



D3D++ Release Notes

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D3D++ 2024 IR10

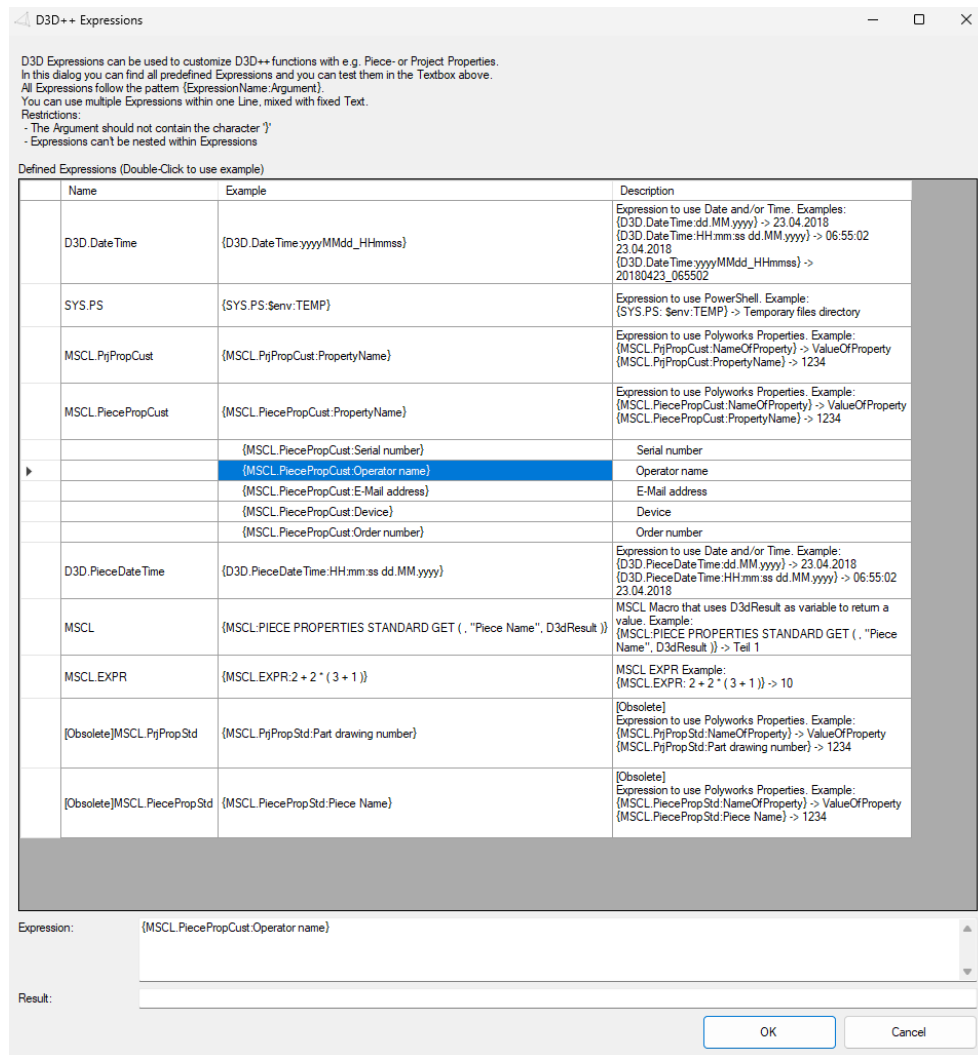
- **D3D++ Toolbar Extension:**
Sequence > Export Report Objects Control View – Add Script to Sequence
This function is now available in English.

D3D++ 2024 IR9

- **D3D++ Toolbar Extension:**
Sequence > Export Report Objects Control View – Add Script to Sequence
Here you will find a function to export report objects of a control view at the end of a sequence.
- **D3D CNC Toolbar Extension:**
CNC Tools > Configure Circle for threaded hole CNC probing
This function now also handles several circles with identical diameters per function call.

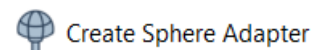
D3D++ 2024 IR8

- **D3D++ Expression** dialog improvements:
Custom Piece and Project Properties are now displayed in a drop-down menu and can be transferred directly to the *Expression* text field by double-clicking.



– Improvement of the function **Create Sphere Adapter**:

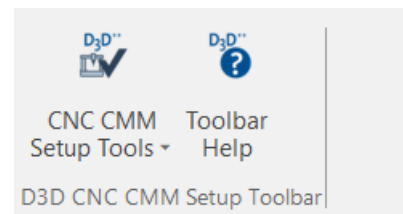
The **Create Sphere Adapter** function in the **D3D++ Toolbar** has been improved. Sphere adapters are now created as hemispheres and no longer as whole spheres. This is mainly useful for the measurement method **Extract**.



Create Sphere Adapter

– Documentation of the **CNC CMM Setup Toolbar**:

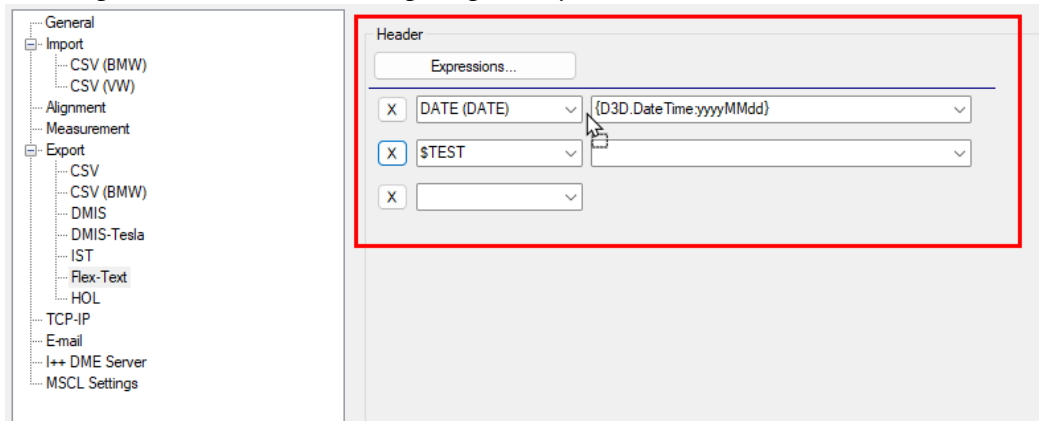
The manual of the **CNC CMM Setup Toolbar**, the **Toolbar Help**, is now fully available in English.



D3D++ 2024 IR7

– **D3D++ FlexText Export** improvements:

The export header can have custom defined fields. All entries in the header part can be rearranged with the mouse using drag & drop.



- New function in the **D3D++ Toolbar**:

- **D3D++ Export – Insert into sequence**

This function opens a dialog to execute the D3D++ Export in the measurement sequence.

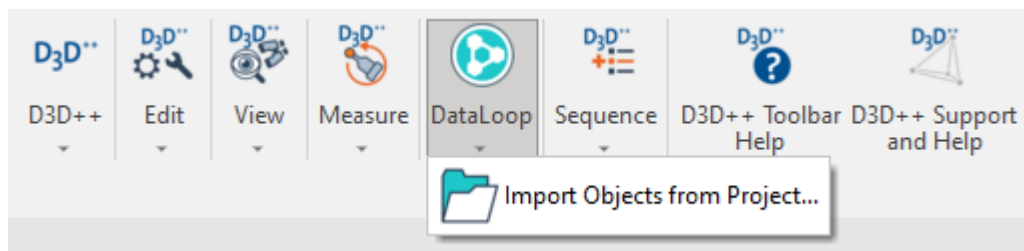


D3D++ 2024 IR6

- **D3D++ Toolbar Extensions**

- **DataLoop > Import Objects from Project**

The D3D++ Toolbar has been expanded by the **DataLoop** category. Here you will find a function to import objects from a project that is managed with DataLoop.



D3D++ 2024 IR5

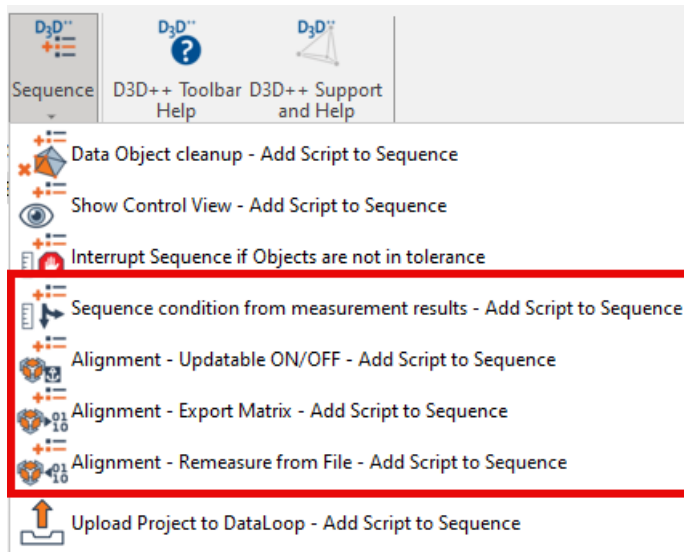
- **Export Reports**

The function has been extended and now offers the possibility to open the PDF after export.



- **D3D++ Toolbar Extensions**

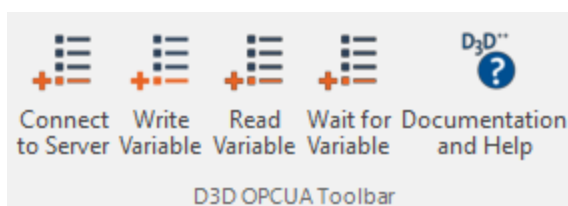
The following functions have been taken over from the **D3D CNC Toolbar** to the **D3D++ Toolbar**:



- ***.HOL-Export**
The export in the ***.HOL** format has been extended and now supports the export of the **A Rad** Control of **Profile gauges**.
- **VW/Daimler/Mercedes-CSV-Import**
Importing inspection plans in the ***.csv** format of VW and Mercedes has been extended and now supports the import of further tolerances for **Comparison Points**.

D3D++ Pro Automation

- D3D++ Pro Automation now includes an OPCUA Toolbar.
With the new OPCUA toolbar, you only need a few clicks to connect to a PLC, machine controller or robot. You can now read and write OPCUA variables from the Sequence or wait for a defined state of a variable.



