Quantapoint PRISM 3D

Importing and Clashing CAD Models Against 3D Laser Models

ABSTRACT

Helping You Extract the Greatest Value from Your Investment in As-Built Laser Documentation
Quantapoint PRISM 3D™ is the most advanced and cost-effective technology available for managing, sharing and extracting dimensional and other information from as-built documentation using laser scanning. With PRISM 3D, companies can fully leverage their investment in as-built laser documentation to reduce risks through the entire project lifecycle. The result is reduced costs, optimized schedules, increased quality and improved safety, with up to an 80% reduction in construction rework.

This document was extracted from the full PRISM 3D manual.

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QUANTAPOINT WHITEPAPERS

As the acknowledged industry leader in laser scanning technology, Quantapoint has published several papers, some of which are listed below. These are available in the Resources section of www.quantapoint.com.

- A Project Manager Guide To Laser Scanning
- Seven Things Every Project Manager Should Know About Laser Scanning
- Specifying Laser Scanning Services
- Uncovering the Value of As-Built Laser Documentation for Engineering Firms
- Uncovering the Value of As-Built Laser Documentation for the Power Industry
- Uncovering the Value of As-Built Laser Documentation for the Processing Industries

Table of Contents

CAD Model Import

PRISM 3D allows users to directly import 3D CAD models into the PRISM for comparison and validation with the 3D laser models. To import a CAD design select 'Import CAD Models' from the 'File' Menu and then browse to the location of the desired CAD file. To be imported, CAD models must be in the DWG or VRML 1.0 formats.

Note: CAD model import functionality requires the optional Okino PolyTrans CAD Conversion software be installed using the Custom installation option. A separate license is required to install and use this software. Please do not install this software if this license has not been supplied.

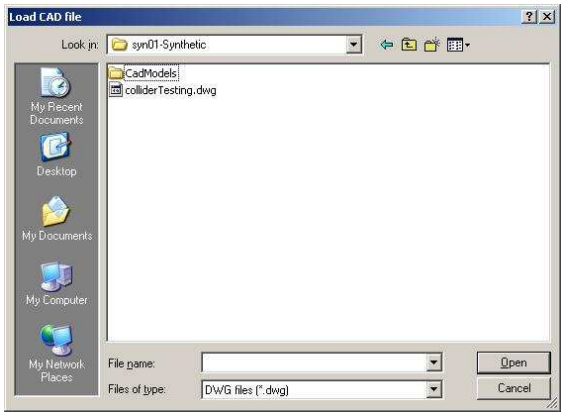


Figure 1: Dialog for Importing CAD Files

Select the measurement units for the CAD model to be imported.

Note: If the proper units are not selected the CAD model coordinates and scale will not be correctly imported.

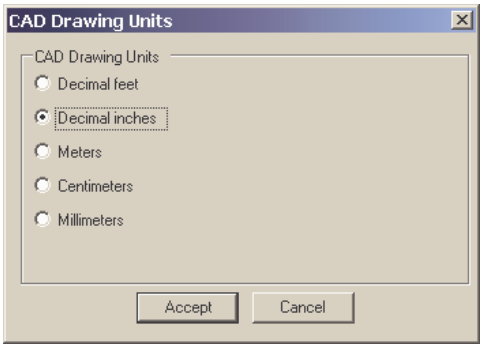


Figure 2: Dialog for Importing CAD Files

Clash Detection

PRISM 3D provides a robust tool for validating external CAD design drawings against 3D laser models. This can be done as follows.

1. Load the desired 3D laser models into the Volumizer.

2. Import and load the desired CAD model into the Volumizer.

3. Select 'Clash visible models' button on the tool bar. Clashing progress will be shown in the Clash Detection Dialog Box.

Figure 3: Clash Visible Models Button on the Tool Bar

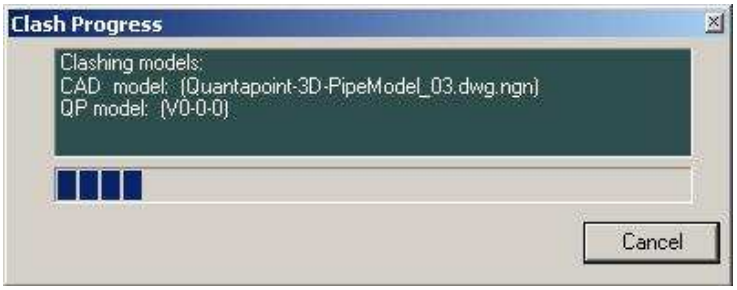


Figure 4: Clash Detection Progress Dialog

Once the clash detection is completed, all detected clashes (including any that may have been detected previously) will be shown as red in the Volumizer and will be listed under a 'Clashes' group that has been added to the Control Panel.

