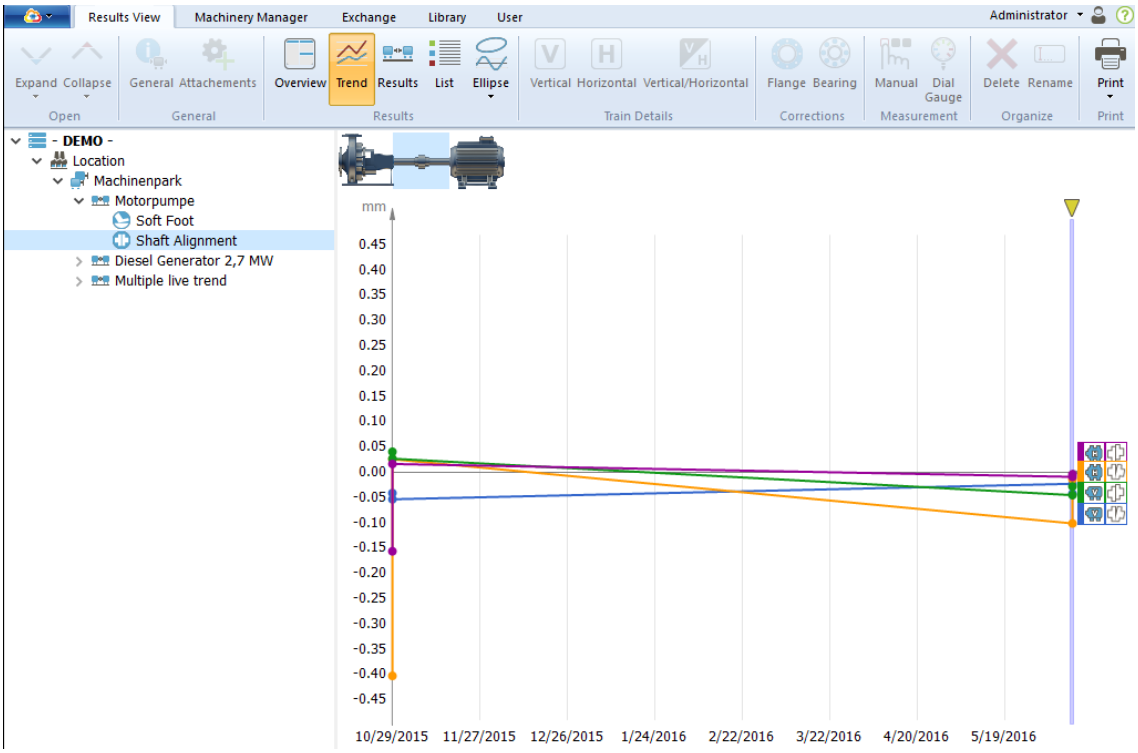
1. Select the "List" button.

2. Select the measurements for the trend representation by placing a check mark in front of the measurement.



Two measurements each can be considered per measurement task, e.g., the first measurement and the last measurement. Measurements, where a move measurement was performed, cannot be considered in the trend representation.

3. Select the "Trend" button to view the updated trend representation.



Enter measurement data manually

1. Select the "List" button. The "Manual" button becomes active.

2. Select the "Manual" button.

The "Manual Measurement" window appears.

3. Enter the vertical and horizontal values and correct date and time as needed.

4. Select the "OK" button.

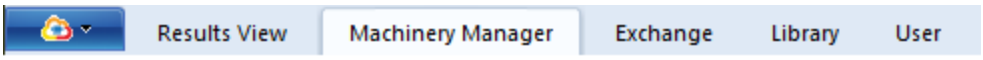
The manually entered measurement data appear in the measurement table (list) with the check mark activated. If the data should not be considered in the trend view, deactivate the check mark.

New functions for evaluating the results

Displaying tolerance values and measurement information

Additional measurement information such as coupling tolerance values can be queried in the dimensions screen.

1. Select the "Machinery Manager" tab in the menu bar.

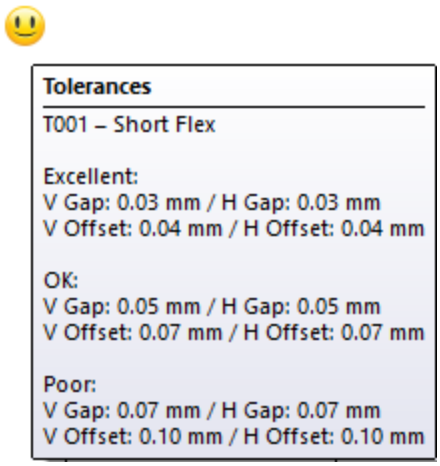


2. Click an asset and a measurement file for shaft alignment in the left window.

3. Select the "Dimensions" button in the toolbar.

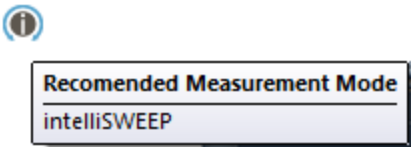
Additional information is stored on the following icons:

Move the mouse over the smiley icon to display the coupling tolerance values:

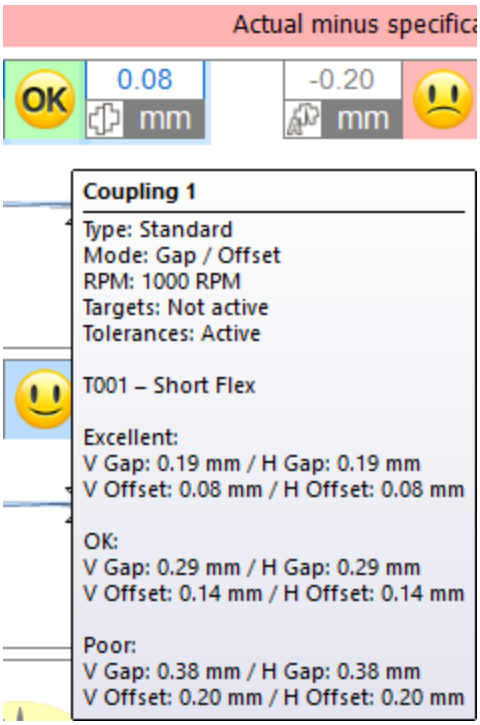


Move the mouse over the smiley icon to view the measurement time:

Move the mouse over the "i" icon to view the recommended measuring mode:



The tolerance information also appears in the results screen if you move over the smiley icon with the mouse.

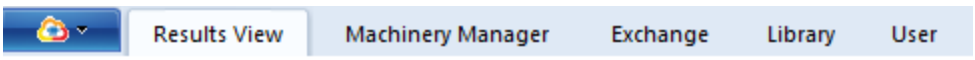


Viewing the measurement video

The measurement video presents the shaft rotation development of a saved measurement.

The measurement video does not present the actual speed at which the measurement value is recorded. Instead, it simulates the measuring process in relation to real-time. You can use the measurement video at a later point in time to see if the shafts were rotated evenly.

1. Select the "Results View" tab in the menu bar.

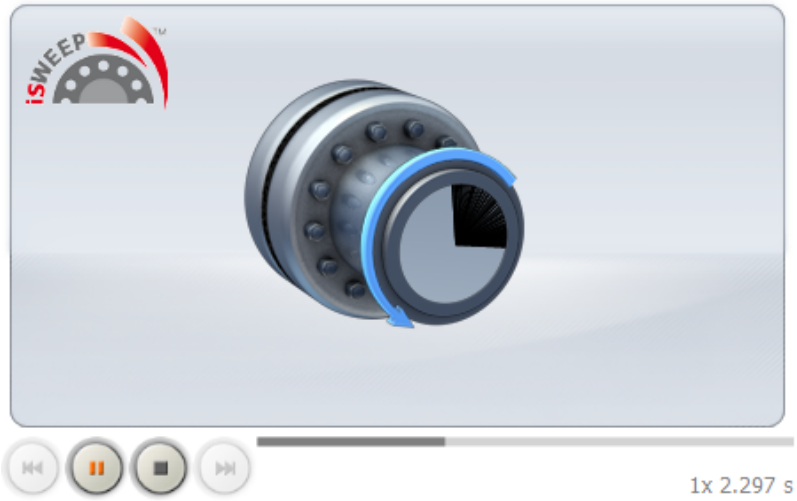


2. Click an asset and a measurement file for shaft alignment in the left window.

3. Select the "Ellipse" button.

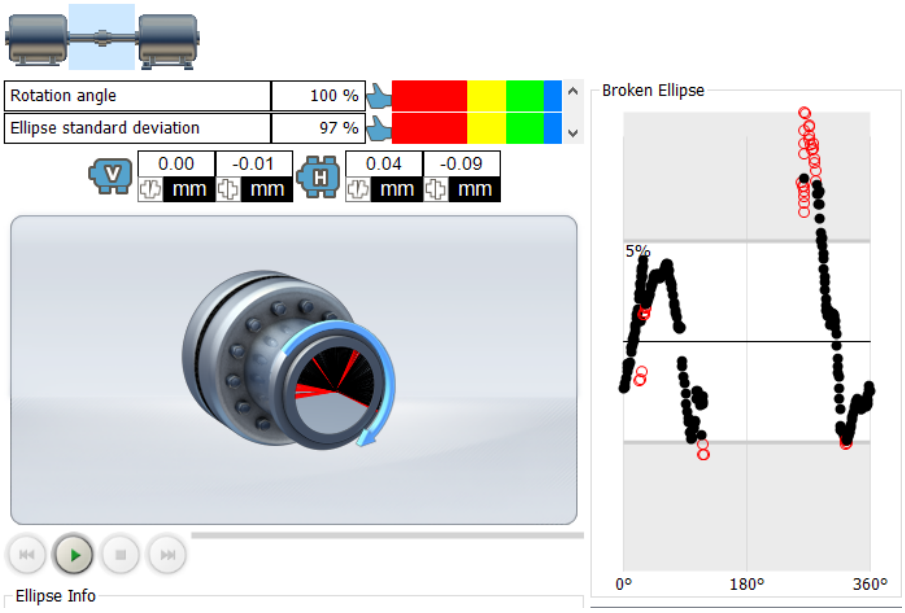

, or

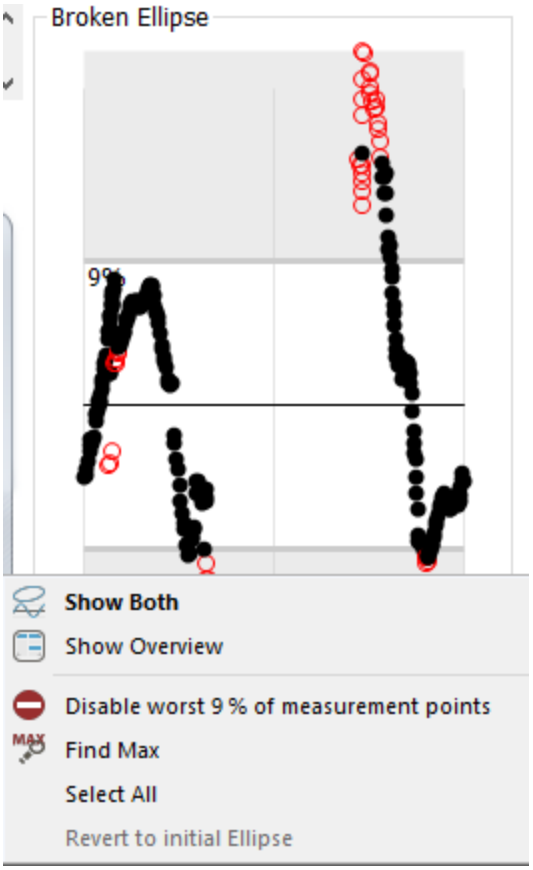
4. Start the measurement video using the play button



Editing the measured ellipse

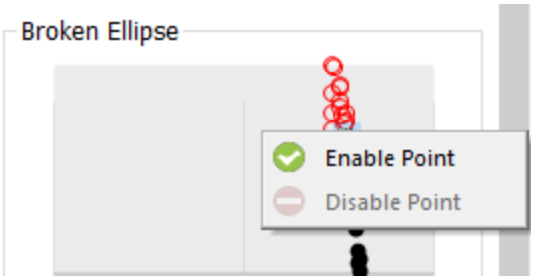
The measured ellipse is reconstructed concurrently to the measurement video.


Rotation angle
100 %
Ellipse standard deviation
97 %
V
0.00
-0.01
mm
mm
H
0.04
-0.09
mm
mm
Ellipse Info
Broken Ellipse
5%
0°
180°
360°


Broken Ellipse
9%
Show Both
Show Overview
Disable worst 9 % of measurement points
Find Max
Select All
Revert to initial Ellipse

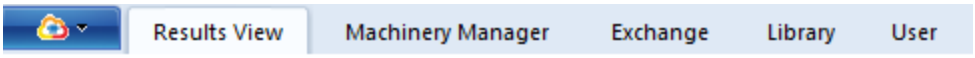
Move the lower (or upper) border of the measured ellipse to include or exclude further measuring points. The context menu of the right mouse button offers additional options such as finding maximum values, deactivating measuring points, etc.