D3D++ 2024 IR4

D3D++ Pro Automation

- D3D++ Pro Automation now includes a [RoboDK](#) interface and Toolbar.
The RoboDK interface gives you access to an extensive library of over 1.000 robot arms. This includes both **RoboDK OLP** (offline programming) and online remote control using the **RoboDK Robot Drivers**. With the new RoboDK Toolbar, you only need a few clicks to remotely control your robot directly from your PolyWorks|Inspector Sequence.

D3D++ 2024 IR3

D3D++ becomes D3D++ Standard and D3D++ Pro Automation

At the request of many of our customers, we are changing the license model of D3D++ from temporary use (rental) to the purchase and maintenance model, you are familiar with from PolyWorks, as of 01.07.2024. You will be able to order D3D++ from your local distributor, along with your PolyWorks Software.

Do you already have an active D3D++ license? Then we would like to congratulate you. You benefit from the fact that you no longer have to buy **D3D++ Standard** but can automatically switch from the previous annual usage model to the maintenance model. You no longer have to pay the one-off acquisition costs. Existing contracts remain valid until the end of the contract.

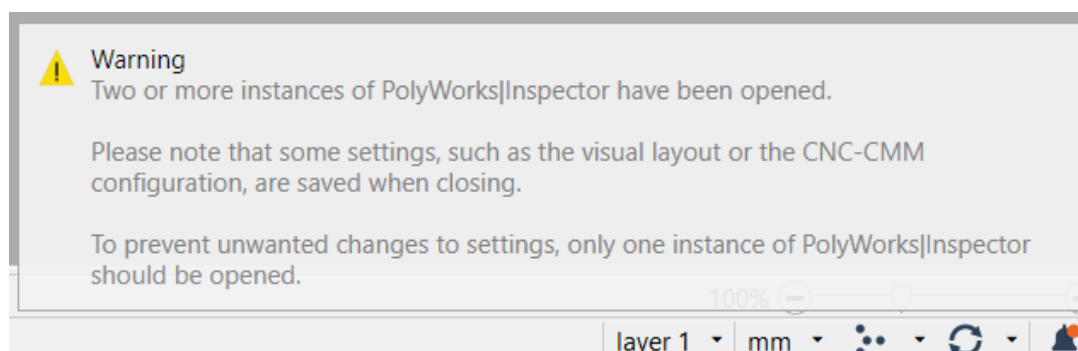
D3D++ Standard offers the import of inspection plans and export of measurement results in OEM formats of BMW, Mercedes-Benz and VW, incl. measurement strategies. **D3D++ Standard** also includes toolbars and functionality to increase productivity. Including an interactive dialog for the use of ISO tolerances. D3D++ user interface and documentation are available in German and English.

D3D++ Pro Automation contains all the functions of **D3D++ Standard** and offers additional interfaces and automation solutions. These include OPC UA Client & Server, RoboDK interface, connection to web services, iterative alignment for duplex CNC measuring machines and much more.

A detailed list of the individual functions can be found under:
[D3D++ software packages \(www.duwe-3d.de/en\)](http://www.duwe-3d.de/en)

D3D++ 2024 IR2

- The **D3D CNC Setup Toolbar** has been extended to determine the tactile scanning deviation THP according to **ISO 10360-4** on a CNC CMM.
- The warning about using multiple instances of PolyWorks|Inspector now appears in the **Notifications** and no longer needs to be confirmed. It still can be deactivated in the D3D++ Options.

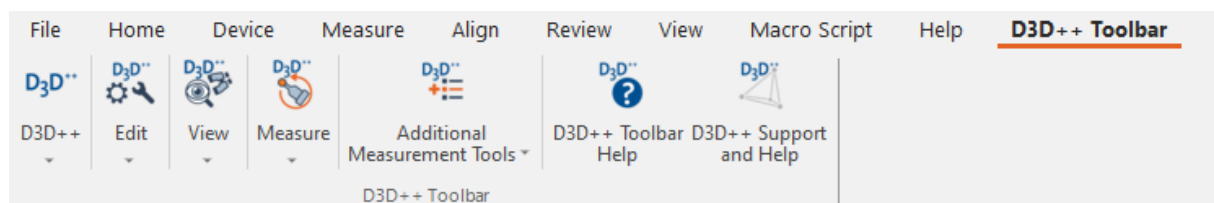


D3D++ 2024 IR1

- D3D++ now supports *Import* and *Export* of the *BMW-CSV KD* elements.
- Closing of a random window after closing PolyWorks|Inspector™ while the *D3D++* plug-in was activated is fixed.

D3D++ 2024 IR0

D3D++ 2024 supports the Ribbons layout. After installing D3D++ and launching PolyWorks|Inspector for the first time, a query automatically appears allowing you to import the *D3D++ Toolbar*.



You can use the *D3D++ Library* menu to add more *D3D Toolbars*.

D3D++ 2023 IR11

- The D3D++ function *Upload Project to DataLoop - Add Script to Sequence* has been revised and now uses updated macro commands. From PolyWorks|Inspector™ version 2024, some older macro commands will no longer be supported, and the upload commands will need to be updated.

D3D++ 2023 IR10

- New functions of the *D3D CNC Toolbar*:
 - *I++ Calibrate actual Tool Orientation*
This function starts the calibration of a *Tool orientation*.
 - *I++ Calibrate actual Tool Orientation - Insert into sequence*
This function inserts the calibration of a *Tool orientation* into the measurement sequence.
 - The *Create temperature measurement* function and the Temperature compensation has been extended for *the I++ CMM* plug-in, and now also supports the documentation of temperatures and of the compensation of the part temperature in combination with an I++ server.
- New functions of the *D3D CNC Laser Scanning Toolbar*:



- **I++ Configure the Exposure**
This function opens a dialog to configure the exposure time for the I++ scanner.
- **I++ Configure the Exposure - Insert into sequence**
This function opens a dialog to configure the exposure time for the I++ scanner in the measurement sequence.



D3D++ 2023 IR9

- The **D3D++ export** in **BMW-CSV** format has been extended and now validates the object properties **InspectionTask** and **InspectionPlan** so that they meet the requirements of the target system. In addition, a warning appears when objects are exported that have not previously been imported by an inspection plan.

D3D++ 2023 IR8

- The **D3D++ Import** of **VW-CSV** files has been extended and now detects changes in the name of the **Object**. Renamed **Objects** can now be updated without creating duplicates.

D3D++ 2023 IR7

- New function in the **D3D++ Toolbar**:
The function **Unroll cylindrical polygonal model** can be used to create an unrolled version of a cylindrical polygonal model in the tree view. This visualization has advantages for documentation with color maps.



D3D++ 2023 IR6.1

- The **D3D++ Export** in ***.hol** format has been extended and now supports the export of X-, Y- und Z Distance in case of **Distance Features**.
- A problem when exporting hidden Controls that were previously imported via a **VW CSV File** has been fixed.

D3D++ 2023 IR6


- The **Create Angle in pitch circle** and **Show Feature Data Points** functions are now also available for **Pattern Features**.
- The **D3D++ Library** is now supporting filters.
- The **Two-point size on two planes** calculation is now visualized by a progress bar in case of longer calculations.



D3D++ 2023 IR5.1

- A problem when importing mirrored objects has been fixed.

D3D++ 2023 IR5

- D3D++ offers **OPC UA** Client and Server interfaces upon request. Thanks to **OPC UA**, various devices and systems in a production line can communicate and exchange data in real time. 
- The **D3D++ Export** in ***.hol** format has been extended and now supports the export of GD&T Controls.

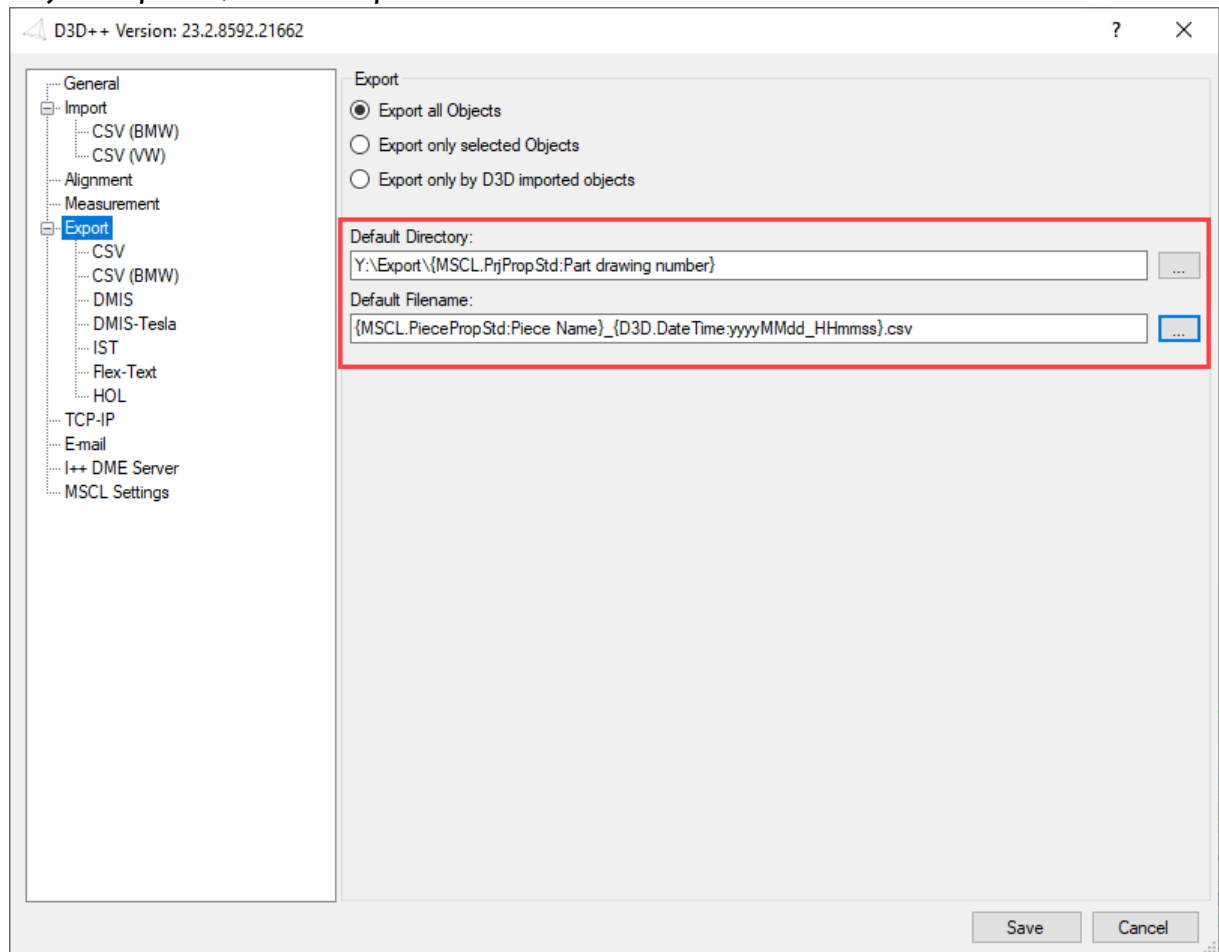
D3D++ 2023 IR4

- The **D3D++ Export** has been extended and now supports the export of measurement results in **eMMA-CSV** format.
- When importing updated **inspection plans**, unnecessary changes are no longer detected for **Planes**, provided that the centers are in the same **plane**.
- When importing **inspection plans** in **VW and Daimler CSV format**, the contents of the **TXT** groups are now imported as object properties.
- When importing **inspection plans** in **VW CSV format**, referenced objects (**VWG_MEASURE_REF**) **are now** also applied to the **AA, BA, BK** and **BM** strategies.

