

What's New in 3DCS?!

3DCS Variation Analyst

7.8.0.0 - June 2021

What's New in 3DCS?

7.8.0.0 June - 2021

Below are a list of changes, enhancements and resolved issues based on the entire 3DCS suite or a specific CAD system available with 3DCS. Please review the list of changes and don't hesitate to ask about a specific change.

Any text written with a teal highlight refers to any Simulation Output change. In other words, some calculation changes were made to either a distribution, a measurement output or DLL result. This could result in minor changes to a previous Model Simulation output.

Introduction

3DCS Variation Analyst is a powerful dimensional analysis tool that predicts the amounts of variation and highlights the causes for part and process variation in multi-stage assemblies. It empowers manufacturers to prevent build problems by quickly evaluating part tolerances, assembly tooling and sequencing ahead of time in the product development stage, so that desired fit and function specifications are achieved in production.

- > Building a 3DCS model using the Variation Analyst tool
- Learn about Rigid Body moves
- Available Functions
- Learn how to use Variation Analyst with one of the available tutorials:
 - Analyst Tutorial: Learn about creating Rigid Body moves on basic and complex features, adding GD&T, viewing Monte Carlo, GeoFactor, and the Contributor Analysis
 - Feature-based Tutorial: Learn about applying Feature moves, adding GD&T, and viewing Monte Carlo Simulation results based on basic geometry.

Enhancements

Pattern Move - Support for Slot/Tab features - The current Pattern Rigid move for Variation Analysis will now support adding slot and tab features defined in 3DCS.

3D Best Fit Floating - Determinate Assembly - A new feature of the MTM Lib2 routine. This routine is designed to rearrange multiple parts relative to a base part and to each other, based on a set of selected hole/pin Fitting Pairs and also point to point Constraints.

Chordal Mesh setting - Sets the maximum absolute distance (Sag) between the actual CAD design and the 3DCS Mesh. Applies on all non-planar surfaces. The setting can be found under the General tab of the Preferences.

Worst-Case Improvements - Improved the Worst-Case (WC) results for GeoFactor.

General

- Added capability to view results for 1 Measure Group at a time in the Analysis Summary Window. (68159)
- The setting 'Show units in the results' will correctly stay active or inactive if set in the Preferences. (68849)
- Added the ability to relink already linked features. The Feature Linking Wizard will now have a "List all features" button which will list both linked and unlinked features allowing the users to relink if needed.(68359).
- Added a Reset All Defaults button to the Analysis Option dialog. (67335)
- Made Slot display in graphics to show a diamond symbol.(68593)
- Slot display is controlled with Show Mesh button.
- Enhanced the WTX import to use 3DCS names if the CAD Name does not Match. (68369)

Analysis

- Added the Estimated Pp and Estimated Ppk results to the Monte Carlo analysis.
 Users can activate these results in the Display Options of the Analysis Window, under the Monte Carlo analysis tab. (68548)
- Added more support for Arc Tolerance in GeoFactor and Analysis results, when using a distribution other than Constant. (Default distribution for Arc Tol is Constant). (62312)

• Added GD&T Form support to spherical and cylindrical features. (68870)

GeoFactor

- Enhanced the Worst Case calculation capabilities to better account for Bonus, Datum Shift, and Floats. (68413)
- Added capability to better support multiple frame DRFs (i.e. Profile, Angularity, and Flatness) in a Worst Case analysis. (68281)
- Fixed a bug that would sometimes not consider the Position on a Datum that has MMB or LMB on it in a relevant DRF when checking WC GeoFactor. (69274)

Feature Groups

- Added a Feature Group lists in Move, Tolerance, Measure, and GD&T List dialogs. This allows users to create new Moves, Tolerances, Measures and GD&T in a specific Feature Group. (68077)
- Added to the Group right click menu, the option to directly add MTMs. (68571)

Features

- When moving Dynamic Points between parts, they will no longer keep their relationship to the point(s) of the previous part. (67802)
- Users coming from an earlier version, with a customized Slot/Tab directions, will be saved and applied in Feature Slot/Tab dialog. Only for features Slot/Tabs used in a move. (69517)
- Correctly creates spherical features and applying the correct size. Update Geometry will be required to fix the features. (68221)
- Same feature is now allowed in multiple Slot creation.(68871)