Measuring points that were deactivated on the measuring device, for example, can be reactivated using the context menu item of the right mouse button. To do so, click on either the individual measuring point with the mouse or select multiple measuring points by dragging them into a window.



Averaging the measurement data

1. Select the "Results View" tab in the menu bar.



2. Click an asset and a measurement file for shaft alignment in the left window.

3. Select the "List" button.

4. Select the measurements in the measurement table that you wish to average.

Select the entire line so that it is highlighted blue. Use the Ctrl and the Shift key to select further lines.

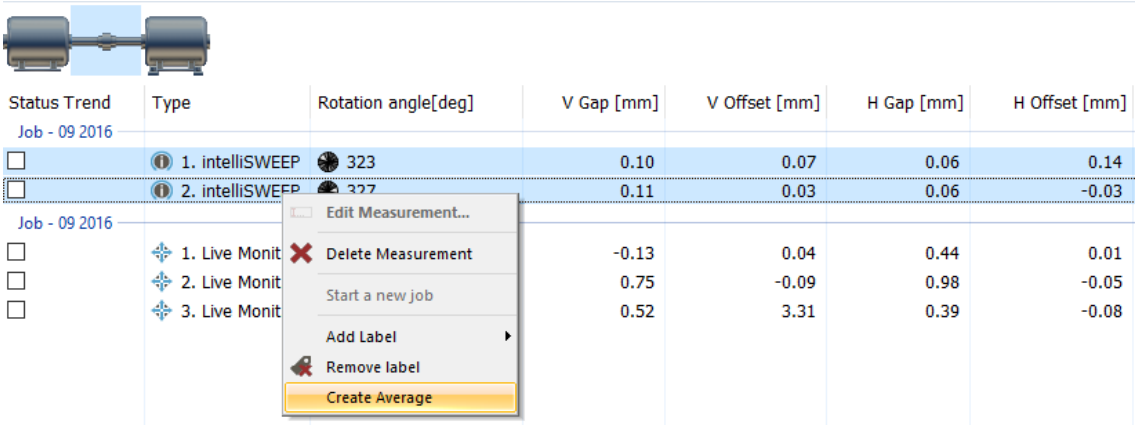
Note:

Only measurements from the same job can be averaged.

Move measurements cannot be averaged with other measurements.

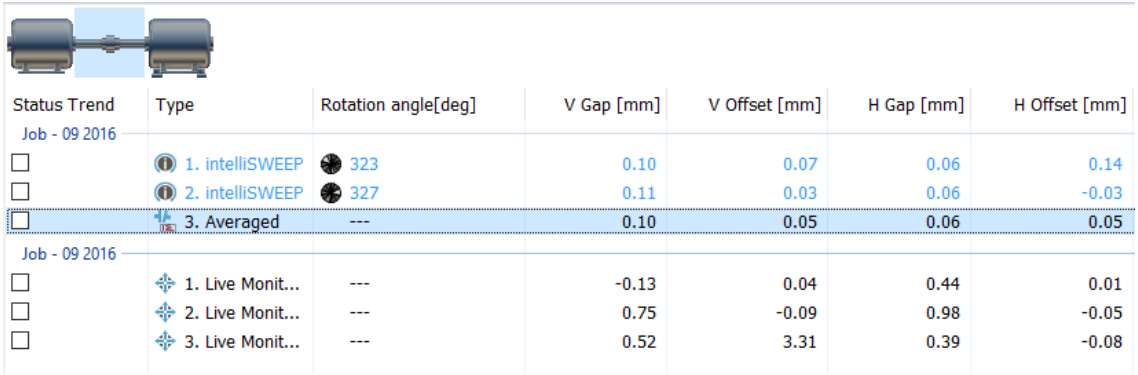
There must not be any move measurements between the measurements to be averaged.

The check boxes at the start of the line are used to select the trend representation and are of no significance to the average determination.



5. Click the right mouse button once you have made a selection. The context menu appears.

6. Select the "Create Average" context menu item.



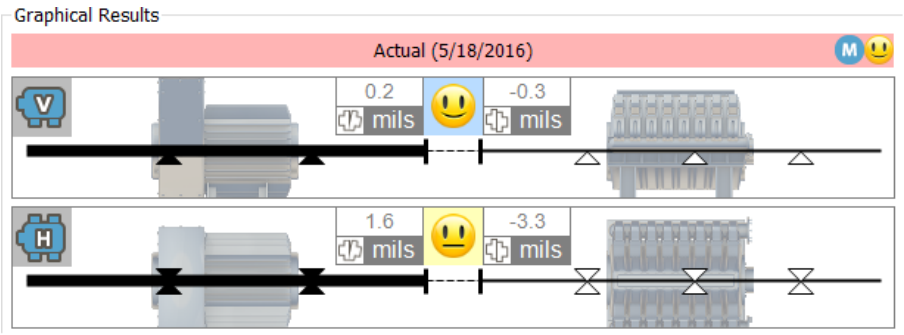
A new line (Averaged) with the averaged values underneath the averaged measurement series.

If this line is selected, the measurement series used for averaging appear in blue font. This can be helpful if multiple average determinations were carried out in one measurement table. This means that for each average determination it is possible to track which measurement series were included in the calculation.

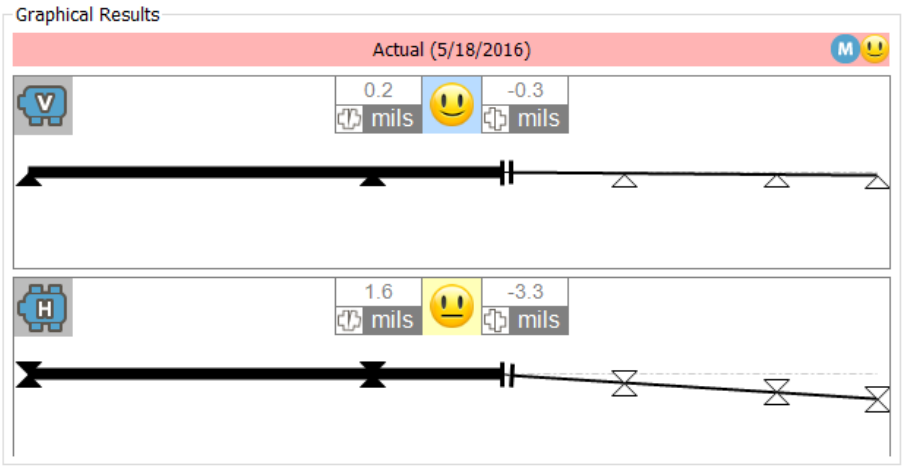
Displaying the machines to scale

There are two options available for displaying the results:

1. Overlayed machine graphics and length displays that are not to scale

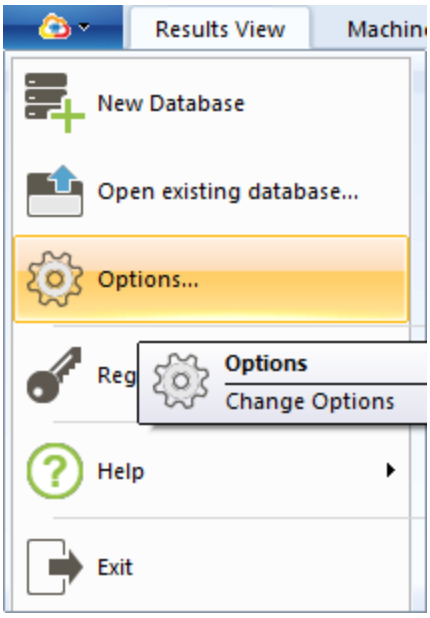


2. Hidden machine graphics and length displays that are not scale



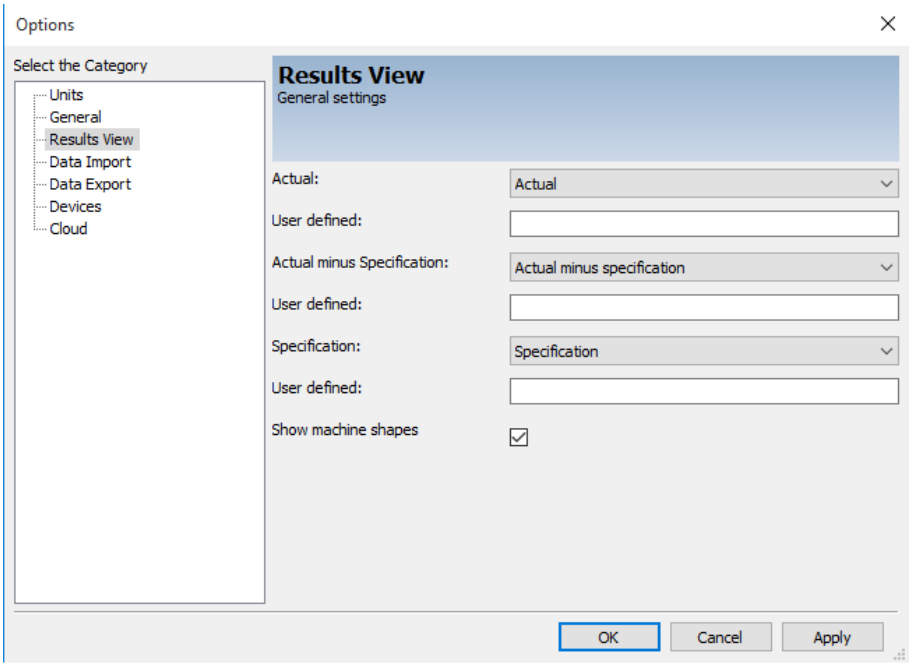
This how you can switch between the two displays:

1. Select the ARC 4.0 icon in the left corner of the menu bar.



2. Select the "Options..." menu item.

The "Options" window appears.



3. Select the "Results View" menu item.

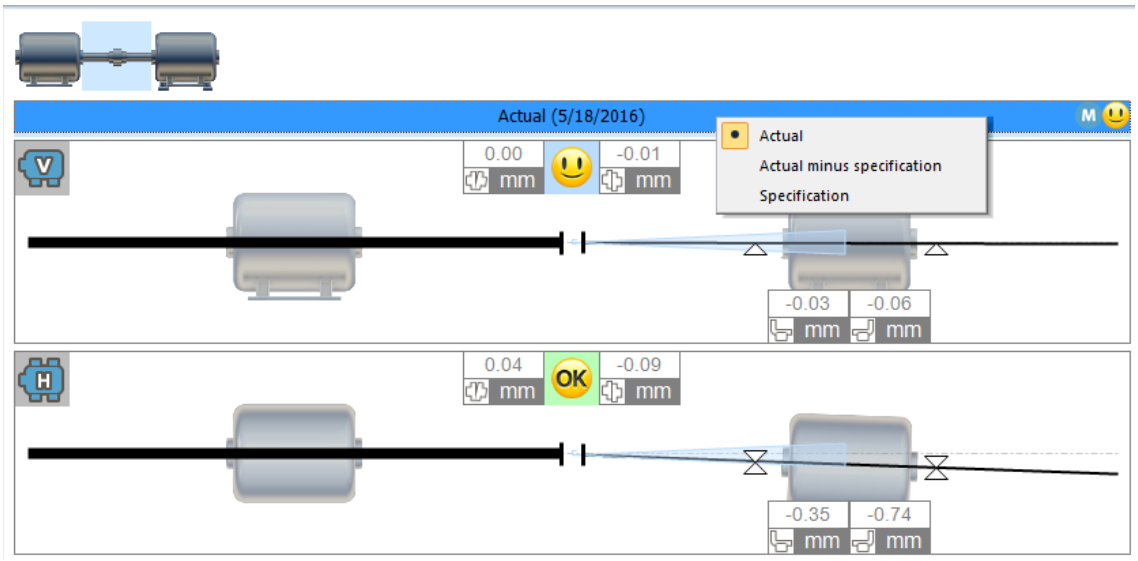
4. Check/uncheck the "Show machine shapes" check box.

5. Confirm the selection with "Apply".

Displaying the specifications

The title line shows the set display option in the coupling results.

Right click in the title line and select a different display option where appropriate.



The following display options can be selected:

"Actual" - only displays the measured alignment values without accounting for default values or values for thermal growth even if these were entered and selected.

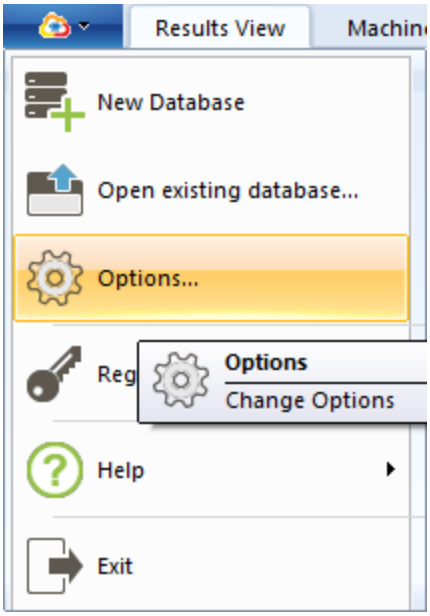
"Actual minus specification" - accounts for all default specifications and/or values for thermal growth.