D3D++ 2023 IR3

- The **D3D++ Export** has been extended and now supports the specification of default file names and folders. As a result, you can now implement a defined scheme for naming folders and files more quickly and easily. In the folder or file name, you can use the date, time,

Project Properties, or Piece Properties.

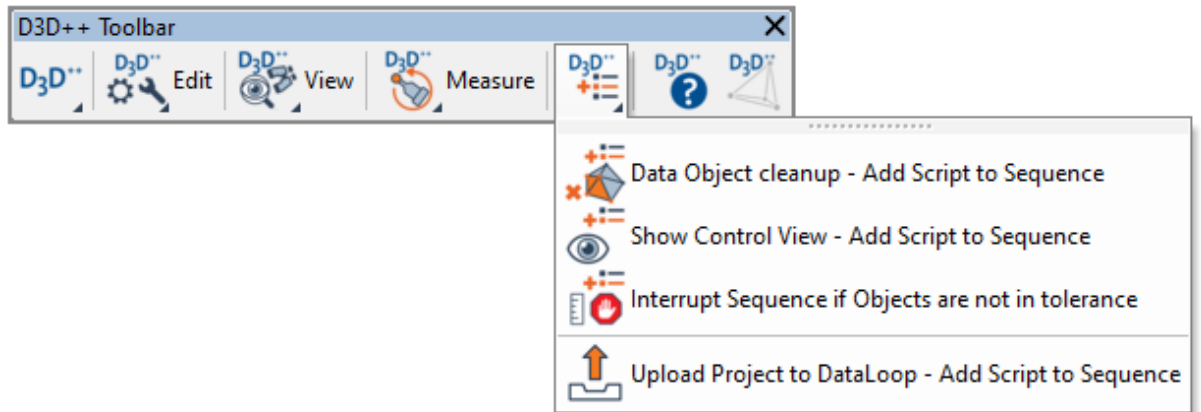


- The *D3D++ Export* has been extended and now supports the export of measurement results in **.hol* format.

D3D++ 2023 Release (IR2)

- **Two-point size on two planes**
With the new function Two-point size on two planes, two-point sizes (LP) according to DIN EN ISO 14405-1 can be determined on two opposite parallel planes.
- New functions in the *D3D++ Toolbar*:
 - The *D3D++ Toolbar* now offers a new main menu for frequently used measurement *Sequence* functions:





For more information about the new *Sequence* menu, see the *D3D++ Toolbar* documentation.

- The *Create Angle in pitch circle* function is now also available in the *D3D++ Toolbar*.
- *Set ISO-Tolerances*: The function has been extended by the tolerance tables of the standards DIN 2769:2021-12 and ISO 8062-4:2017-07.



D3D++ 2022 IR11

- Some macro commands have been enhanced to make it easier to connect to REST APIs.
- The *Create Angle in pitch circle* function has been enhanced to provide improved object selection and support for additional *Features*.
- The Function *Show Feature Data Points* has been simplified and optimized.

D3D++ 2022 IR10

- Some Functions in the *D3D CNC Laser Scanning Toolbar* have been optimized. *Importing and editing larger scan paths is now significantly faster*.
- Extension of the function *Angle Decimal in Degrees*: The conversion of angles into degrees, minutes and seconds is now also done for *Features* in *Cross-Sections*.



D3D++ 2022 IR9

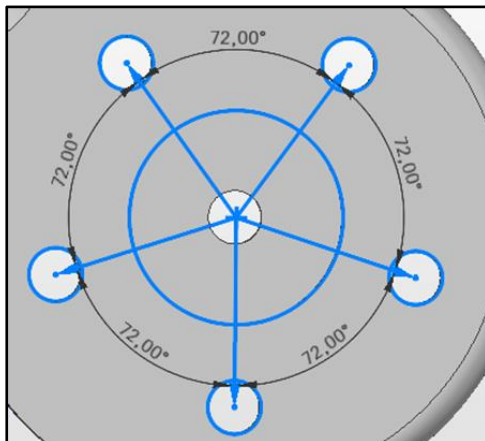
- The D3D++ automation interface via TCP-IP has been expanded and now offers additional, uncomplicated options for connecting robotic and PLC systems.
- New functions of the *D3D CNC Toolbar*:

- **Reset Reference Sphere location**
This function opens a dialog to reset the location of a Reference Sphere, when it has been moved or temporary removed.



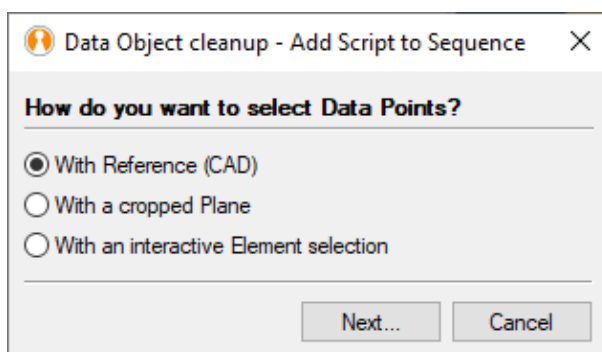
D3D++ 2022 IR8

- New function in the **D3D++ Library**:
 - The function **Create Angle in pitch circle** can quickly and easily create e. g. angles in a bolt circle. For this purpose, the required lines and angles with corresponding dependencies are created.



D3D++ 2022 IR7

- New function in the **D3D++ Library**:
 - The function **Data Object cleanup - Insert into Sequence** has been extended to also support **Reference Objects (CAD)** to clean up the **Data Object** within the **Sequence**.



D3D++ 2022 IR6

- New functions in the **D3D++ Toolbar**:
 - The function **Create Feature with chamfer interactively** was extended to also support the **"Anchor" creation method**.
- New functions in the **D3D CNC CMM Setup Toolbar**:

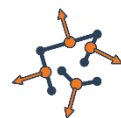


- Spheres, sphere holders and distance tubes can be created as CAD for visualization and collision detection.
- Temperature measurements can be automatically generated and inserted into the sequence.
- Option in the context of the control view: **Activate original alignment**.
- Selection when saving the report table in the sequence: **Automatically generated name** or **file save dialog**.



D3D++ 2022 IR5


- New functions in the **D3D++ Toolbar**:
 - The function **Search Datum** can now search for the usage of a **Datum** in **Controls** of a **Feature**.
 - The function **Rename selected objects with running Index** is now supporting leading zeros in the index.
Example: „Feature_001“
 - The function **Create Comparison Points from Polyline** now supports **Polylines** in **cross-sections** and the **Comparison Points** can be **extracted** directly.
 - The function **Set ISO Tolerances** now supports **DIN ISO 20457:2021-06**.
 - The window of **Set ISO Tolerances** can now stay open, while Objects are selected. This enables a better workflow.
- New functions of the **D3D Duplex Toolkit**:
 - A new feature has been added to ensure that the correct **Project** and desired **Piece Template** are used on all machines.
 - With the D3D++ function to deploy the project, you can now deploy or redeploy your project with one click. All necessary steps on the linked machines are carried out automatically.




D3D++ 2022 IR4

- Direct access to the **Duwe-3d Portal** via the **D3D++ Support Dialog**:


PolyWorks® Plus Paket



[D3D++ Release Notes](#)
[D3D++ User Guide](#)
[D3D++ Toolbar import](#)
[PolyWorks Shortcuts](#)
[GD&T Tolerances \(German only\)](#)





PolyWorks Version: 2022 IR3 64-bit
 Last Update: 17. Juli 2022 - 19:34:32
 D3D++ Version: 22.3.8245.22232
 Last Update: 29. Juli 2022 - 12:21:04
 Active features: Audi PMP, BMW I++, BMW Spalt-/Bündigkeits
 Messung, JT, PiWeb Meshmodel, RegTestMode, VW Messstrategien



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Close

- New functions in the *D3D++ Library*:
 - **Data Object cleanup - Insert into Sequence**
This function opens a dialog to configure a Data Object cleanup in the sequence.
 - **Sort all Features and Comparison Points in the Tree View**
This function will sort objects in the Tree View. Sorted objects include Features, Grouped Features, Pattern Features, Cross Section Features, Comparison Points, Grouped Comparison Points.

D3D++ 2022 IR3


- New functions of the *D3D CNC Toolbar*:
 - **Configure manual retraction distance**
This function opens a dialog for configuring the manual retraction distance in the measurement sequence. This is often used when e.g., very small circles are manually probed. 
 - The **Documentation of Tool Orientations** now also considers the **Acceptance tests** of the **Reference Sphere Measurement**. 
- When exporting in **BMW CSV** format, deviations (**QC.Deviation**) can now also be exported. This is optional data, the output of which can be activated via the **D3D++ Options > Export > CSV (BMW) > Export deviations**.

D3D++ 2022 Release (IR2)

- D3D++ now supports further VW measurement strategies and measurement methods, which are automatically applied when importing an inspection plan in **VW CSV** format. Details on the supported VW measurement strategies and measurement methods can be found in the **D3D++ User Manual**.