Measures

- Addressed internal direction calculation for Point-Line measure. (68504)
- Dimensional Distance Measure dialog will now display the feature info (size diameter) next to the feature name. (67653)
- Dimensional Distance Measure now has access to creating a Point-at-Pick (mouse click position), as well as surface selection. (68530).
- Fixed the issue, now Sphere size Tolerance will be recognized correctly in Dimension distance Min and Max Measure.(68436)
- When Dimensional Distance measure is measuring between Cylinder and a Plane Feature, made the vector direction to always display from the Plane feature.(68086)

Moves

- Added support for Tabs and Slots in the Rigid Pattern move. (47780)
- Float not deviating on extracted Feature Moves issue is fixed.(69010)

Validation

- The Relationship Wizard will now show Green for Datums that are referenced by important Features in the model. (68394)
- Dimensioning Location should not report a zone-shape error, if originally created from a size tolerance with a diametrical zone. (69408)
- Removed the move dialog Validation for Pins larger than the Hole size. Only Validate will warn the user. (68605)

GD&T

- Datums will now pick up any location change that may come about from a Dimensioning Location tolerance. (68796)
- Composite Position GD&T will now allow non-size features in the GD&T. (68992)
- If invalid DRFs are shown in the Validate dialog or Run Log window, users can double-click the line to edit the DRF. (68210)
- Added Distribution Defaults for Axial Location, Axial Form, Axial Orientation Tolerances in the Preference dialog. (66226)
- Editing a Position or Profile tolerance will keep the edited applied range. (67936)
- Inactive Geometric Tolerances (GD&T) will no longer prompt "Datums Not Referenced" in the GD&T Wizard. (67749)
- Changing Position or Profile to and from Composite will keep the first range and offset. (68634)
- Switching the GD&T Type will no longer change the DRF Tab to "From Nominal". (67757)
- In the GD&T dialog if the user enters a higher value in the Lower Spec field a warning will pop up to fix this user error if clicked else where in the dialog except for the Upper Spec field. This fix will also not revert back the user entered value to default. (68822)
- Position GD&T will now display 0 and 90 arrows in all platforms .(62521)

Display

- Cleaned up Feature and Analysis labels, removing extra, unnecessary labels.
 (67912)
- Enhanced the Moves, Measures and Tolerance annotation drawing in the graphics. (65165)
- Fixed the Feature Measure display to display the labels in the correct location. (68586)
- Annotation drawing displayed in the graphics will now get cleared correctly when the MTM List selected. (68520)
- When the Contributor list is set to "Per Feature" it will only display the selected feature in graphics.(68980)
- Selecting a user Dll Move with lot of points will no more delay the graphic display.
 (68125)

Advanced Analyzer and Optimizer

7.8.0.0 - June 2021

Enhancements (7.8.0.0)

Datum Optimizer - a new tool designed to determine the optimal datums from a candidate set with the goal of minimizing the rigid part variation or compliant part deformation.

Sequence Optimizer - a new tool designed to reduce lead and launch time by eliminating or minimizing manual join/clamp sequence studies. The Sequence Optimizer determines the optimal join/clamp sequence from a candidate set of joins/clamps. Users may optimize clamp sequence or joining sequence.

Critical Tolerance Identifier (CTI):

• Enhanced CTI to function when only Contributor Analysis has been run. (68286)

Mechanical Modeler

7.8.0.0 June 2021

Below are a list of changes, enhancements and resolved issues based on the entire 3DCS suite or a specific CAD system available with 3DCS. Please review the list of changes and don't hesitate to ask about a specific change.

Enhancements (7.8.0.0)

- **Gear Modeling** is a new Dialog-based utility to facilitate the gear modeling and calculate Angle and Axial Backlash.
- **Collision Detection** Is a new tool which automatically generates Part Distance measurements that calculates the Min Distance, Interference and Clearance between the selected parts.
- **Part Distance Measure** Is a new measure to measure the distance between 2 or more parts between the parts in "From" list and "To" List and gives the minimum distance between them. It internally uses all the meshed features on each part, calculating the distance between each feature and each mesh node.