"Specification" - displays the impact of default specifications and/or values for thermal growth that were entered - without accounting for the measured misalignment.

Individually adapting texts for display options

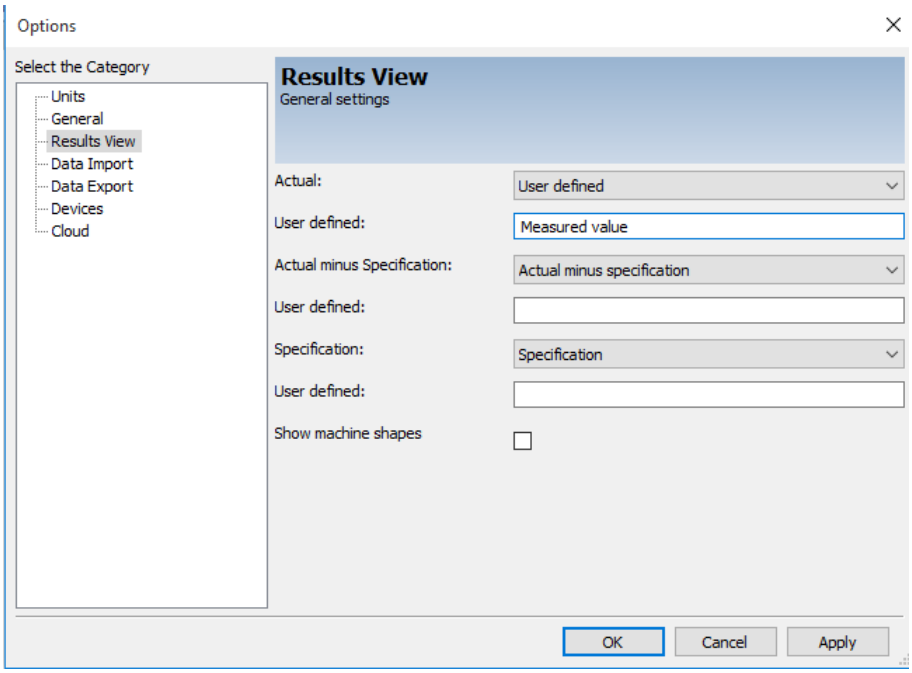
The text designations "Actual", "Specification" and "Actual minus Specification" can be adapted according to customer requirements.

1. Select the ARC 4.0 icon in the left corner of the menu bar.



2. Select the "Options..." menu item.

The "Options" window appears.

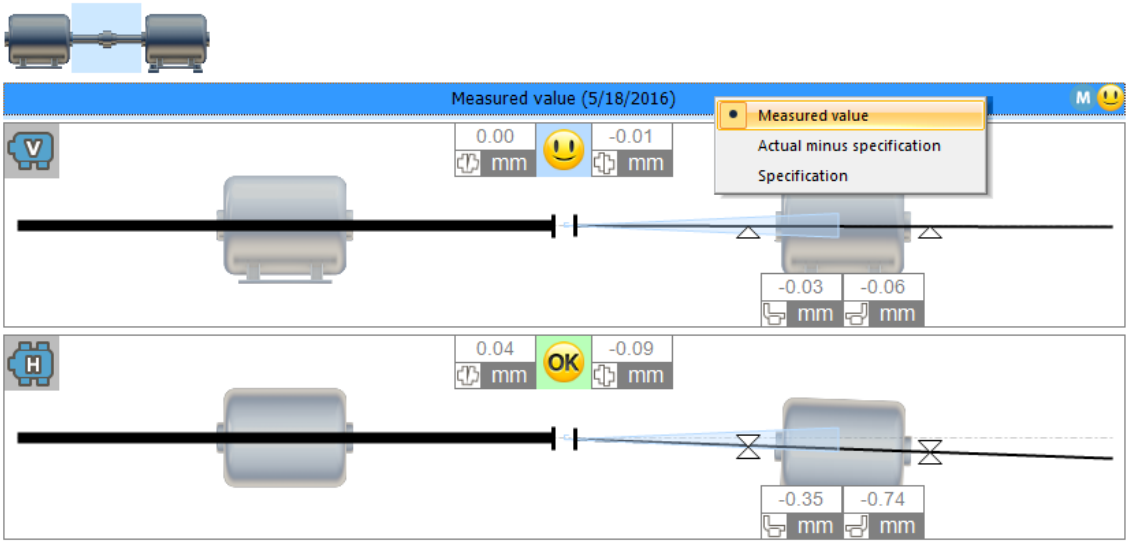


3. Select the "Results View" menu item.

4. Enter the separate user-defined designations or select one of the options in the drop-down menu.

5. Confirm the entries with "Apply".

The user-defined designations are displayed in the title line of the coupling results:



Live Trend

What is Live Trend?

Live Trend is an application that runs on the PRÜFTECHNIK Condition Monitoring GmbH platforms **ROTALIGN touch** and **ROTALIGN Ultra iS Expert**

The application is used for monitoring machine movements that can be caused by the following influences:

- Thermal growth
- Machine foundation movements
- Changes in the operating load

Live Trend tracks machine displacements and indicates them in X- and Y-coordinates. The intelligent sensALIGN sensor systems allows to record temperature and vibration data additionally.

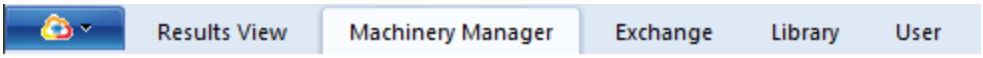
In a Live Trend file, measurement series can be stored as measurement history and assigned clearly to an asset.

Using ARC 4.0 Live Trend measurement files can be prepared and evaluated on the PC.

Live Trend setup

Proceed as follows to **prepare** a Live Trend measurement file:

1. Select the "Machinery Manager" tab in the menu bar.



2. Click an asset in the left window.

3. Select the “Live Trend Setup” button in the toolbar.

4. Select the applicable operating conditions (Cold to Hot, Hot to Cold) for the market asset.

5. Enter the distance of the measurement sensor system as well as the measurement duration and the desired measurement interval.

Note: The total measurement duration can amount to maximum 72 hours.

Exchanging Live Trend measurement data

Importing and exporting measurement files

A detailed description of the measurement file exchange can be found in chapter "Connecting PRUFTECHNIK measuring devices" on page 93.

You can recognize Live Trend measurement files in ARC 4.0 by the following icon:

Selecting the standard display for imported measurement data

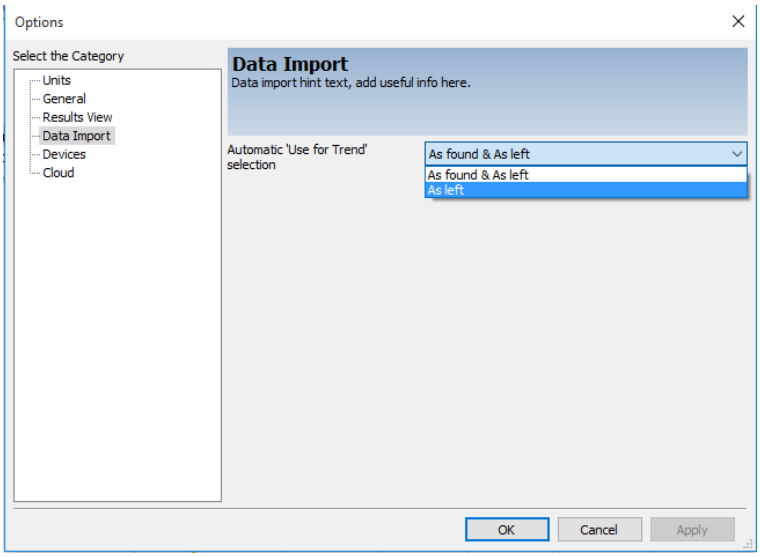
Live Trend measurement data can be imported from the PRÜFTECHNIK Condition Monitoring GmbH platforms ROTALIGN touch and ROTALIGN Ultra iS Expert.

If labels were already assigned to the measurement data on the measurement computer (e.g., with “as found” or “as left”), two options can be selected as default for a fast and automated display. For this purpose, proceed as follows:

1. Select the icon in the upper left corner of the menu bar.

2. The pull-down menu opens. Click the “Options” icon.

3. Select an option as standard display under “Data Import”.



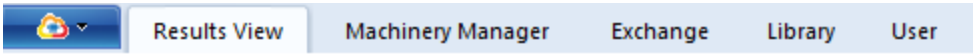
Note:

If no labels or labels with a different name were assigned in a measurement file, the first measurement in the measurement series is automatically set to “as found” and the last measurement as “as left”.

The selection for the presentation in trend charts can be changed at any time in the list (set check mark).
Further information can be found under "Trend view: Selecting measurement data" on page 50.

Evaluating Live Trend results

1. Select the "Results View" tab in the menu bar.



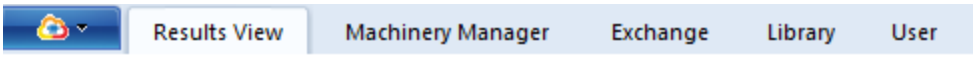
2. Click an asset and an imported Live Trend measurement file in the left window.

Different result views are available in ARC 4.0 for evaluation:

Icon	Menu item	Meaning
	Overview	Display all result views
	Results	Display vertical and horizontal coupling and foot results, display axial view with result vector and trend chart
	List	Display trend table with all measurement details, e.g., measurement date and time, raw X- and Y-values, temperature changes and averaging
	Vertical	Display vertical coupling and foot results only, display result vector and trend chart
	Horizontal	Display horizontal coupling and foot results only, display result vector and trend chart
	Vertical/horizontal	Display vertical ad horizontal coupling and foot results, display result vector and trend chart

Trend chart

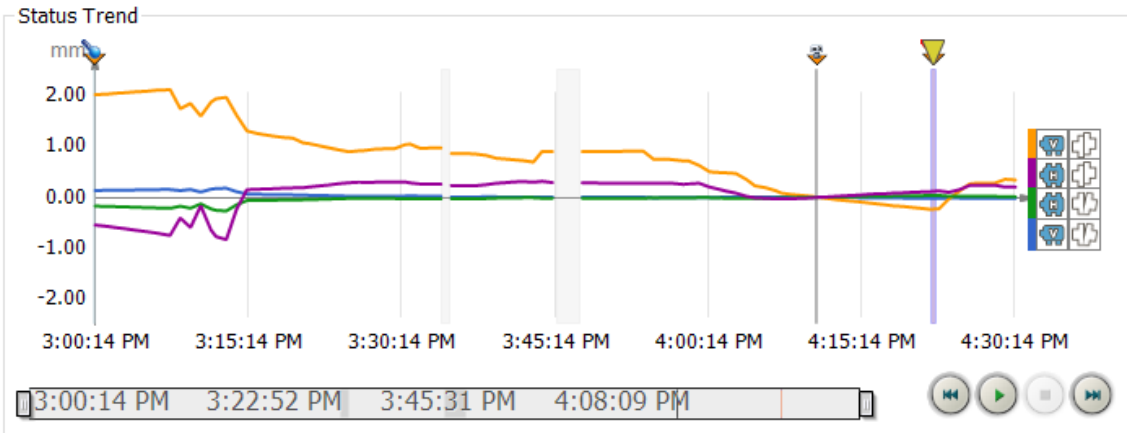
1. Select the "Results View" tab in the menu bar.



2. Click an asset and an imported Live Trend measurement file in the left window.

3. Click one of the following icons "Overview", "Results", "Vertical", "Horizontal", or "Vertical/Horizontal" in the toolbar.

The trend chart will be displayed in the lower screen area.



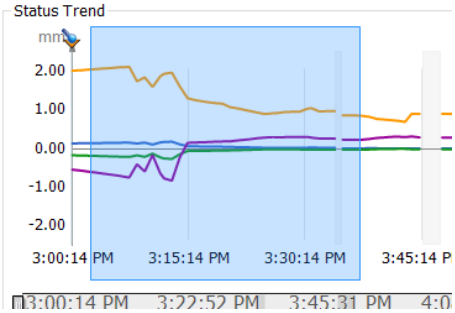
In the trend chart, the **vertical and horizontal gap** as well as the **vertical and horizontal offset** are presented with four different colors over the entire course of time of the measurement.

Note: In the ROTALIGN touch measuring device, the coupling results of an alignment measurement can be adopted as the initial values for a subsequent Live Trend measurement.

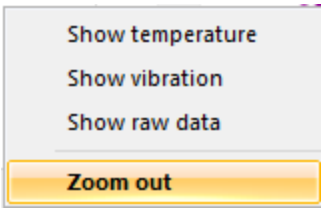
The associated trend chart in ... ROTALIGN touch and in ... ARC 4.0 does not in this instance start at zero (0, 0, 0, 0) for the horizontal and vertical gap and offset value. Instead, it starts at the most recently measured and adopted coupling values.