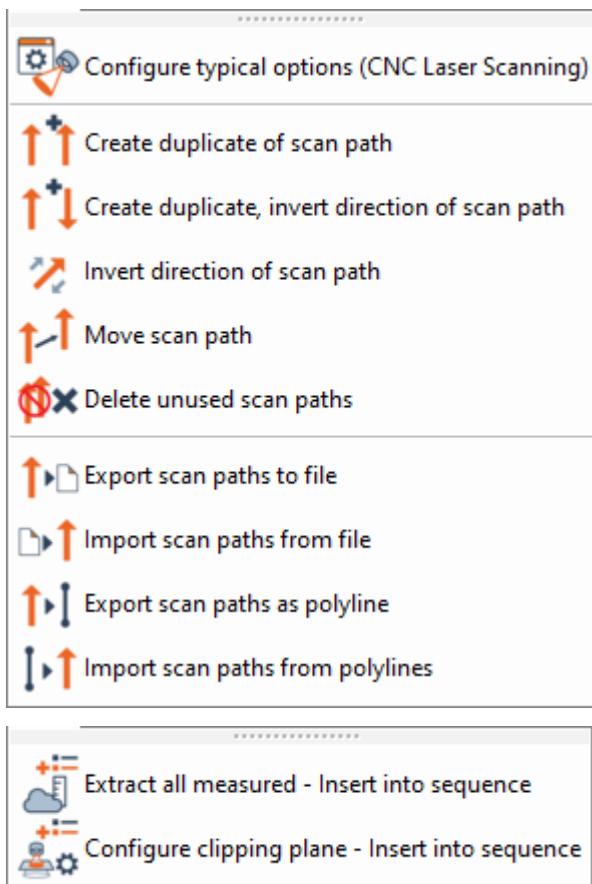
- The new **D3D CNC Laser Scanning Toolbar** supports you in dealing with scan paths and laser scanners on CNC measuring machines.



An overview of all functions and a corresponding help can be found in the *toolbar documentation* under the icon: 

The **D3D CNC Laser Scanning Toolbar** can be imported via the **D3D++ Library**.

- **New functions of the D3D CNC Laser Scanning Toolbar at a glance:**



- Adjustments to the VW and Daimler CSV format:
 - Adjustments for the assignment of tolerances of **Comparison Points**:
When importing tolerances and exporting **Controls of Comparison Points** in VW and Daimler CSV format, the assignment has been changed. The **3D Point** and the **Surface deviation** are now tolerated and exported. In previous versions, the **Surface Point** was tolerated and exported.
 - Adjustments regarding the **Outputflag** of tolerances:
Previously, when importing tolerances in VW and Daimler CSV format, tolerances with an **"Outputflag = 0"** were also activated and evaluated. This is no longer the case. Tolerances with an **"Outputflag = 0"** are imported, set, and also exported again.
- Adjustments to the Flex-Text format:
With the **Flex-Text** export of **Surface Comparison Points** it is now possible to export the

3D Point instead of the **Surface Point**. For this, at least one **Geometry Control** of the **3D Point** must be activated, and no **Geometry Control** of the **Surface Point** must be active.

- The new **D3D CNC Setup and Servicing Toolbar** supports you in setting up and monitoring your CNC measuring machines. Since these are often complex tasks, these functions are only offered within the scope of a service, put into operation and, if necessary, adapted to the specific needs. Please contact us if you are interested.

D3D++ 2021 IR11

- An issue when exporting header data in Flex-Text format has been fixed.
- An issue when setting tolerances in DIN EN ISO 13920 has been fixed.

D3D++ 2021 IR10.1

- An issue in the measurement of Comparison Points on the material opposite side has been fixed.
- An issue in the interactive creation of features with a chamfer has been fixed.

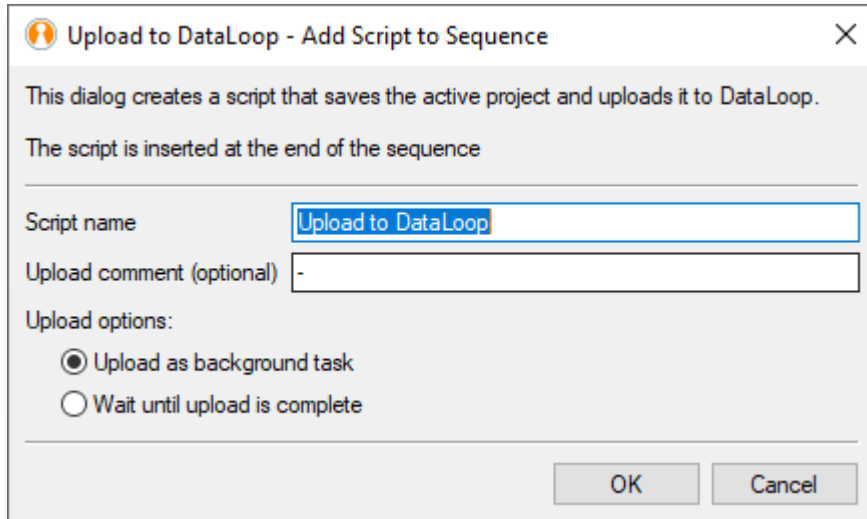
D3D++ 2021 IR10

- New functions in the **D3D CNC Toolbar**:
 - **Validate Tool calibration**
This function creates a script which checks the **calibration** of the **Tool orientations** used in the active **Sequence** and interrupts the **Sequence** if necessary. For this purpose, the configured **Acceptance tests** of the **Reference Sphere Measurement** and the **Max days since last calibration** are considered.
 - The function **Create temperature measurement** now supports multiple sensors for compensating CNC Axis.
- When exporting in the BMW-CSV-Format, updated object codes can now be used.



D3D++ 2021 IR9

- New functions in the **D3D++ Library**:
 - **Upload Project to DataLoop - Add Script to Sequence**
This function shows a dialog to create a script that saves the active project and uploads it to PolyWorks|DataLoop™. The upload can be carried out in background to be able to continue with the next piece immediately.



- New functions in the *D3D CNC Toolbar*:
 - **Configure manual retraction distance**
This function offers faster and easier operation than changing the retraction distance in the machine configuration.



D3D++ 2021 IR8


- New functions of the *D3D++ Toolbar*:
 - The **Search and Replace in Object Names** function has been enhanced to rename only selected objects.
 - The function **Rename selected Objects with running index** has been extended to support additional object branches.
 - The function **Create opposite Measurement** has been extended and now automatically determines the material thickness even with *Surface points*.
- **Reading data from Microsoft Excel files;**
D3D++ now offers the possibility to import data from Microsoft Excel files (.xlsx) via a macro command. Please contact us to automate your inspection processes.
- A problem has been fixed in the function **Configure Circle for threaded hole CNC probing**.



D3D++ 2021 IR7

- New functions of the *D3D++ Toolbar*:
 - The function **Copy Extraction Parameters** has been extended for the use of *Polylines*.






- The function *Edge points link relatively* has been extended with a new dialog, and a problem with projecting new points on the CAD has been fixed. 
- Faster start of D3D++:
The loading times of D3D++ when starting PolyWorks|Inspector have been optimized.
- When importing inspection plans with *material thickness* and *objects* with the *CNC Probe* measurement method, half the material *thickness* is imported as an offset to the *plane*. This setting is not overwritten when the inspection plan is updated later.

D3D++ 2021 IR6




- New functions of the *D3D++ Library*:
 - *Add Sequence Step: Interactive Element selection*
With this function you can, for example, clean data objects before the data is further processed by the measurement sequence.

D3D++ 2021 IR5



- New functions of the *D3D++ Toolbar*:
 - *Search and select Objects*
This function opens a dialog for searching and selecting objects in the *Tree View*. This function was developed because so far only a single object can be selected via the PolyWorks search. 
- New functions of the *D3D CNC Toolbar*:
 - *Configure selected circle for threaded hole CNC probing*
This function configures a selected circle or cylinder for a CNC threaded hole probing. 
 - *Sequence condition from measurement results*
With this function you can execute *Steps* in the measurement *Sequence* depending on measurement results. 
- New functions of the *D3D++ Library*:
 - *Use or ignore Objects – Add to Sequence*
This function allows you to hide, restore, ignore, or use *Objects* during the measurement *Sequence*. As an example, this allows to adjust collision detection to disassembled components.
- A problem saving the *Export – Options* in IR4 has been fixed.

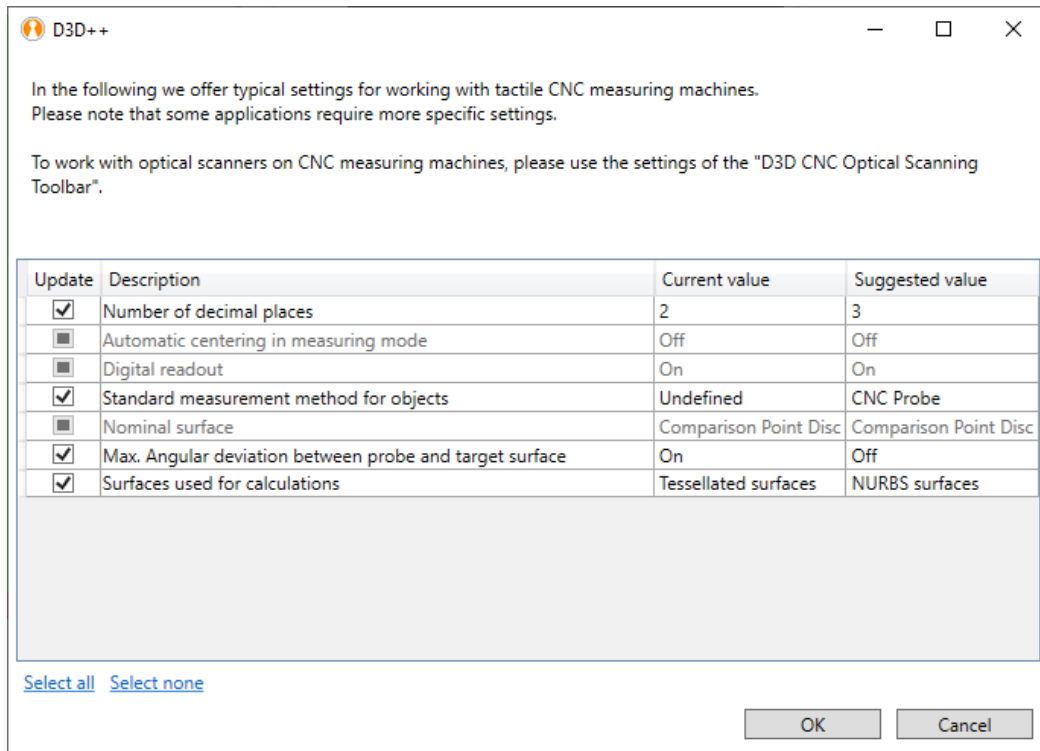
D3D++ 2021 IR4

- The installation of D3D++ has been significantly accelerated.
- New functions of the *D3D CNC Toolbar*:

- **Documentation of Tool Orientations**
With this function, you can document the calibration of sensor system orientations in a PDF report. Optionally, a measurement can also take place via the measurement sequence via the created *Custom measurements*. Details can be found in the *Toolbar documentation*. 
- **Configure typical options for CNC probing**
In this dialog some new settings and functions have been added. 
- The **Rename** recognition when importing updated inspection plans has been extended so that several objects can also be assigned to the same position.
- Extension of the Function **Angle Decimal in Degrees**:
The conversion of angles into degrees, minutes and seconds is now carried out for all active angle controls. 
Limitations and Notes:
 - The calculated values are not updated automatically (only by executing the D3D++ function).
 - Only Features are supported.
 - Only active controls are calculated or updated.
- A problem when exporting **Distances** in DMO format has been fixed. The order of the parameter **NOMINL** did not comply with the DMIS standard.

D3D++ 2021 IR3

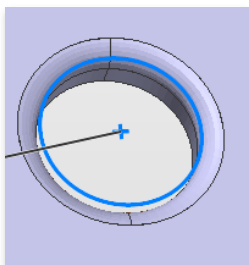
- New functions of the **D3D CNC Toolbar**:
 - **Interrupt Sequence if Objects are not measured or not in tolerance**
This function interrupts the measurement **Sequence** if not all **Objects** could be measured or if **Objects** are out of tolerance. In this case, a custom **Guiding Instruction** is displayed. Optionally, the **3D Scene** can be displayed based on a **Control View**. 
 - **Configure typical options for CNC probing**
This function opens a dialog for configuring typical settings for working with tactile CNC measuring machines. 



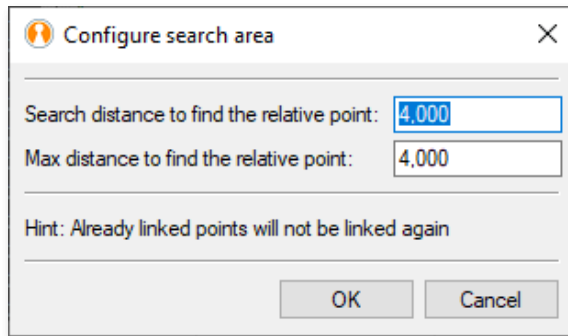
- **Configure comparison points for CNC shank probe**
This function starts a dialog to configure the selected comparison points for a CNC shank probing. Details can be found in the *Toolbar documentation*.

- **New functions of the D3D++ Toolbar:**

- **New function: Copy Measurement Parameters**
Sets the measurement parameters of the selected **Objects** from the parameters of another measurement **Object**.
Note that all **Objects** must be of the same type for the operation to be successful, except for curve-based Features.
- **New function: Create Feature with chamfer interactively**
With this function, a curve-based Feature with a chamfer or a radius is interactively picked on CAD. Measurement parameters will be adapted automatically.



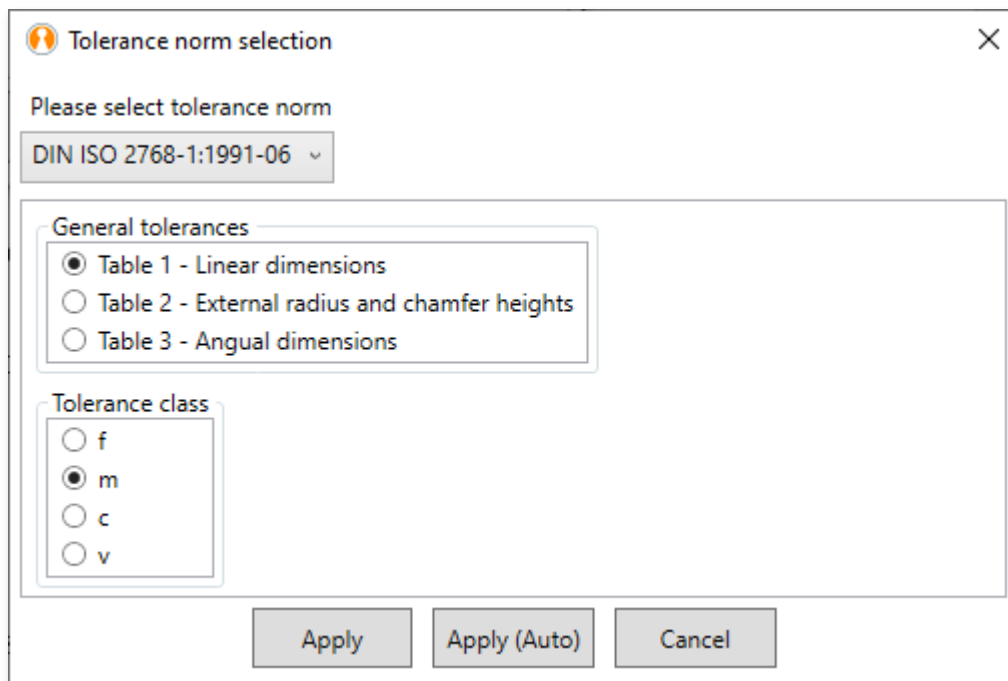
- The function **Edge Points link relative** has been extended to configure the selection of relative points in even more detail.



- New measuring method "**D3D CNC Probe CP with shank**"
Using this measurement method, comparison points can be CNC probed with the shaft of the probe. Details can be found in the *D3D++ manual*.
- The export of measurement results in *Flex-Text* format now also supports the export of Flush and Gap information.

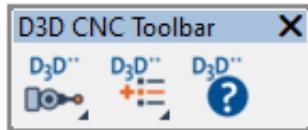
D3D++ 2021 Release (IR2)

- Setting ISO tolerances is faster and clearer with a new dialog. The new dialog saves its last settings and responds faster. In addition, some ISO standards have been supplemented and updated. The function is available in the new *D3D++ Toolbar: D3D++ Toolbar > Measure > Set ISO Tolerances*.



See the *D3D++ toolbar documentation* for details.

- The new *D3D CNC Toolbar* gives you quick access to frequently used functions of CNC measuring machines.



An overview of all functions and a corresponding help can be found in the toolbar documentation under the icon:



You can import the *D3D CNC Toolbar* via the *D3D++ library*.

New functions of the *D3D CNC Toolbar* at a glance:

- Typical settings for CNC measuring machines
- Password protected access to CNC device settings
- Measurement method for monitoring and documentation of piece and axis temperatures
- Menu item to open the CNC configuration folder

New Sequence scripts of the *D3D CNC Toolbar* at a glance:

- Starting the home position movement in the measurement sequence
 - Activating and disabling collision detection in the measurement sequence
 - Display a control view / 3D Scene from the measurement sequence
 - Activating and disabling the updateability of alignments in the measurement sequence
 - Export alignments in the measurement sequence as a matrix (also with relative paths)
 - Remeasure alignments in the measurement sequence from file (even with relative paths)
 - Switching between scanner and integrated probe without message (e. g. Kreon Zephyr)
- New "Rename" detection when importing updated inspection plans. D3D++ compares the position of existing objects with the inspection plan when importing updated inspection plans. This also allows renames to be detected and automatically applied.
 - New macro commands to connect web services, web pages, or services through the http(s) protocol. Files or other data in JSON or XML format can be retrieved or uploaded. This allows us to integrate PolyWorks into business processes faster and more easily – Please contact us!
 - ***D3D Duplex Toolkit:***
This toolkit includes measurement methods and macros for various use cases in the field of duplex machines. Since these are often complex tasks, these functions are only offered within the scope of a service, put into operation and, if necessary, adapted to the specific needs. Please contact us if you are interested.

Highlights of the *D3D Duplex Toolkit:*

- Joint start of all machines
- Fast step synchronization for collision avoidance
- Import of measurement results (approx. 50% faster than synchronization)
- Automatically open the project on all subordinate machines
- Redistribute projects with just one click
- Iterative alignment with multiple machines

- Quick and easy chaseball measurement
- **D3D Sequence Master Toolkit.** This toolkit includes measurement methods and macros for complex measurement sequences, such as iterative alignments. Since these are often complex tasks, these functions are only offered within the scope of a service, put into operation and, if necessary, adapted to the specific needs. Please contact us if you are interested.

Highlights of the *D3D Sequence Master Toolkit*:

- Iterative alignments
- Loops, jumps and complex conditions
- Multi piece inspection (e. g. multiple parts on a pallet)
- D3D++ menu structure has been updated
- The functions for controlling collision detection have been moved from the *D3D++ Toolbar* to the *D3D CNC Toolbar*.

D3D++ 2020 IR11

- When exporting in DMIS format, additional, user-defined data can now be exported for each object.

D3D++ 2020 IR10

- The *Check Naming Convention* (for mirrored Objects) macro has been optimized and is now much faster.
- When exporting to DMIS format, the template to be used can now be set in the dialog.
- When importing modified inspection plans, object comparison and user interface have been optimized and expanded.
- Troubleshooting when importing linked *Comparison Points* in BMW CSV format. Linking *Comparison Points* to (auxiliary) *Planes* is not supported in PolyWorks®. This is now indicated by a message.

D3D++ 2020 IR9

- New D3D measurement method *D3D Probe Caliper*. The measuring method *D3D Probe Caliper* allows to probe within a caliper tip area. The caliper tip areas can be probed either using comparison points or feature planes that are temporarily created using this measuring method. Details can be found in the *D3D ++ manual*.
- Fix when copying extraction parameters from one object to other objects. The bug has already been fixed in IR6.

- Various minor optimizations.