Zooming the trend chart

To **zoom in**, use the **right mouse button** to drag a window across the section in the trend chart, you would like to enlarge.



To **zoom out**, use the "Zoom out" context menu item of the right mouse button



OR the following icon in the bottom right area of the screen:

Displaying the trend chart as a full-screen image

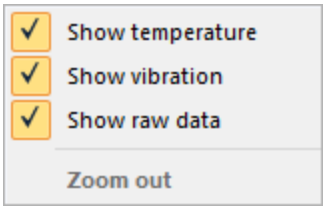
Select the "Trend" button in the toolbar.

The trend chart is shown as a full-screen image.

If the trend chart was enlarged (zoomed in) in a different view, then the enlarged screen section appears as a full-screen image.

Showing additional measurement data

1. Click the right mouse button in the trend chart. The context menu appears:



2. Select the desired options. The measurement data (sensor temperature, vibrations, raw data) is displayed with additional colored characteristic lines in the trend chart.

To **hide** the additional information, click the right mouse button again and remove the check mark.

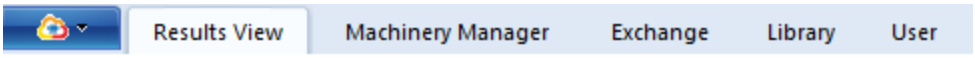
Displaying trend development

Using the buttons at the bottom right, the trend development can be displayed as video sequence. After starting, the measurement development is presented **in real-time**.

Icon	Menu item	Meaning
	Start	Plays back the trend development as video sequence in real-time.
	Stop	Stops the playback
	Pause	Pauses the playback
	Faster/ forward	Accelerates the playback by a factor of 2. The button can be clicked several times to further accelerate the playback.
	Slower/backward	Slows down the playback. The button can be clicked several times. After activating the button many times, playback will be backward.

Trend table

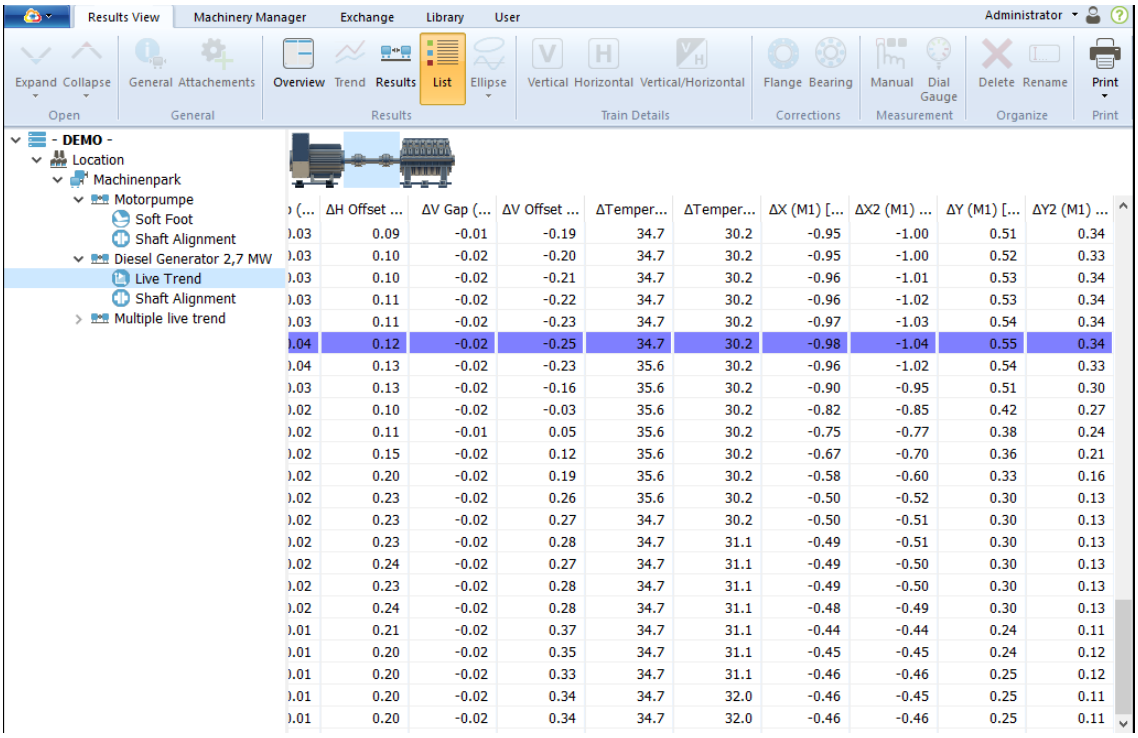
1. Select the "Results View" tab in the menu bar.



2. Click an asset and an imported Live Trend measurement file in the left window.

3. Click the "List" button in the toolbar.

The trend table is displayed:



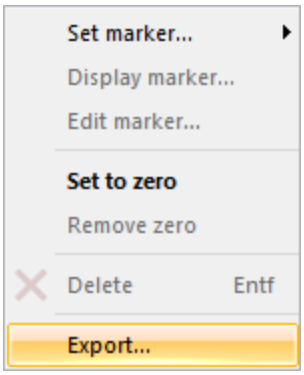
(...	ΔH Offset ...	ΔV Gap (...	ΔV Offset ...	ΔTemper...	ΔTemper...	ΔX (M1) [...	ΔX2 (M1) ...	ΔY (M1) [...	ΔY2 (M1) ...
.03	0.09	-0.01	-0.19	34.7	30.2	-0.95	-1.00	0.51	0.34
.03	0.10	-0.02	-0.20	34.7	30.2	-0.95	-1.00	0.52	0.33
.03	0.10	-0.02	-0.21	34.7	30.2	-0.96	-1.01	0.53	0.34
.03	0.11	-0.02	-0.22	34.7	30.2	-0.96	-1.02	0.53	0.34
.03	0.11	-0.02	-0.23	34.7	30.2	-0.97	-1.03	0.54	0.34
.04	0.12	-0.02	-0.25	34.7	30.2	-0.98	-1.04	0.55	0.34
.04	0.13	-0.02	-0.23	35.6	30.2	-0.96	-1.02	0.54	0.33
.03	0.13	-0.02	-0.16	35.6	30.2	-0.90	-0.95	0.51	0.30
.02	0.10	-0.02	-0.03	35.6	30.2	-0.82	-0.85	0.42	0.27
.02	0.11	-0.01	0.05	35.6	30.2	-0.75	-0.77	0.38	0.24
.02	0.15	-0.02	0.12	35.6	30.2	-0.67	-0.70	0.36	0.21
.02	0.20	-0.02	0.19	35.6	30.2	-0.58	-0.60	0.33	0.16
.02	0.23	-0.02	0.26	35.6	30.2	-0.50	-0.52	0.30	0.13
.02	0.23	-0.02	0.27	34.7	30.2	-0.50	-0.51	0.30	0.13
.02	0.23	-0.02	0.28	34.7	31.1	-0.49	-0.51	0.30	0.13
.02	0.24	-0.02	0.27	34.7	31.1	-0.49	-0.50	0.30	0.13
.02	0.23	-0.02	0.28	34.7	31.1	-0.49	-0.50	0.30	0.13
.02	0.24	-0.02	0.28	34.7	31.1	-0.48	-0.49	0.30	0.13
.01	0.21	-0.02	0.37	34.7	31.1	-0.44	-0.44	0.24	0.11
.01	0.20	-0.02	0.35	34.7	31.1	-0.45	-0.45	0.24	0.12
.01	0.20	-0.02	0.33	34.7	31.1	-0.46	-0.46	0.25	0.12
.01	0.20	-0.02	0.34	34.7	32.0	-0.46	-0.45	0.25	0.11
.01	0.20	-0.02	0.34	34.7	32.0	-0.46	-0.46	0.25	0.11

The list of measurements comprises the following information:

- Measurement date and time
- Raw ΔX1/X2 and ΔY1/Y2 values
- Temperature changes
- Averaging

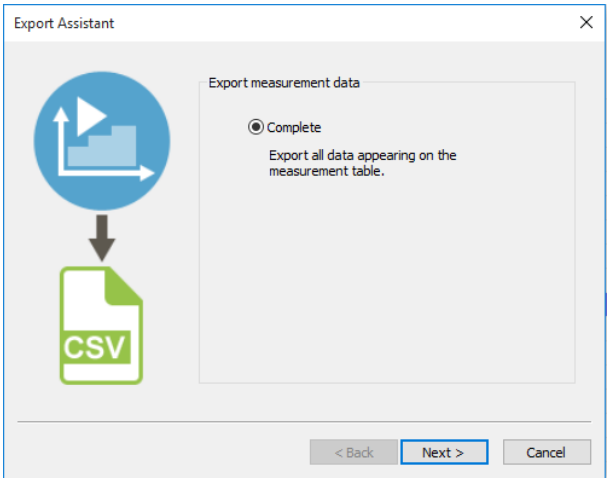
Exporting a trend table as a csv-file

1. Select the right mouse button inside the trend table.

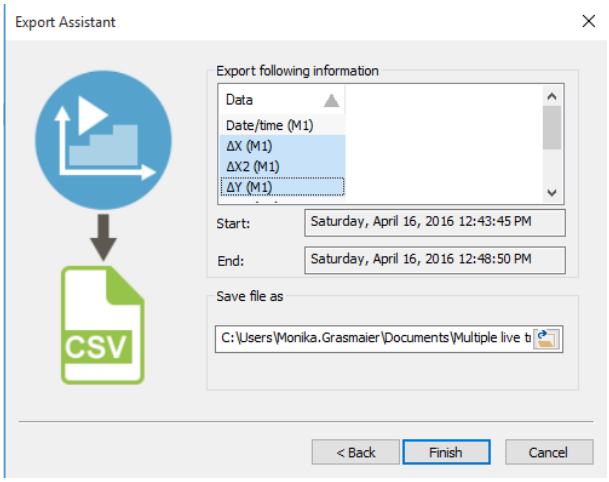


2. Select the "Export..." context menu item.

The Export Assistant appears.



3. Select the "Next >" button.



4. Select the data fields that are to be exported in the "Export following information" window.

Press and hold the shift key if multiple selections are to be made.

Select the desired start and end time for the measurement series, the storage location and the file name.

5. To save, select the "Finish" button.

Displaying the csv-file as an Excel spreadsheet

Open the csv-file in Excel. The exported data has separators but is not separated. All of the data is in column A.

1. Select all of column A by clicking on the header.

2. Select the "Data" tab and the "Text in columns" menu bar option.

The text conversion assistant opens. Follow the instructions of the assistant to separate the values into columns.

3. Select "Separated" as the file type.

4. Make an appropriate selection for the separators.

Note: Live Trend measurement data is exported as a csv-file (comma-separated values). Different separators are used during the export depending on the language or Windows setting or depending on the units used. Tab stops, semicolons and spaces can be used as an alternative to commas.

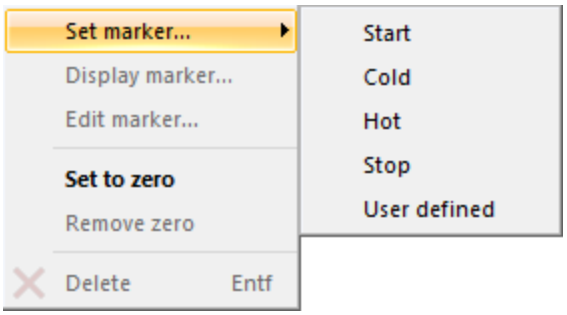
Marker

Markers can be set, deleted, and edited in the trend chart as well as in the trend table.

Setting a marker

1. Using the left mouse button, mark the desired point in time in the trend chart or in the trend table.

2. Click the right mouse button. The context menu appears:



3. Select the desired option.

Activity / marker	Meaning
Start	Is used for marking the point in time, when the machine was started
Cold	Is used for the first operating phase after the start
Hot	Is used for indicating the operating condition, when the machine is at operating temperature
Stop	Is used for marking the point in time, when the machine was switched off
User defined	Is used for marking additional special operating conditions

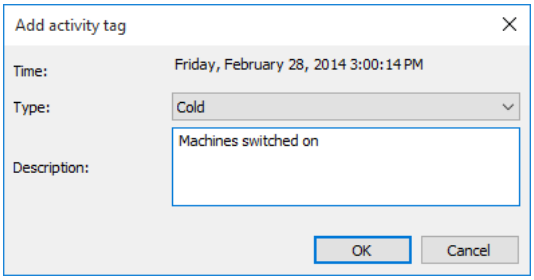
Note: The "Start", "Cold", "Hot", and "Stop" markers and the zero point can only be assigned once. If one of these markers is set a second time, the marker position is moved to the new position. User-defined markers can be assigned several times.

Viewing and editing a marker (activity)

Using the “View Activity …” menu item, the type and point in time, when the marker was set, can be viewed for already existing markers.