D3D++ 2020 IR7

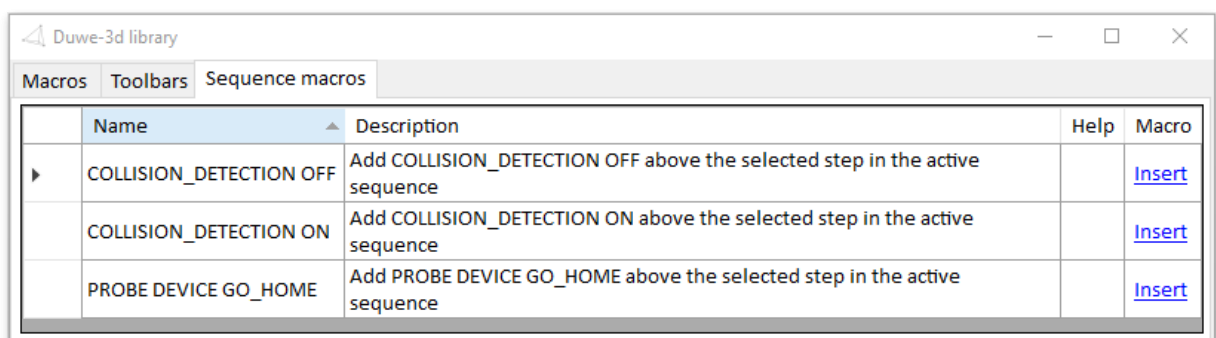
- The BMW CSV Import is now using the alignment axis from BMW .csv files.
- **DMIS export** window is more user-friendly - long texts in combo boxes can be read.
- Renaming of incorrect object names in DMIS has been improved.
- When importing inspection plans in Daimler .csv format, there is no double mirroring anymore if mirrored objects already exist.

D3D++ 2020 IR6

- **Set measurement method** dialog is shown for every D3D++ import if the measurement method is not set within PolyWorks|Inspector™.
- BMW .csv trim points take CNC probe depth from material thickness divided by 2.
- Parsing and saving of simple relative comparison points is now supported within BMW .csv files.

D3D++ 2020 IR5

- Renaming objects with running index now works for objects in a pattern.
- Creating objects on the opposite side of material also works for several selected objects.
- New **D3D++ Library for Sequence macros**. Often used **Sequence macros** can be imported quickly and easily into the measurement process via this library.





Duwe-3d library				
Macros		Sequence macros		
Name	Description	Help	Macro	
COLLISION_DETECTION OFF	Add COLLISION_DETECTION OFF above the selected step in the active sequence		Insert	
COLLISION_DETECTION ON	Add COLLISION_DETECTION ON above the selected step in the active sequence		Insert	
PROBE DEVICE GO_HOME	Add PROBE DEVICE GO_HOME above the selected step in the active sequence		Insert	

- New **Sequence macro** to move a CNC machine to the "home position".
- The following functions of the D3D++ toolbar have been adapted to a new dialog system: **Search and replace in object names**, **Show Feature deviations** and **Search Datum**.
- The function **Create Comparison Points from Polyline** has been extended to be able to use existing polylines.

- New D3D measurement method **D3D Set temperature from WPT100**. With the measuring method **D3D Set temperature from WPT100**, the temperature of a Wenzel measuring machine axis can be read out with WPT100 and transferred to the machine configuration. Details can be found in the D3D ++ manual.
- The D3D++ diagnostic files are now also transmitted with the **PolyWorks® Support Assistant**.

D3D++ 2020 IR4

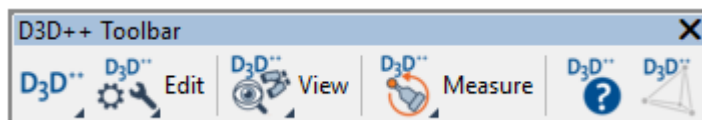
- New functions of the **D3D++ Toolbar**:
 - Export **formatted reports** automatically:
With the function **Export reports**, selected **formatted reports** or **report objects** are exported under a definable name and path. This can be done automatically via a measurement **sequence** or afterwards for series measurements that are linked to a piece template. You can find details on this in the documentation for the **D3D ++ Toolbar**. 
 - New functions for controlling collision detection in the measurement **sequence**:
With the **Activate Collision Detection** and **Deactivate Collision Detection** functions, you can configure collision detection within a measurement sequence. E.g. tool orientations can also be changed outside the working volume without warning. 

D3D++ 2020 IR3

- With the **DMO** export of **Surface Comparison Points** it is now possible to export the **3D Point** instead of the **Surface Point**. For this, at least one **Geometry Control** of the **3D Point** must be activated, and no **Geometry Control** of the **Surface Point** must be active.
- Bugfix when exporting custom **DMO** dropdown lists.
- New macro command to check whether an element is in a list:
D3D STRING EXISTS IN_ARRAY (...)

D3D++ 2020 Release (IR2)

- The new **D3D ++ Toolbar** gives you quick access to all important D3D ++ functions.



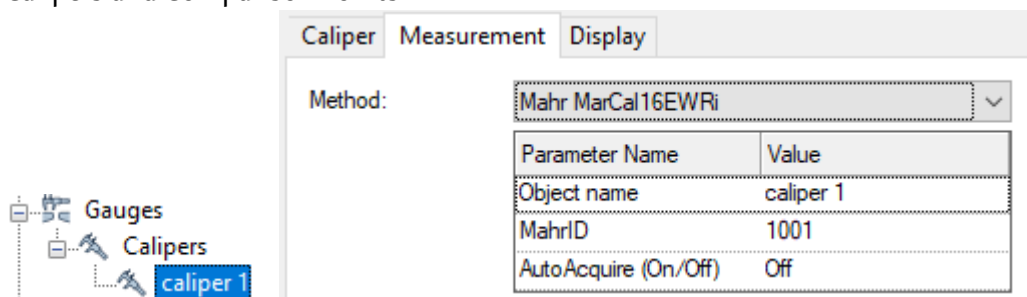
- Setting ISO tolerances is now quick and easy via the **D3D++ Toolbar > Measuring > Setting ISO tolerances**.

- An overview of all functions and corresponding help can be found in the D3D ++ toolbar documentation and help under the button:

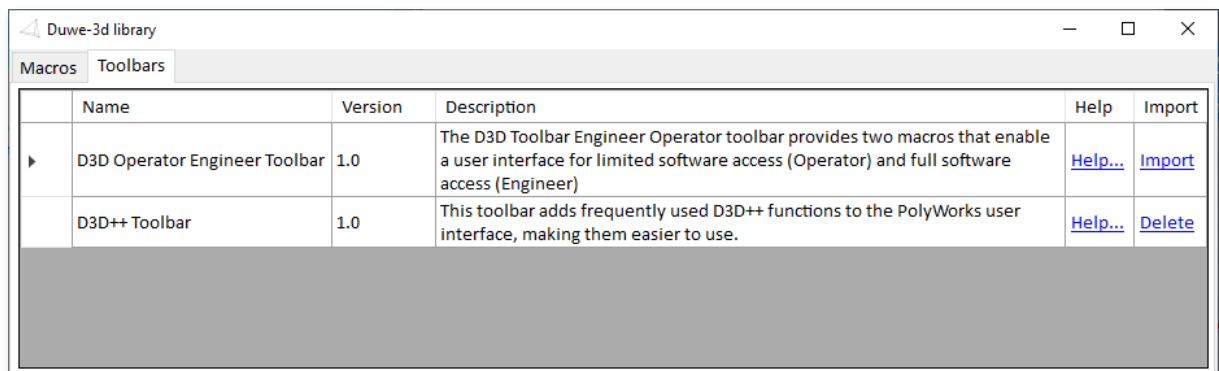


Overview of new functions of the D3D++ Toolbar:

- New function to move comparison points interactively on the CAD
 - New function to transfer extraction parameters from one object to another
 - New function to measure sphere adapters (Probe, CNC-Probe and Extract)
 - New feature to measure cylinder adapters (Probe, CNC-Probe and Extract)
 - New function to measure features on the opposite side of the material (Probe, CNC-Probe and Extract)
 - New function for searching and replacing in object names
 - New function to search for objects that are assigned to a reference
 - New function to select data points
 - New function to make it easier to view characteristic deviations
 - New function to calculate angular characteristics from decimal degree to angular degree
 - New function to rasterize comparison points using a polyline
- Important note: Changed location of the D3D ++ settings and options. As of version 2020, the D3D ++ settings and options are saved in the PolyWorks user configuration. File path: `$_USERCONFIG_PATH\config\D3D++`
 - Mahr handheld measuring devices with integrated wireless can now also be used with Calipers and Comparison Points

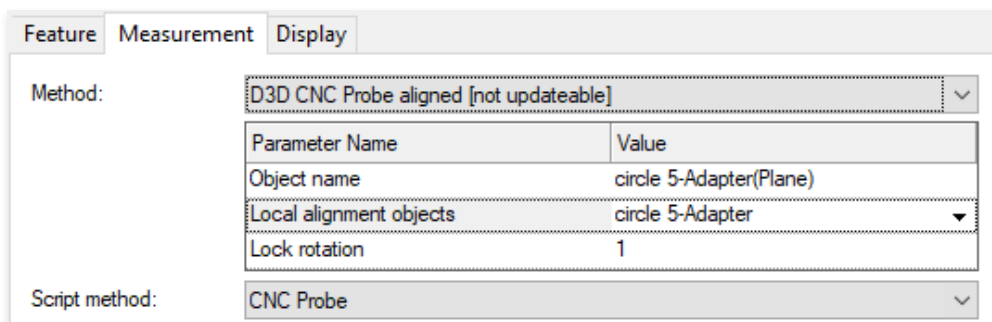


- New D3D++ library that allows you to import D3D++ toolbars easily.



- New **D3D++ Operator Engineer Toolbar** for limited software access with limited operating options and thus reduced incorrect operation
- Avoiding incorrect entries in the DMIS and Flex-Text export dialog:
The configuration and selection of the header data has been removed from the export dialog. Settings on the DMIS header data and Flex-Text configuration can only be adjusted via the options menu. This prevents unwanted changes to the configuration.
- New D3D ++ measurement methods:
 - **D3D CNC Probe aligned [not updateable]:**

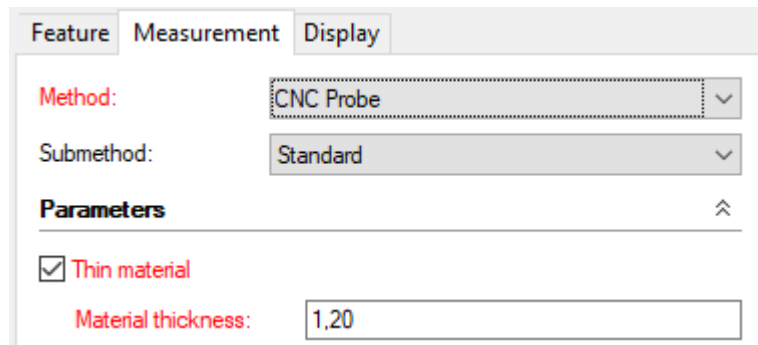
The **offset of the probing areas** available in PolyWorks cannot be applied to all features or comparison points. In these cases, a temporary **alignment of measured objects** can be created using the **D3D CNC Probe aligned [not updateable]** measurement method. The alignment is created and activated by the measuring method before the CNC measurement. All objects of the **Local alignment objects** parameter are used for this. After the measurement, the alignment is deleted. The **Lock rotation** parameter can be used to control whether the alignment should enable rotation. By default, the parameter **Lock rotation = 1** disables any rotation.



Parameter Name	Value
Object name	circle 5-Adapter(Plane)
Local alignment objects	circle 5-Adapter
Lock rotation	1

- **D3D Measure sphere adapter [not updateable]:**
You can use this measurement via the **D3D++ toolbar > Measure > Create Sphere Adapter**. Manual configuration is possible but is not recommended. For more information on creating and measuring the ball adapter, see the D3D ++ toolbar documentation.
- **D3D Get deviations from object [not updateable]:**
The measurement method **D3D Get deviations from object [not updateable]** is used for the cylinder adapter measurement as well as for the measurement of objects on the opposite side of the material. You can use these measurements via the **D3D++ toolbar > Measure > Create cylinder adapter** and **Create opposite measurement**. Manual configuration is possible but is not recommended. Further information on creation and measurement can be found in the D3D++ user guide.
- Import of material thickness in BMW CSV and Audi/Daimler/VW CSV format:
When importing Features in BMW-CSV and Audi/Daimler/VW CSV format, the **Material**

thickness for *CNC Probe* is now taken from the CSV file:



The screenshot shows a software window with three tabs: 'Feature', 'Measurement', and 'Display'. The 'Measurement' tab is active. It contains the following settings:

- Method:** A dropdown menu set to 'CNC Probe'.
- Submethod:** A dropdown menu set to 'Standard'.
- Parameters:** A section with a chevron icon to expand it.
- Thin material**
- Material thickness:** A text input field containing '1,20'.

- The use of *D3D Expressions* is now available in the header data of all export formats. *D3D Expressions* provide access to *project and part properties*, as well as date and time functions. This prevents multiple inputs or manual inputs during export. *D3D Expressions* can also be configured and replaced via macro commands. See the D3D++ manual for details.
- Conversion of the Microsoft .NET Framework to version 4.7.2. This version is already installed in all current Windows versions. If necessary, this version can also be downloaded and installed separately from Microsoft.

D3D++ 2019 IR11.3

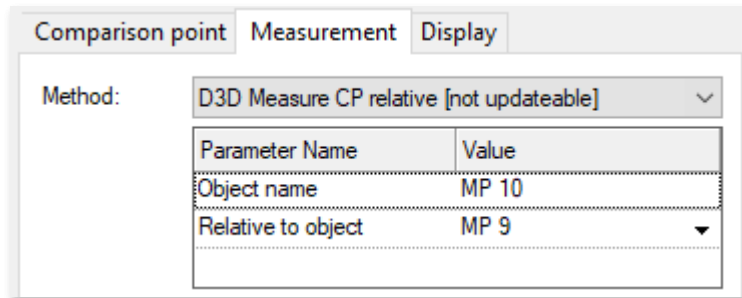
- New option to import or update objects from only one vehicle side.
 - Create Objects on the left side (Y < 0)
 - Create Objects in Y = 0 position
 - Create Objects on the right side (Y > 0)
- Bug fix when updating linked RPS points with an updated inspection plan.

D3D++ 2019 IR11.2

- The macro for automatically linking edge points with relative surface points has been extended for flanged edges.
- An error message when creating the *D3D-LogFile* has been fixed.

D3D++ 2019 IR10

- The measurement method *D3D Measure CP relative* to measure comparison points relatively has been added.



More details, limitations and hints can be found in the **D3D++ User Guide**.

D3D++ 2019 IR9

- Functions for mirroring inspection plans in Daimler CSV format have been added. The functions for mirroring the objects are activated and deactivated in the **D3D ++ options**.

D3D++ 2019 IR8

- New macro functions from D3D ++:
 - Message window with several buttons: **D3D INPUT QUESTION**
 - Execution of macros in a remote PolyWorks instance (remote control): **D3D TCPIP CLIENT MACRO_COMMAND**
- Various minor improvements

D3D++ 2019 IR7

- An issue with the installation of object measurement macros has been fixed. Added a message if measurement method not installed. Proper mirroring of measure groups with macro measurement method.
- Various minor optimizations

D3D++ 2019 IR6

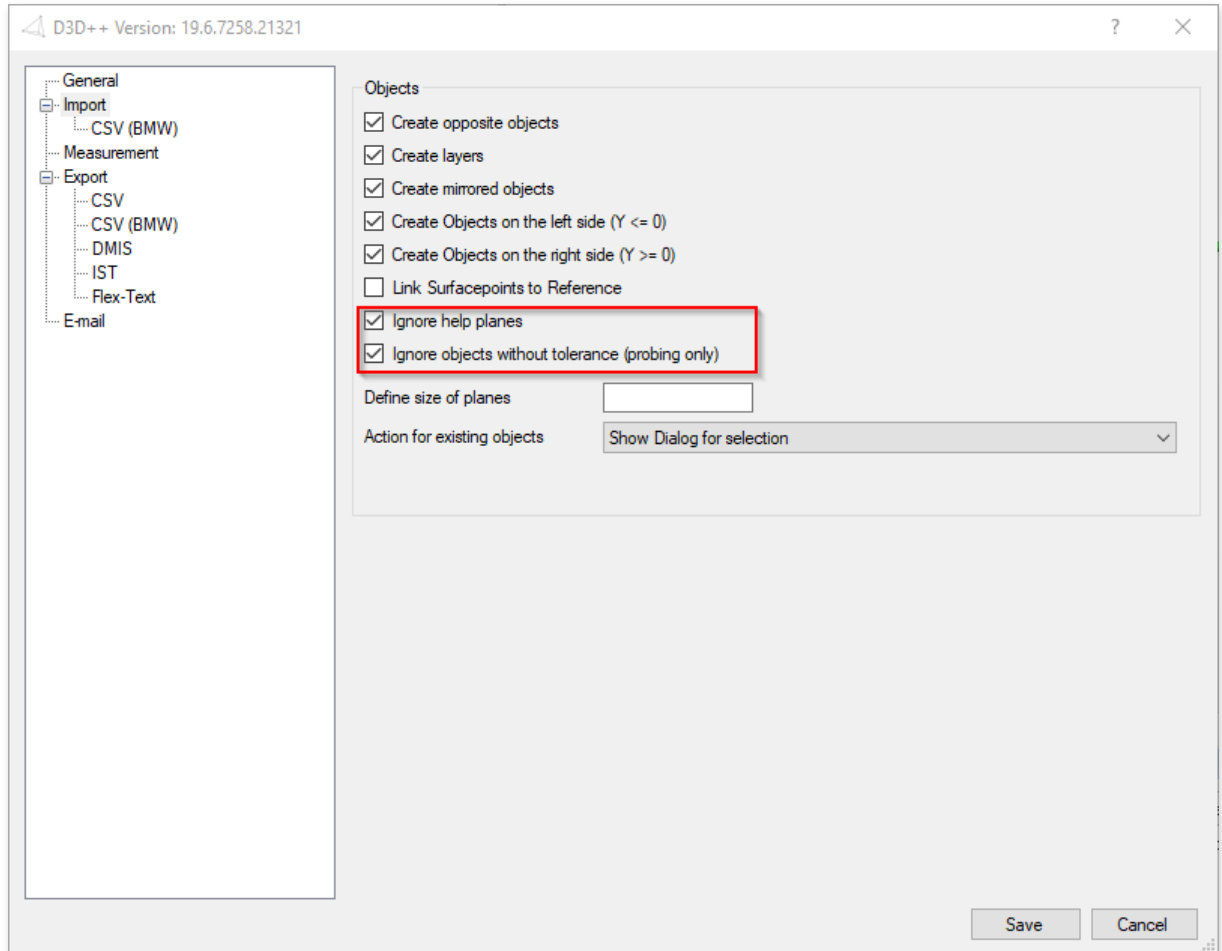
- New CNC measurement macro for linking surface comparison points **CNC Probe CP relative V2**. In version 2, the relative object can be selected via a selection list. This link is also considered by the wizards of the sequence editor.
- Added a macro for interactively linking surface points in the 3D view (initially only for CNC-Probing)

Menu	Description	Help	Macro
CNC CMM Setup\Create Features Ballbar...	Dialog to creates features to measure a ballbar		Execute
CNC CMM Setup\Create Features Stepgauge...	Dialog: Creates features to measure a stepgauge		Execute
CNC CMM Setup\Create Sequence Ballbar and Stepgauge	Creates the measurement sequence for a step gauge or ball bar measurement. The macro for step gauge or ball bar must have gone through before. The CNC_KMG configuration and the sensor system orientation must be set.		Execute
CNC CMM Setup\Export Measurement...	Exports values of a CNC-CMM measurement		Execute
CNC CMM Setup\Goto Without Tool...	Dialog: Relative or absolut Go-To without a calibrated tool		Execute
Edit\Check naming convention of selected objects	Checks the naming convention (Audi, BMW, Daimler, VW) of the selected objects and edits it if the location of the objects does not match name		Execute
Edit\Set new name with running index of selected objects...	Sets new name of selected objects in treeview with running index		Execute
Measure\Comparison Point from Polyline	Creates comparison points from polyline by defined stepwidth		Execute
▶ Measure\Comparison Point link interactive	Link comparison points interactive for D3D-relative-measurement	Help...	Execute
Measure\Comparison Point link relative...	Link Comparison points to new or existing points to measure them relativ		Execute
Measure\Comparison Point set numerically...	Sets deviation of comparison point numerically.		Execute
Measure\Features ISO Tolerance Zones	Sets the tolerance of distance features to ISO norms	Help...	Execute
Report\Capture and Export Snapshot...	Creates snapshot from 3D view with specified name and exports to defined folder		Execute
Select\Data Points from reference surfaces...	Dialog for selecting data points based on maximum distance and maximum angle to the reference		Execute
Tools\Create new Pieces from Polygonal models...	Dialog for selecting scan data. For each record, a new part is created and evaluated		Execute
Tools\Create Transformation Matrix of Coordinate Systems	Determines the TRF-Matrix between two coordinate systems and exports them as *.txt-File.		Execute

- The D3D ++ toolbar now includes a button to overview the Duwe-3D macros.