Using the “Edit Activity …” menu item, set markers can be edited.

Additional information regarding the conditions for the marked point in time can be stored in the “Description” text field.



Deleting a marker

1. Mark the marker using the **left mouse button**.

2. In the context menu of the **right mouse button**, select the “Delete” button or select the “Delete” button in the toolbar or the “Delete” key.

Setting and removing the zero point

Using the “Set Zero Point” menu item, any time span within the entire measuring series can be limited and analyzed without changing the raw data.

Application example

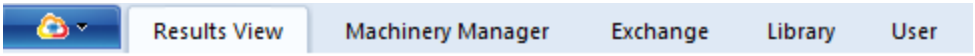
Practically, the Live Trend measurement does not necessarily start at the same time as the machine is switched on, but often already much earlier. Thus, a zero point can be set at the switch-on time (start

marker, cold marker) for the analysis. Next, all machine changes are calculated and presented relative to the set zero point and not relative to the measuring start point.

Using “Remove Zero Point” or “Delete”, the zero point can be removed again at any time.

Reading out the specifications and thermal growth

1. Select the "Results View" tab in the menu bar.

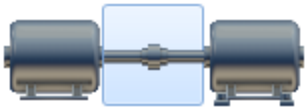


2. Click an asset and an imported Live Trend measurement file in the left window.

3. Select the "Overview" buttons.

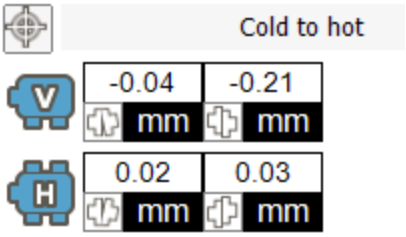
4. Set a Cold marker and a Hot marker in the trend chart. The values that are subsequently calculated are dependent on the marker positions.

5. Mark the coupling in the miniature presentation in the top left of the screen.

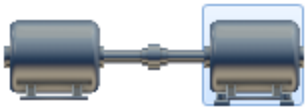


The calculated **vertical and horizontal gap and offset values** are displayed in the window on the right. These correspond to the recommended coupling specifications.

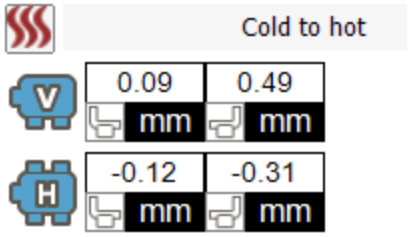
Note: The displayed values are the difference values between the hot marker and the cold marker. If the markers are changed, this may result in changed difference values.



6. Mark the moving machine in the miniature presentation in the top left of the screen.



The calculated **vertical and horizontal foot correction values** are displayed in the window on the right. These correspond to the calculated thermal growth.



Adopting calculated values as default values

Select the button  to adopt the calculated values for the coupling specifications.

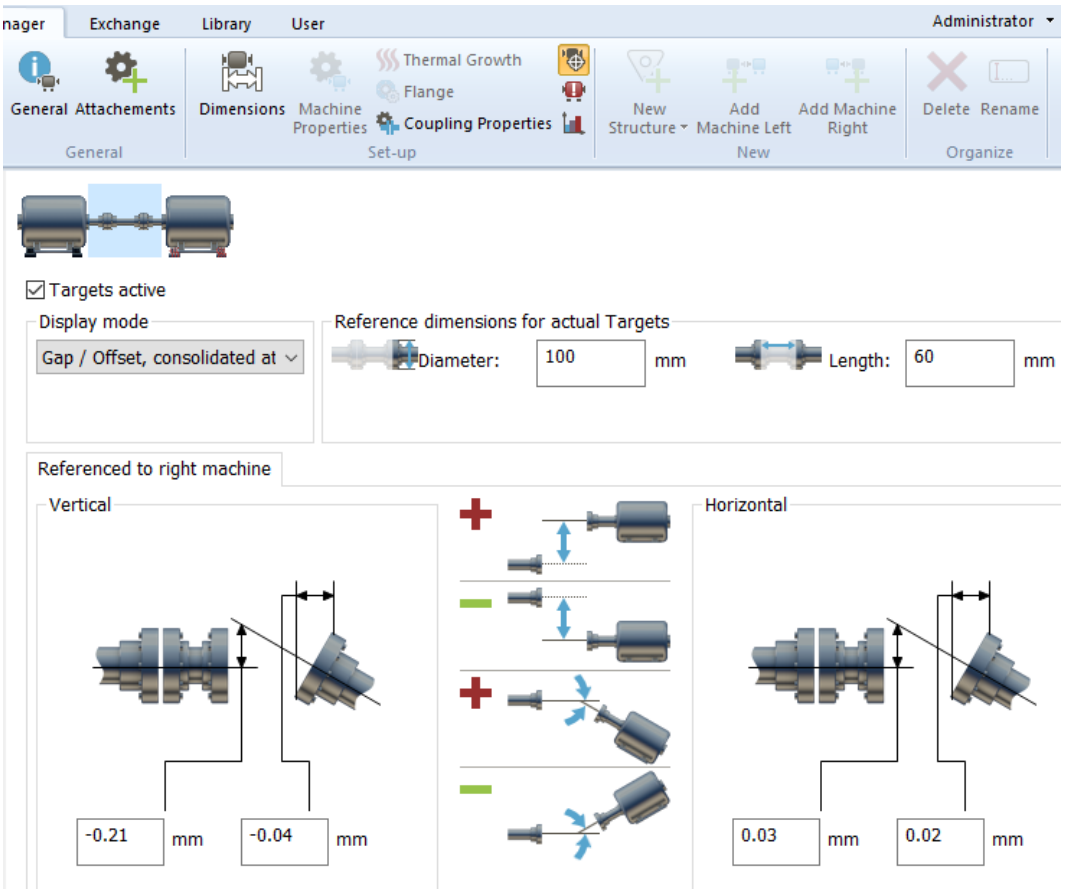
Select the button  to adopt the calculated values as specifications for thermal growth.

A prompt appears in both cases. This needs to be confirmed.

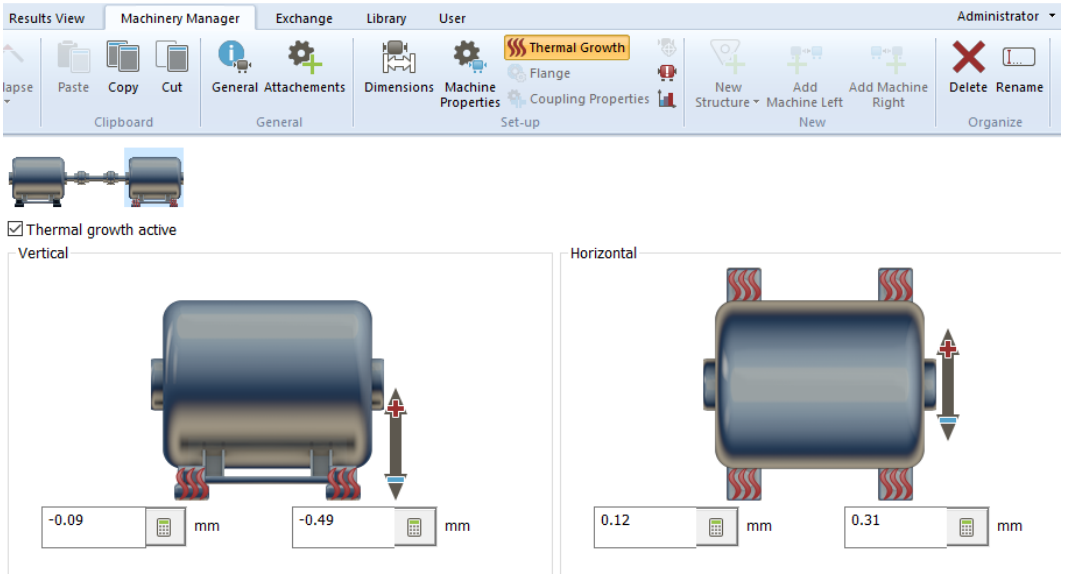
The calculated values are interdependent. For this reason, adopting the calculated specifications for both the coupling and foot values is not recommended.

The adopted values can be called up and, where necessary, edited in the following screens:

Machinery Manager - Specifications

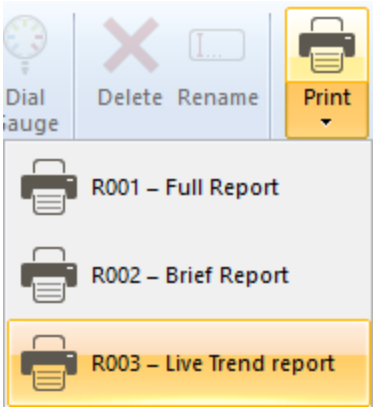


Machinery Manager - Thermal growth



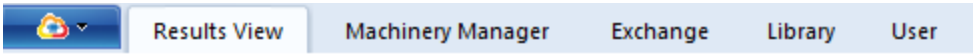
Printing Live Trend measurement report

1. Click the sub-menu of the “Print” button and select the “R003 - Live Trend report" format for printing.



Printing

1. Select the "Results View" tab in the menu bar.



2. Click a measurement file in the left window.

 or or

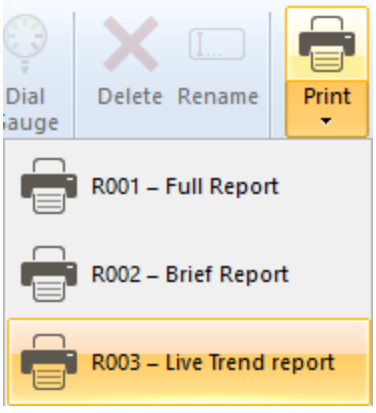
The "Print" button in the toolbar becomes active.

3. Select the "Print" button.

The complete measurement report is outputted on your standard printer. The template used here is the template that was selected under the "Machinery Manager" tab, unless you define a quick selection for the report format.

Selecting the report format quickly

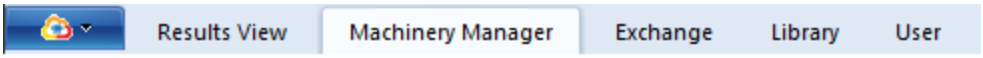
Click the sub-menu of the “Print” button and select one of the displayed report formats for printing:



The measurement report is printed in the selected report format. The “R003 - Live Trend report" template is suitable for Live Trend measurements.

Creating template for report

1. Select the "Machinery Manager" tab in the menu bar.



2. Click an asset in the left window.

3. Select the "General" button in the toolbar

4. Select a measurement report format from the "Report" pull-down menu.

Managing data

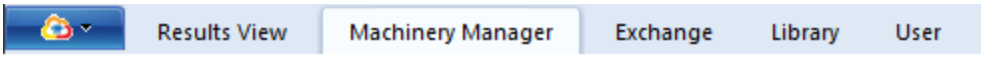
This section contains all information about data exchange and data backup.

Please refer to "Importing a database" on the next page for information on importing data from the previous version of Alignment CENTER.

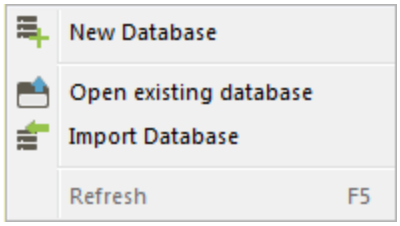
Importing a database

If you used the previous Alignment CENTER version on your PC, you can import the complete database into ALIGNMENT RELIABILITY CENTER 4.0.

1. Select the "Machinery Manager" tab in the menu bar.



2. Place the mouse pointer into the left window and click on the right mouse button. An additional window opens:



3. Select the "Import Database" menu item.

4. Select the storage location of the Alignment CENTER database (file format: *.mdb) and open the database to import the data.

Note: If you are using the OMNITREND software made by PRÜFTECHNIK Condition Monitoring GmbH, the directory structure (without measurement files) is imported as well during a database import. Live Trend data is also imported within the scope of the database import.

Exchanging measurement files from one data-base to another

ARC 4.0 Version 1.2 offers some new functions to allow a quick and easy exchange of measurement data:

Exchanging measurement files via the desktop

Measurement files can be imported or exported individually. This option exists for ARC 4.0 measurement files of all versions (*.arc4) and for measurement files of the Alignment CENTER software (*.ACTrans-port).

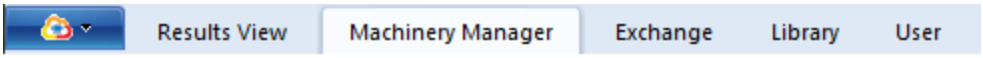
1. Deposit the individual measurement files on the desktop per drag&drop if, for example, you have received measurement files by email.

Examples of measurement files on the desktop:

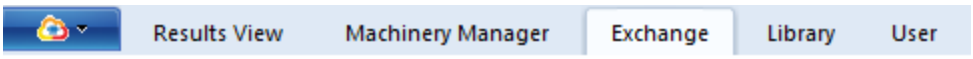
Left-hand symbol: Alignment CENTER File

Right-hand symbol: ARC 4.0 File

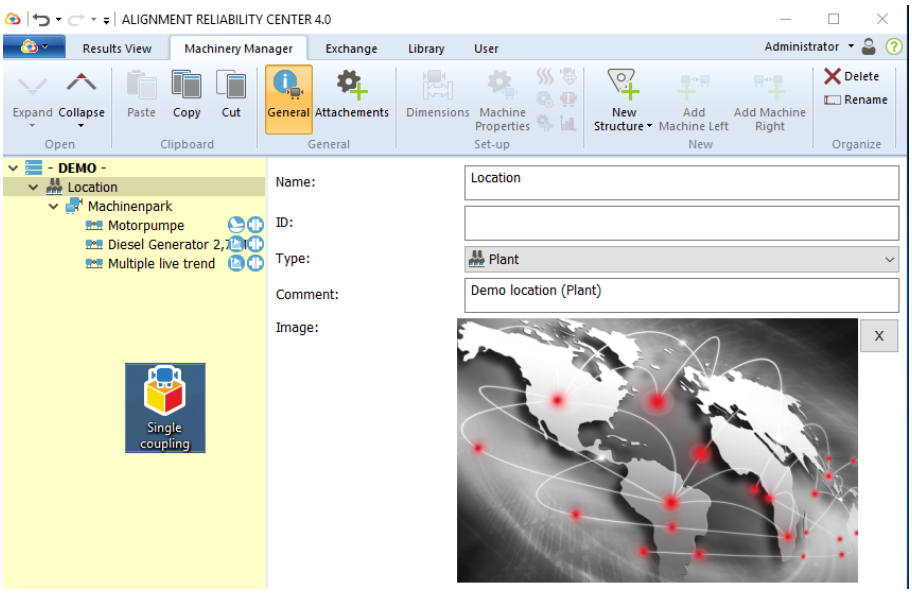
2. Select the "Machinery Manager" tab or the "Exchange" tab in the menu bar.



or



3. Drag the measurement files into the software's left-hand window per drag&drop ARC 4.0 .



The measurement files are copied. Press and hold the Ctrl key to move them.

Measurement files can be copied and moved from your desktop in the same way ARC 4.0 .

Exchanging measurement files via the menu

1. Click an asset in the left-hand window.

2. Click the right-hand mouse button. The context menu appears:

3. Select the "Export file..." context menu item or "Import file..." context menu item .

During the import, you can choose between the formats ARC 4.0 and Alignment CENTER .

Updating the dimensions during data import

In ARC 4.0 assets can be preconfigured. This prepared data can be copied to the PRÜFTECHNIK Condition Monitoring GmbH measuring devices. After conducting the measurement, if the data is copied back to

the ARC 4.0 , the software recognizes the structure automatically. The measurement data is stored in the correct directory relative to the asset.

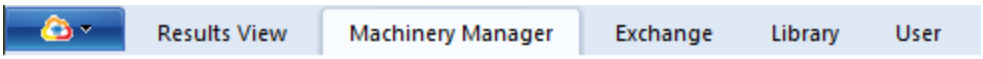
It is possible that dimensions such as clearances, coupling diameters will be adapted on the measuring device at a subsequent point in time or that older measurement data sets will be imported into an asset and the dimensions will not match the values stored in ARC 4.0 :

In this ARC 4.0 version 1.2 dimensions can be overwritten when measurement files are imported if the imported dimensions are more recent and more current than the values stored in ARC 4.0 . ARC 4.0 This is detected automatically. A prompt appears prior to the data being overwritten. This needs to be confirmed.

Merging assets and measurement files

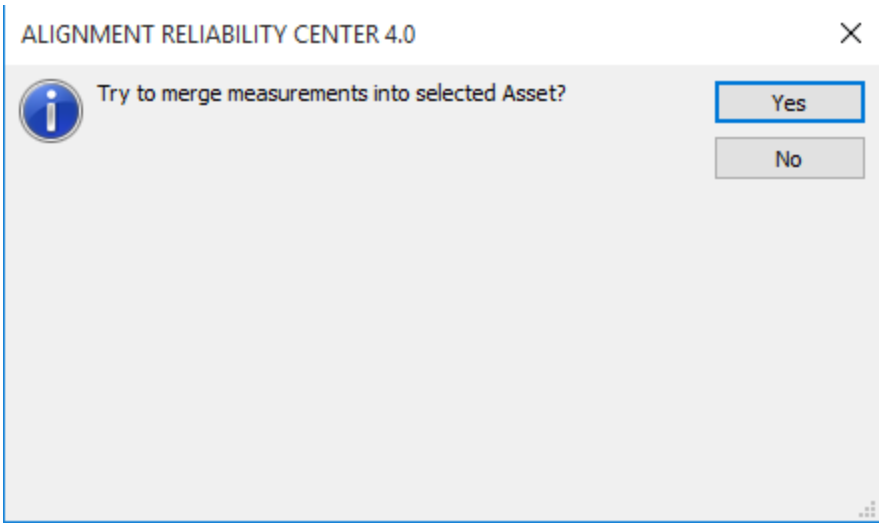
In this ARC 4.0 version 1.2 measurement files of different assets can be added. This is a practical function if the same asset was created and used in different databases. This function allows data sets to be merged quickly.

1. Select the "Machinery Manager" tab in the menu bar.

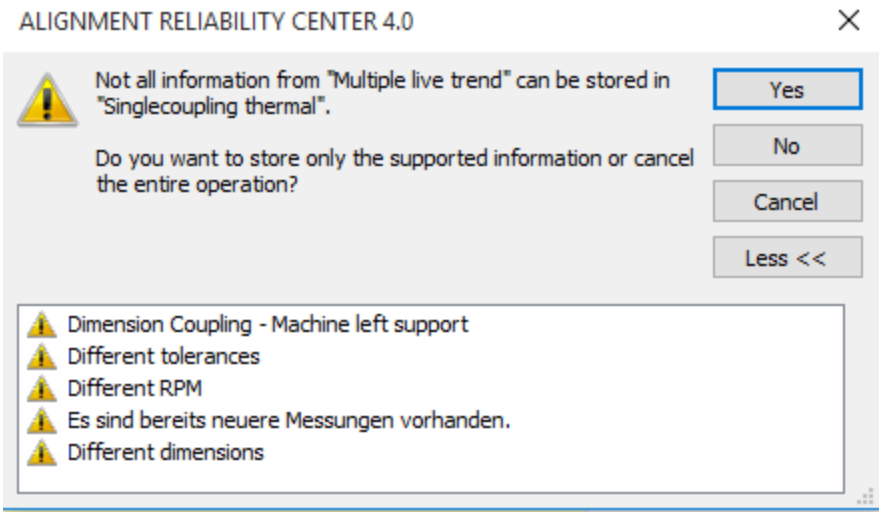


2. Move an asset to a different asset in the left-hand window per drag&drop.

3. A prompt appears. This needs to be confirmed.



4. A further window displays the differences between the two assets.



Caution: This merging of assets can also be carried out even if the two assets exhibit differences. In this regard, the user must decide for himself/herself the extent to which it useful to merge the measurement data.

The measurement data cannot be merged if there are extreme differences between the assets. This is the case if the two assets include different coupling types, different machine alignments (vertical, horizontal) or if one machine has a flange and the other one does not.

Connecting PRUFTECHNIK measuring devices

The measuring device must be registered for data exchange between your measuring device and ARC 4.0 . Information about this can be found in the ARC 4.0 installation instructions.

Data exchange via USB cable (alternatively, WLAN - only ROTALIGN touch)

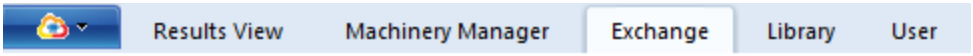
1. Connect your measuring device to the USB port of your PC using the enclosed USB cable.

Note: You can find detailed information about the device components in the operating instructions of your measuring device.

The relevant function needs to be activated in the measuring device for data exchange via WLAN ROTALIGN touch . Ensure that the same WLAN is set on the PC or laptop with the ARC 4.0 software and in the measuring device, especially if a company or network WLAN is being used.

2. Switch on your measuring device.

3. Select the ARC 4.0 "Exchange" tab in the menu bar of the software.



4. Select your device (serial number) in the pull-down menu in the "Communication" group in the toolbar.

All measurement files stored on your measuring device are displayed in the right window.

5. Use the "Cut", "Copy", and "Paste" command in the toolbar or drag and drop the directories and files to the desired position.

Two possibilities are available for copying (moving) data from the device into the database:

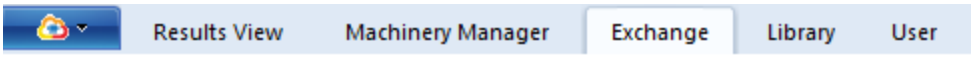
The file does not exist yet in the database	An attachment is automatically created with the file name and the measurement file as subdirectory.
The file exists already in the database	The measurement data is assigned via the asset ID and automatically added to the correct position.

Note: Measurement data from different applications cannot be transferred into the database.

Use the "Results View" tab to display the transferred measurement data.

Data exchange via Cloud (for...only ROTALIGN touch)

1. Select the "Exchange" tab in the menu bar.



2. Select "Cloud Storage" in the pull-down menu in the "Communication" group in the toolbar.

The Cloud is used as intermediate storage for measurement data and prepared files, whereby data can be provided and picked up at any time.

The Cloud directory created for your measuring device (<serial number>) appears in the right windowROTALIGN touch . If you used several Cloud-capable measuring devices, a Cloud directory is created for every device. Every measuring device can communicate via its own Cloud directory only.

3. Click on the Cloud directory of your measuring device to display the content.

The data appears in the right window with the following icons:

Icon	Description	Meaning
	Green closed envelope	Measurement was stored from the ROTALIGN touch device into the Cloud
	Blue closed envelope	Measurement file can be picked up by ROTALIGN touch the device
	Blue open envelope	Measurement file was picked up by ROTALIGN touch the device

4. Use the "Cut", "Copy", and "Paste" command in the toolbar or drag and drop the directories and files to the desired position.

5. Use the "Refresh" icon to update the Cloud view or the device communication.

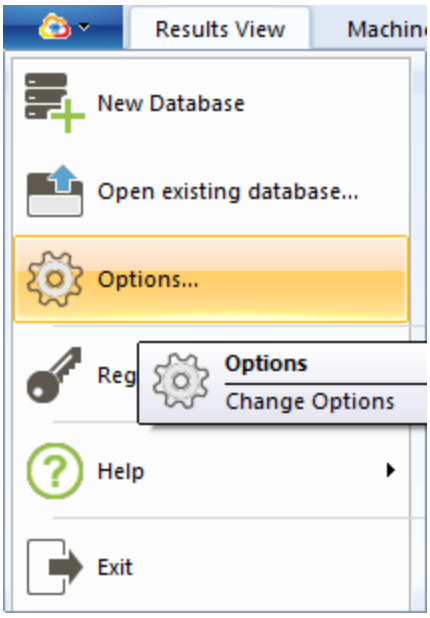
New functions for the Cloud

Automatic Cloud connection

Every time ... is restarted, ARC 4.0 the Cloud connection is established automatically and new measurement data is displayed in the Cloud immediately.

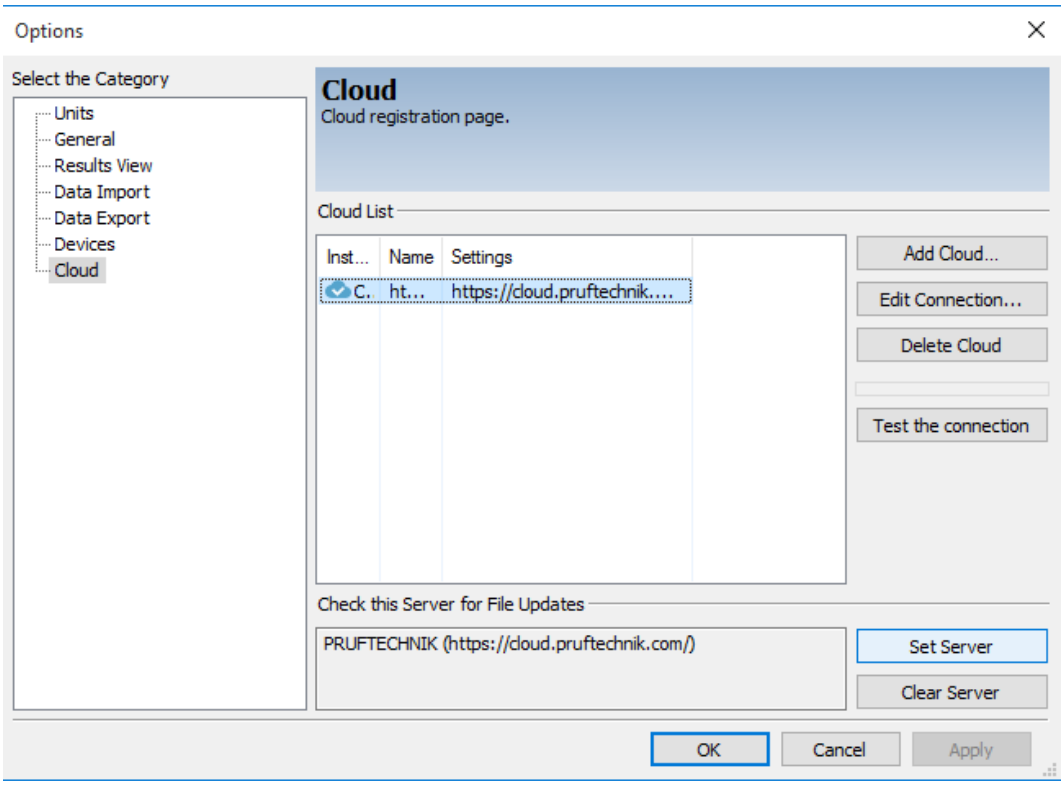
This is how to activate/deactivate the automatic Cloud connection:

1. Select the ... ARC 4.0 icon in the left corner of the menu bar.



2. Select the "Options..." menu item.

The "Options" window appears.