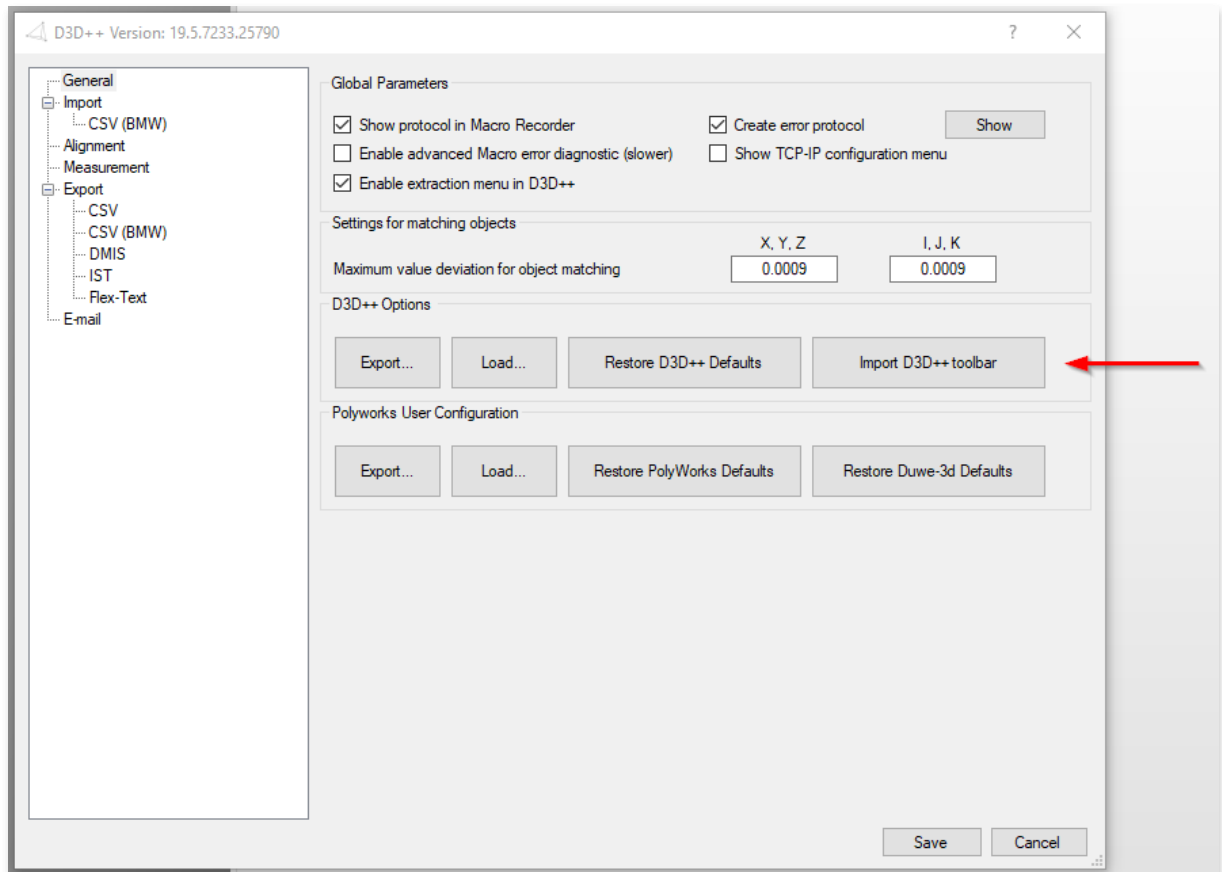


- When importing inspection plans, auxiliary planes from the design are no longer imported. Furthermore, manual probed points without tolerances can also be ignored during import. These settings can be adjusted via the D3D++ Options menu.



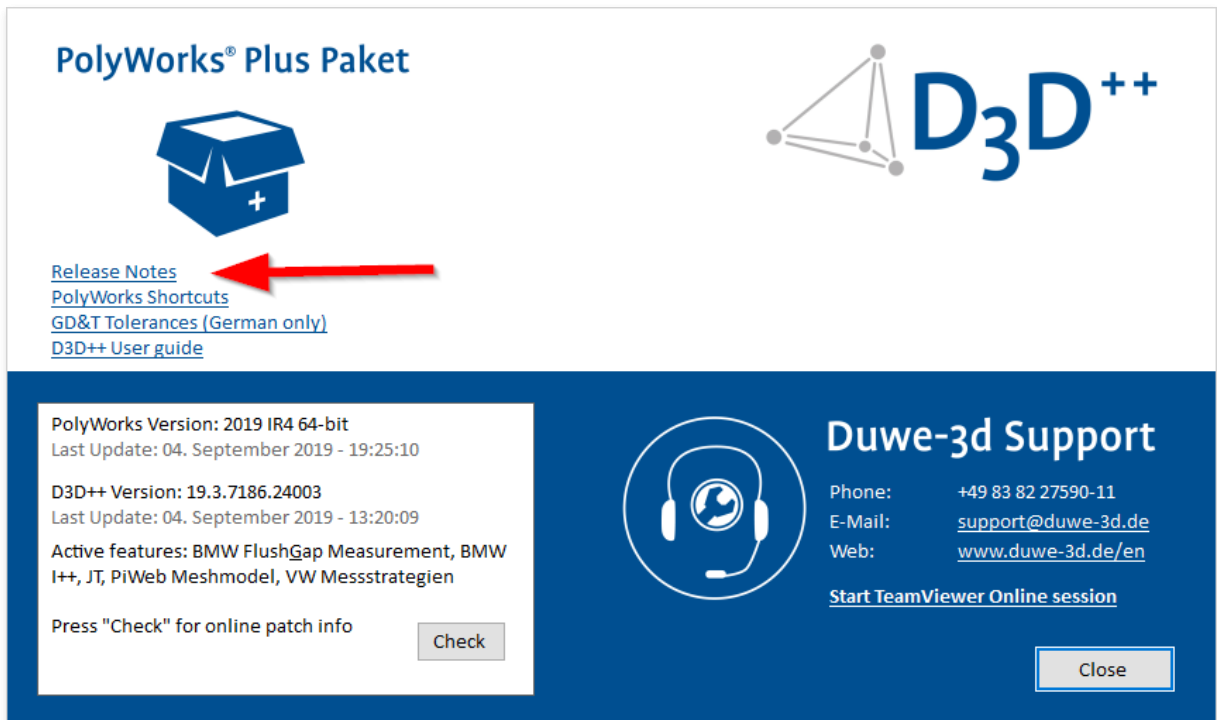
D3D++ 2019 IR5

- Troubleshooting, when using VW feature plans - the same measurement method is used for all objects.
- **D3D++ toolbar** installs itself with the plug-in.



D3D++ 2019 IR4

- Revision of the Duwe-3d macros as well as its documentation and help
 - Extension in the macro *Features ISO Tolerance Zones* for ISO 13920 by table 2 and 3 (angle, straightness, flatness, and perpendicularity)
 - Revision of macros for CNC setup and monitoring
 - The help dialog of the Duwe-3d macros is no longer modal and can also be used to run the macros
- Troubleshooting the use of VW feature plans
 - Troubleshooting importing mirrored objects using VW measurement methods
 - Troubleshooting the extraction of BA, BH, and BK measuring methods
- Release information about D3D++ has been integrated and is stored in the *support dialog* as follows.



PolyWorks® Plus Paket

[Release Notes](#)

[PolyWorks Shortcuts](#)

[GD&T Tolerances \(German only\)](#)

[D3D++ User guide](#)

PolyWorks Version: 2019 IR4 64-bit
Last Update: 04. September 2019 - 19:25:10

D3D++ Version: 19.3.7186.24003
Last Update: 04. September 2019 - 13:20:09

Active features: BMW FlushGap Measurement, BMW I++, JT, PiWeb Meshmodel, VW Messstrategien

Press "Check" for online patch info

Duwe-3d Support

Phone: +49 83 82 27590-11
E-Mail: support@duwe-3d.de
Web: www.duwe-3d.de/en

[Start TeamViewer Online session](#)

D3D++ 2019 IR3

- Various minor optimizations
- Bugfix when exporting to the PiWeb-MeshModel format
- Extensions when exporting to Flex-Text format

D3D++ 2019 IR2

- Various minor optimizations

- Adjustments for the 2019 release

D3D++ 2018 IR11

- Various minor optimizations

D3D++ 2018 IR10

- Various minor optimizations

D3D++ 2018 IR9

- New option for linking reference points to the reference

D3D++ 2018 IR8/IR7

- The normals of surface points and edge points can be updated with changed inspection plans
- In *DMO* files, the part date and time can now also be used
- Macro commands for sending an e-mail (via SMTP)
- Various minor optimizations
- Installation errors have been fixed

D3D++ 2018 IR6

- New macro for playing sounds: *D3D PLAY_SOUND (ProbingEnd)*

D3D++ 2018 IR5

- Several minor improvements and bugfixes

D3D++ 2018 IR4

- Speed optimization during import and export
- Progress bar for import and export of inspection features
- Interactive dialog when importing inspection features into an existing project (update of inspection characteristics)
- TCP/IP macro functions for communication with external systems (server and client)

- Support of the Daimler MDM-XML format (beta)
- Use of project and part properties in the DMIS header
- Custom properties of D3D++ are only created when needed
- D3D ++ StartUpMacros are executed when starting PolyWorks®. For details see **D3D++ documentation**.
- Troubleshooting translation texts (en/de)
- Troubleshooting projects that are edited with different language settings
- Several minor improvements and bugfixes for import and export

D3D++ 2018 IR3.1

- TCP/IP macro functions for communication with external systems
- Support of the Daimler MDM-XML format (beta)
- Troubleshooting translation texts (en/de)
- Troubleshooting projects that are edited with different language settings

D3D++ 2018 IR3

- New functions for the local alignment of features in the (VW/Audi/Daimler) CSV format
- Option to export all tolerances in DMIS format (including tolerances that are not active)
- Bugfix when exporting length tolerance of cylinders in DMIS format
- Various bugfixes when importing linked objects into a project with existing inspection features (update of linked inspection features).

D3D++ 2018 IR2

- Adjustment of alignment: D3D no longer creates iterations, as PolyWorks now supports this feature directly.
Attention: This can lead to different results in PolyWorks 2018!
- Update and extension of various integrated macros
- Option to import only one vehicle side ($Y \geq 0$ or $Y \leq 0$)
- New features on the support and info page
- Several minor improvements and bugfixes.