3. Select the "Cloud" menu item.

4. Select the "Cloud List" menu in the PRUFTECHNIK Cloud.

5. Select the "Set Server" button. The automatic Cloud connection thereby becomes the default setting for every program start.

Use the "Clear Server" button to deactivate the automatic Cloud connection.

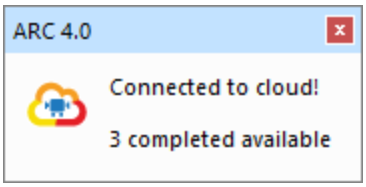
The "Delete Cloud" button can be used to completely remove a Cloud from the Cloud list. This, for example, can be done if the Cloud is not to be used at all. The "Add Cloud..." button can be used to add another Cloud.

Even if the PRÜFTECHNIK Condition Monitoring GmbH Cloud was deleted from the Cloud list, the Cloud can be added again. To do so, use "https://cloud.pruftechnik.com/" as the server address.

New measurement data available

The availability of new measurement files for download are displayed in two ways:

1. Display



Three new measurement files are available in this example.

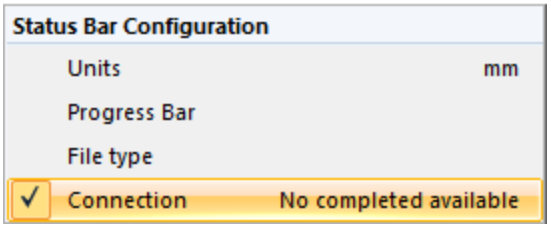
2. Status bar

The display in the status bar is optional.

This is how you activate/deactivate the display in the status bar:

1. Select the right mouse button in the status bar.

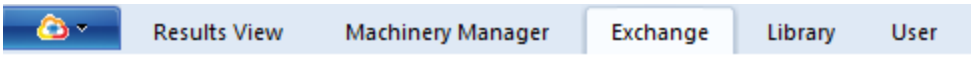
The context menu appears:



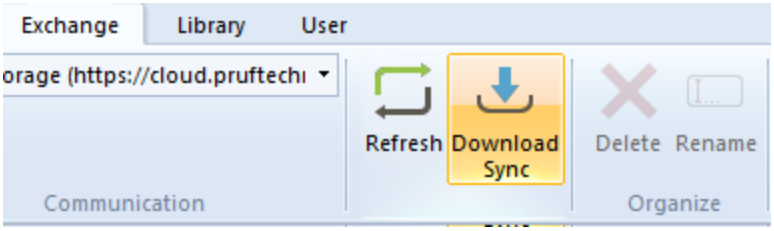
2. Activate/deactivate the "Connection" menu item.

Import new measurement data from the Cloud

1. Select the "Exchange" tab in the menu bar.



2. Select the "Download Sync" button in the toolbar.



This automatically saves all new measurement data in the assigned assets. New assets are created where necessary. At the same time, data is deleted in the Cloud.

Newly generated assets and assets with new measurement data appear in the left-hand window in bold letters.

This marking allows the user to have an overview of the changed data and is retained even if ARC 4.0 closed or restarted.

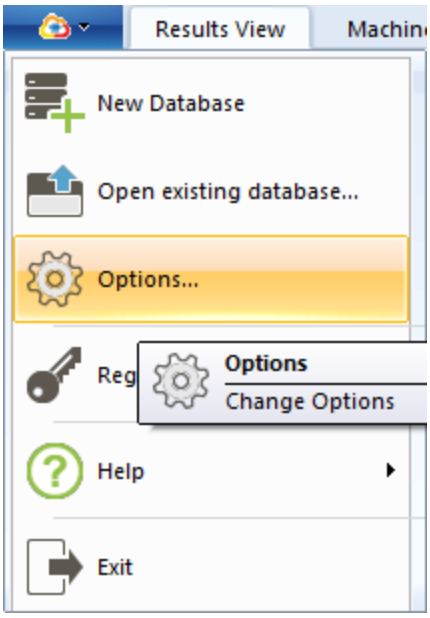
The respective asset or measurement file is not shown again in normal font in the left-hand window until new measurement data is opened in Results View.

Copying measurement results to measuring devices (only ... ROTALIGN touch and ROTALIGN Ultra iS Expert...)

In this ARC 4.0 version, 1.2 setups as well as measurement results can be copied to measuring devices.

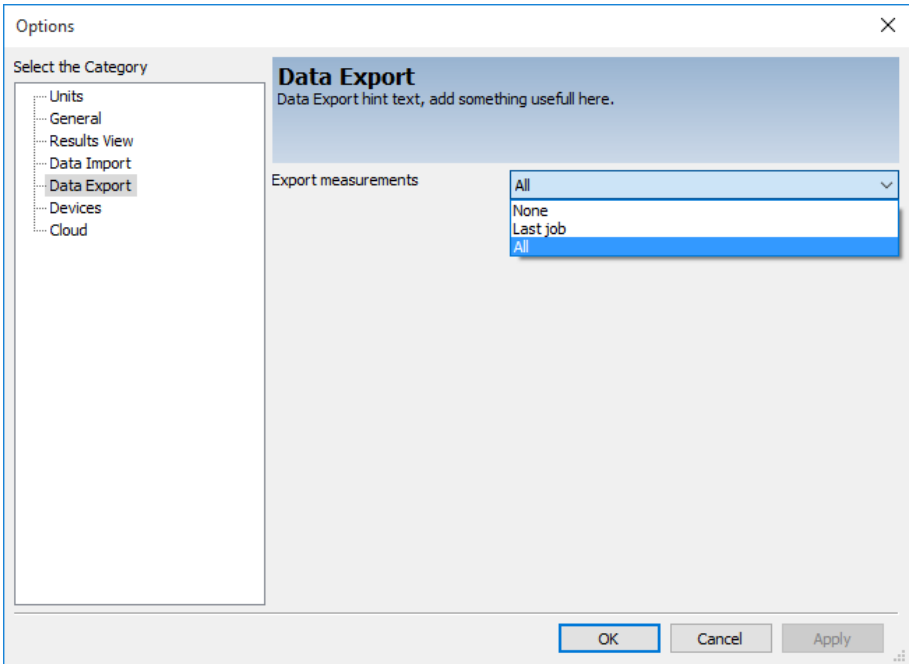
To this end, a general preselection can be defined as the default:

1. Select the ... ARC 4.0 icon in the left corner of the menu bar.



2. Select the "Options..." menu item.

The "Options" window appears.



3. Select the "Data export" menu item.

4. Select the desired default setting in the "Export measurements" menu.

5. Confirm the selection with "Apply".

Note: The default setting chosen in this menu applies to all assets that ARC 4.0 are to be exported from ...

There are three options available for selection:

1. None: the setup is exported without measurements (e.g. as a template).

2. Last job: the most recent measurement for shaft alignment, tilt foot and vibration respectively is exported.

3. All: the entire measurement history for shaft alignment and, in each case, the most recent measurement for tilt foot and vibration are exported.

Data backup

Data can get lost or be changed unintentionally when working with data-processing software.

- PRÜFTECHNIK Condition Monitoring GmbH recommends that you keep copies and printouts of this important data at a safe location.
- PRÜFTECHNIK Condition Monitoring GmbH assumes no responsibility for data lost or otherwise rendered unusable, whether as a result of improper use, repairs, defects, battery replacement, or similar.
- PRÜFTECHNIK Condition Monitoring GmbH assumes no responsibility, directly or indirectly, for financial losses or claims from third parties resulting from the use of this product and any of its functions, such as the loss of data.

Adjusting the software

The ARC 4.0 software can be user-specifically customized.

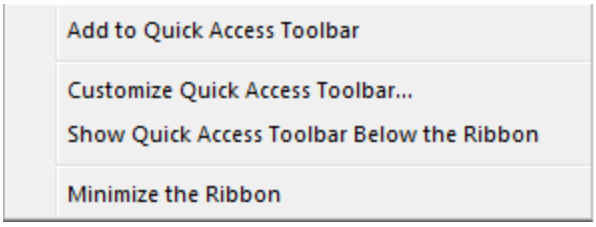
This allows efficient and convenient operation.

- "Assigning password" on page 107
- "Keyboard shortcuts" on page 106
- "Adjusting the toolbar" on the next page

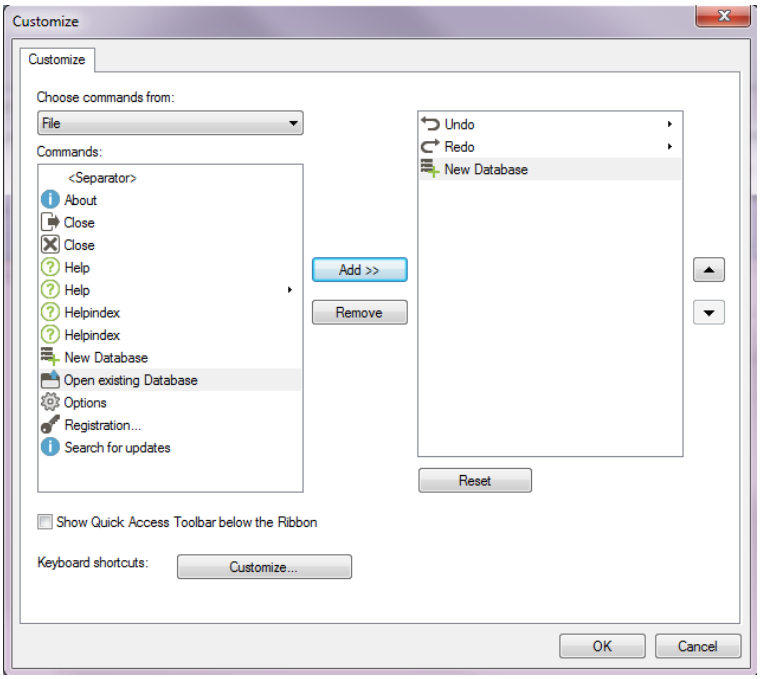
Adjusting the toolbar

Add commands for quick selection

1. Using the right mouse button, click on the toolbar. The context menu of the toolbar appears.



2. Select the "Adjust quick access toolbar" context menu item. A window appears for adjusting the toolbar.



3. Select the desired tab in the "Select commands" pull-down menu, and the desired command in the "Commands" selection menu.

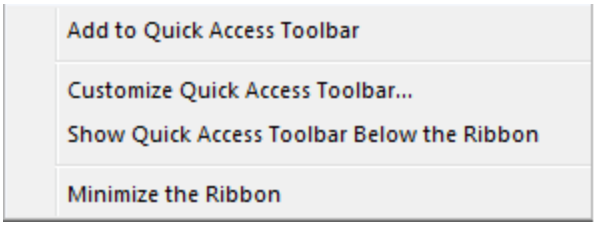
4. Activate the "Add>>>" button.

5. Activate the "OK" button. The additional quick access icons are shown under the toolbar.

Note: You can move additional icons into the title bar using the "Display quick access toolbar above the multifunction bar" context menu item.

Hiding the toolbar

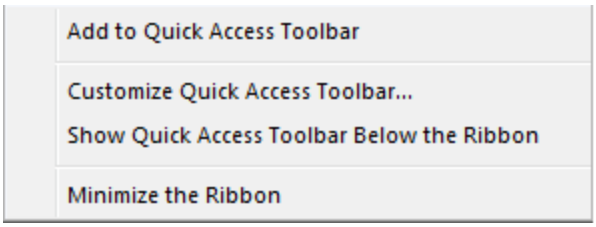
1. Using the right mouse button, click on the toolbar. The context menu of the toolbar appears.



2. Select the "Minimize multifunction bar" context menu item to hide the toolbar. The quick access toolbar is further displayed.

Displaying the toolbar again

1. Using the right mouse button, click on the menu bar. The context menu of the toolbar appears.



2. Select the "Minimize multifunction bar" context menu item. Clicking removes the check mark and the toolbar is displayed again.

Keyboard shortcuts

Keyboard shortcuts are available for quick and efficient operation:

1. Press the **Alt** key.
2. **Capital letters** appear at the tabs in the menu bar.
3. Directly select the respective tab using the displayed letter.
4. As soon as the window of the selected tab opens. additional letters appear in the toolbar for quick selection.
5. Directly select the desired command using the displayed letter.

Example:

"Alt" displays the keyboard shortcuts in the menu bar.

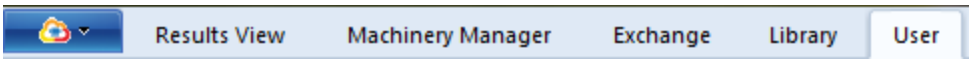
"R" activates the "Report" tab.

"C" activates the "Copy" icon in the report window.

Keys	Action
Alt	Switches the keyboard shortcut display on and off
V	Activates the "Results View" tab
L	Activates the "Library" tab
U	Activates the "User" tab

Assigning password

1. Activate the "User" tab in the menu bar.



2. Enter your name, e-mail address, and the desired password into the input screen.

3. Activate the "View password" check box.

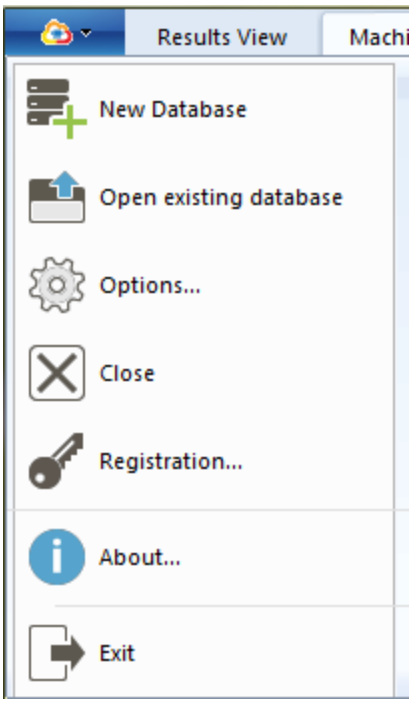
4. Confirm the password.

5. Activate the "Define password" button.

Note: It is not possible to define different user roles in the current program version.

Software information

1. Activate the icon in the upper left corner of the menu bar. The pull-down menu opens.



2. Activate the "About..." menu item.

A new window opens. Here you can find

- Manufacturer's address
- Contact data
- Software information
- Legal information
- License information

ALIGNMENT RELIABILITY CENTER 4.0

Installation instructions

Here you can find all information required for successful program installation.

You can also find the installation instructions as PDF version on your USB stick.

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Edition January 2017

Order number DOC 17.100.en

Software version 1.2

System requirements

Operating system	Windows 7 (32/64 Bit), Windows 8 (32/64 Bit), and Windows 8.1 (32/64 Bit), Windows 10 **Not** supported are: Windows 8 RT and Windows 8.1 RT
Screen resolution	1280 x 1024
CPU	Intel or AMD (x86 or x86-64)
RAM	Minimum 1 GB
Free disk space	Minimum 500 MB
Ports	USB, Bluetooth or Wifi, depending on the device
Installation	Internet

Concept and installation

Concept

The software is modular. The "Shaft Alignment" application is currently implemented. Further applications will be added later.

ARC 4.0 is available as free version. The data exchange between ARC 4.0 and PRÜFTECHNIK measurement devices and the Cloud is subject to a charge. To use the full functional scope, the device communication with ARC 4.0 must be licensed.

A license for the communication between measurement device and ARC 4.0 can be ordered from PRÜFTECHNIK Condition Monitoring GmbH.

ARC 4.0 - installing

ARC 4.0 is installed using the ARC 4.0 USB stick.

1. Insert the ARC 4.0 USB stick into your USB drive.

2. Click on the *.exe file.

3. Select a language for the installation.

The installation wizard starts automatically. Follow the instructions of the installation program closely.

4. Activate the "OK" and "Next" buttons.

5. Activate the "Installation" button.

6. Activate the "Finish" button.

ARC 4.0 - starting

Click on the ARC 4.0 icon on your desktop.

Saving and undoing changes

Use the "Ctrl" + "S" keyboard shortcut to save the entries. You can undo changes using the "Ctrl" + "Z" keyboard shortcut.

ARC 4.0 - exiting

1. Activate the ARC 4.0 icon in the left corner of the menu bar.

2. Select the "Exit" menu item.

ARC 4.0 Update

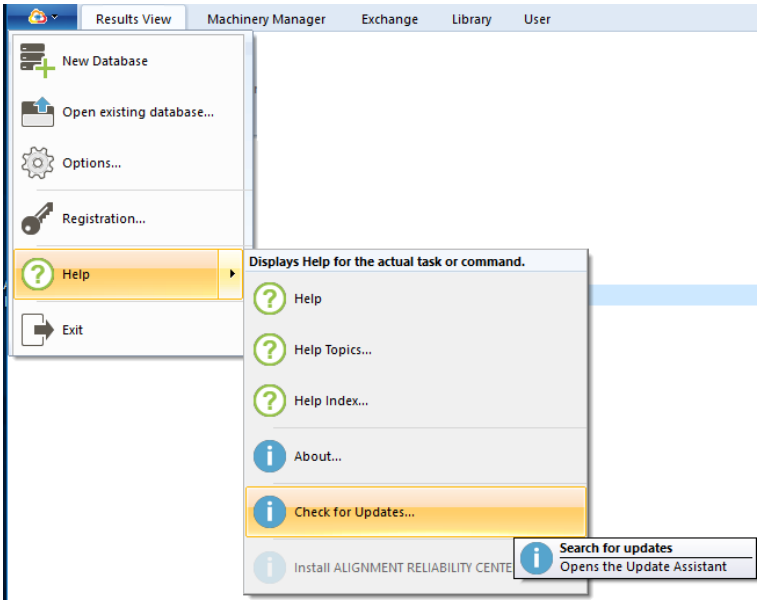
The current product version of ARC 4.0 is 1.2.

If an update is available, ARC 4.0 suggests a software update automatically during program start.

If you accept the suggestion and follow the wizard, the update is executed.

If you reject the suggestion, no suggestions will be made anymore during future program starts. An update can then be started manually at any time.

Starting update manually



Follow the instructions of the Update wizard for update installation.

Licensing device communication

To register your PRÜFTECHNIK Condition Monitoring GmbH device and thus enable communication with ARC 4.0, you require a valid license certificate.

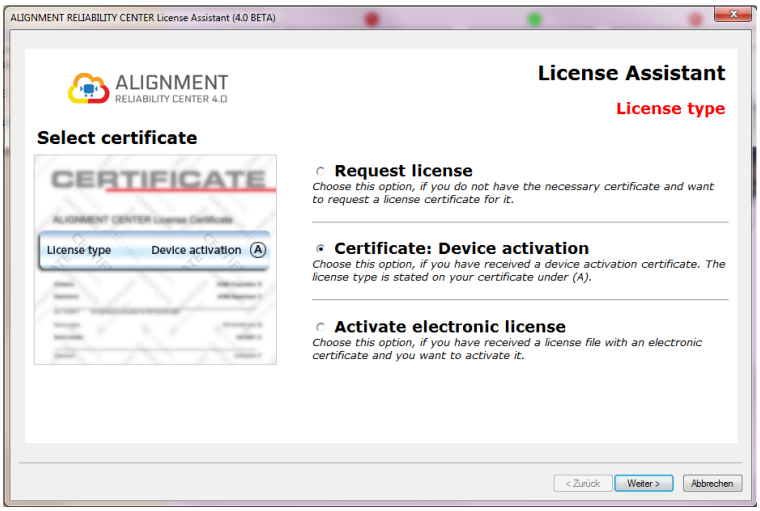
Please contact your local PRÜFTECHNIK Condition Monitoring GmbH contact person. Have the serial number of your measuring device available for registration. You can find the serial number on the type plate on the underside of the device. You will receive the license certificate by e-mail.

You may receive an electronic license file in the *.ACRLicense format. Please save it on your PC.

Registering PRÜFTECHNIK measuring devices

1. Activate the ARC 4.0 icon in the left corner of the menu bar.

2. Select the "Registration..." menu item. The "License Assistant" window opens.



3. Select "Certificate: Device activation" (or possibly "Activate electronic license")

4. Activate the "Next" button.

5. Enter the name of your company and your department (see license certificate, line B and C).

6. Activate the "Next" button.

7. Select your device (see license certificate, line D).

8. Activate the "Next" button.

9. Enter the serial number of the device (see license certificate, line E and/or type plate).

10. Activate the "Next" button. The checksum in line F indicates, whether your previous entries were correct.

11. Enter the license code (see license certificate, line G).

12. Activate the "Next" button and complete the registration.

Note: With the registration of ROTALIGN touch, a server address is automatically enabled in the Cloud as well as 100 MB memory.

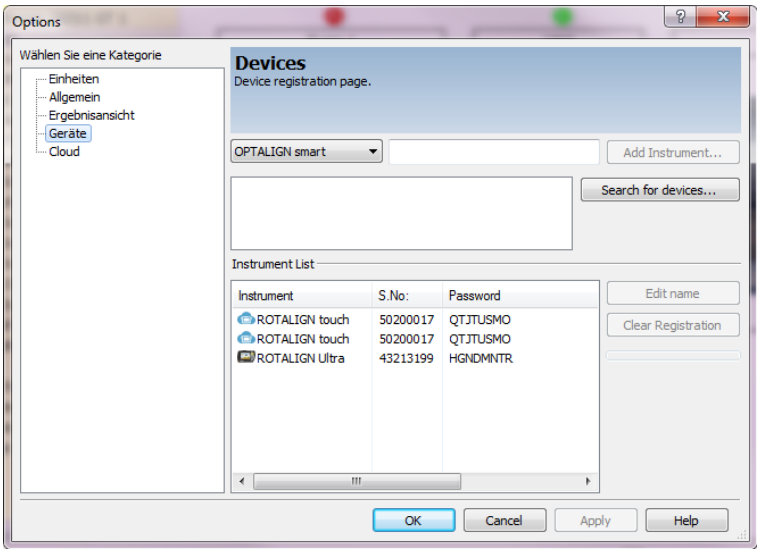
Managing device registration

1. Activate the ARC 4.0 icon in the left corner of the menu bar.

2. Select the "Options..." menu item.

The "Options" window opens.

3. Select the "Devices" menu item.



All registered devices appear in the device list. Here, a device name can be assigned. The registration can be deleted as well.

Glossary

A

Angular misalignment

Angle between two rotational shaft axes (gap)

Angular tilt foot

Tilt foot due to inclining contact surface of the foot to the foundation (foot has partial contact only)

Asset

Machine asset

C

Cardan shaft

Drive shaft combination with one or two universal joints for bridging a large parallel offset between driving and driven shaft axis

Curved-tooth coupling

Coupling for interlocking transfer of torques and compensation of shaft tilting

D

Diaphragm coupling

Coupling with high torque capacity for fast-running shafts

Dimensions

Values to be entered (e.g. distances, speed) depending in application and machine property

F

Foot screw

Screw for anchoring the machine to the ground or foundation

G

Gap

Angle between two rotational shaft axes (angular misalignment)

I

Intermediate shaft

Coupling for the compensation of significant alignment changes during operation

L

Location

Location, type, e.g. company, area, directory, machinery, station, ship, or production line

M

Machine train

Three or more machines that must be aligned to one another

Machinery

Collection of assets

O

Offset

Distance between two rotational shaft axes, usually measured at the coupling center

One-level coupling

Simple non-flexible coupling with rigidly bolted coupling halves (usually flanges joined using bolt screws)

P

Parallel tilt foot

Tilt foot due to one or two machine feet being too short or too long

Pipe strain

Deformation due to connected pipes and lines

R

RPM

Speed (revolutions per minute)

S

Shaft alignment

Positioning of two or more machines so that the rotational axes are aligned under operating conditions

Shaft sagging

Deformation of the shaft depending on rigidity, weight, and distance of the shaft between the bearing blocks and the bearing design

Shimming

Lifting of a machine and inserting or removing of shims of a certain thickness

Shims

Plates made of metal or plastic with different thicknesses and dimensions for corrections at the machine foot or flange

Short flexible coupling

Coupling, whose axial length of the flexible element (or the axial length between the flexible elements) is of the same size or smaller than the coupling diameter

Spring coupling

Coupling with transfer of torques free from play

Standard coupling

Coupling with interlocking transfer elements with play (e.g. teeth, catches, or pins) or with elastic connecting elements, such as rubber buffers or spring elements

T

Thermal growth

Temperature increase at the couplings and attachments occurring during operation

Tilt foot

Machine foot that lifts off the foundation when loosened

Tolerance vector

Presentation of the vertical and horizontal result as vector

V

Vibrations

Vibrations occurring in the machine train or resulting from external influences

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