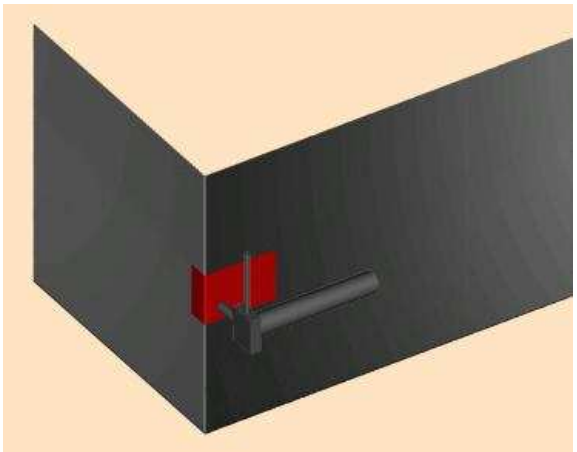


Figure 5: A Detected Clash

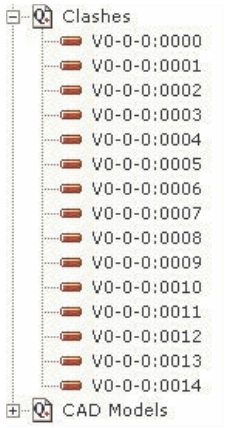


Figure 6: Clashes in the Control Panel

To turn clash highlighting on or off, right-click the 'Clashes' group and select 'Clash Highlights On/Off'. You may highlight a single clash by selecting its entry in the tree. If clash highlights are turned on, the selected clash color will be changed to green.

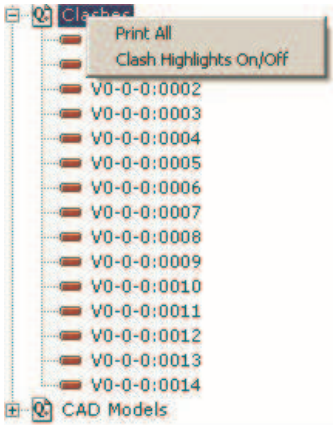


Figure 7: Menu for Highlighting Clashes

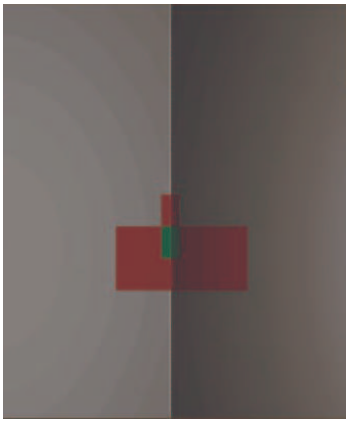


Figure 8: Selected Clash Shown as Green

To view a specific clash in the Volumizer, right-click on the desired clash in the Clashes group and select 'Center On'. To view the information for a specific clash, right click on a clash in the tree and select 'View Clash Info'. A dialog box will be shown that displays information for the detected clash.

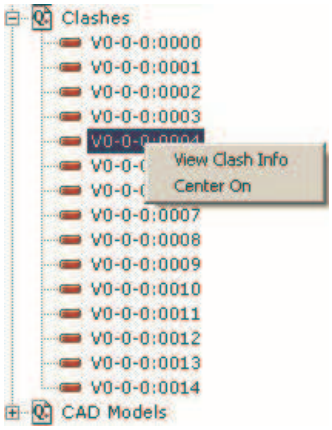


Figure 9: Viewing Information for and Centering on a Specific Clash

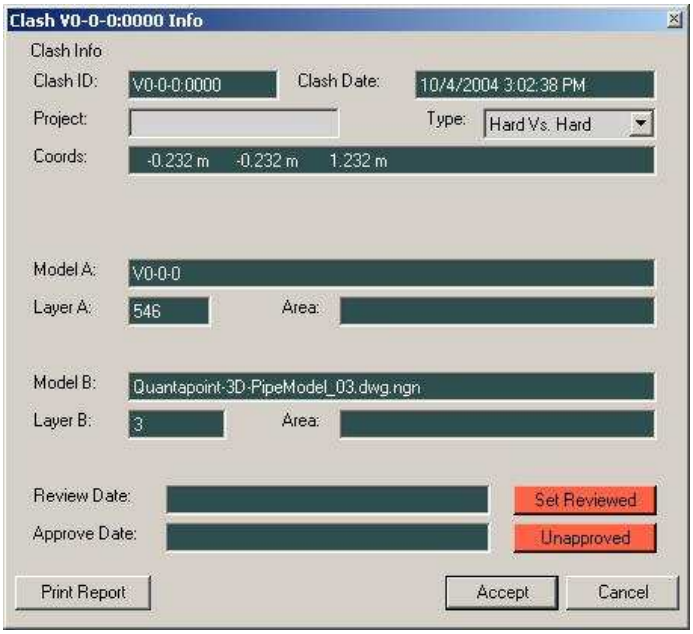


Figure 10: Clash Information Dialog

The properties in the Clash Information dialog box are described below:

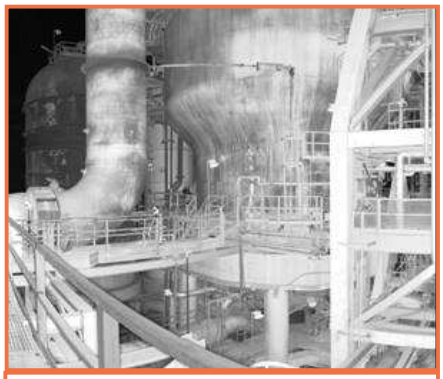
- Clash ID: A unique PRISM 3D 5.0 clash identifier (as listed in the Clashes group).
- Clash Date: The date the clash was generated.
- Project: Reserved for future usage.
- Type: Used to enable user to indicate the type of clash based on the materials (e.g. steel vs. steel is hard vs. hard).
- Coords: X-Y-Z coordinates of the lower left-hand corner of the clashed layer.
- Model A: The Quantapoint 3D laser volume involved in the clash.
- Layer A: The layer ID of the 3D laser model volume that clashed.
- Area: Reserved for future usage.
- Model B: The external CAD model involved in the clash.
- Layer B: The layer ID of the external CAD model that clashed.
- Review Date: A date set by user to indicate when the clash was reviewed*.
- Approve Date: A date set by user to indicate when the clash was approved as being addressed*.

* These properties are optional and are used to support your design work process by allowing clashes to be marked as Reviewed and/or Approved. They are particularly useful when multiple users are accessing the as-built laser documentation.

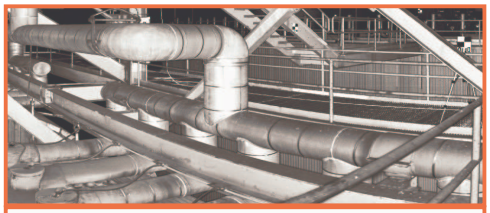
The Print Report button can be used to print the above information for the specific clash. **Note**: Information for all clashes may be printed by right-clicking on the Clashes group and selecting 'Print All'.

PRISM 3D

PRISM 3D is software for managing, sharing and extracting critical information from as-built laser documentation. PRISM 3D is specifically designed to the support the work process and information requirements of the process and power industries by providing a single, consistent repository for highly accurate facility dimensional information that is accessible using an intuitive and interactive photo-realistic 3D image (a "digital plant"). Proposed modifications can be imported into the as-built documentation as CAD (computer-aided design) models. This can help identify potential clashes with the facility, enhance design and constructability reviews and more easily share proposed updates with team members that do not have CAD software. Searchable hyperlinks can be added from the as-built laser documentation to 2D drawings, asset data sheets, best practices, etc. This provides a single entry point from an intuitive 3D visual image to other plant information, improving usability and accessibility.

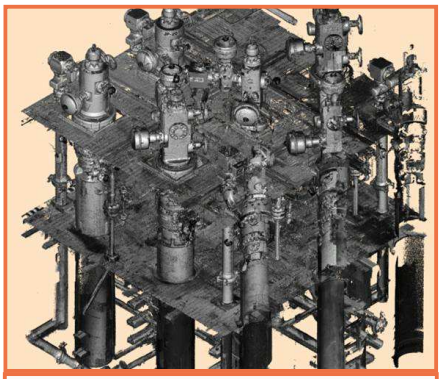


2D Image of Quantapoint Laser Scan for Refining (not a picture)



2D Image of Quantapoint Laser Scan for a Power Plant (not a picture)

PRISM 3D can also help you make integrated quality and work processes a reality, with users being able to fully leverage asset as-built documentation to improve designs and make decisions based on more accurate information. The outcome is reduced costs, optimized schedules, increased quality and improved safety compared to other as-built technologies or traditional surveying techniques, reducing our construction error by 80% and saving millions of dollars and thousands of man-hours.

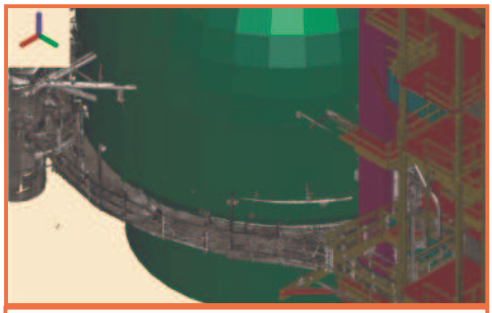


Actual PRISM 3D Image for an Offshore Platform

What's New in PRISM 3D

PRISM 3D contains a number of new capabilities based on user feedback. The top 5 new capabilities are:

1. View interactive photo-realistic 3D laser models of the as-built laser scan data.
2. Interact with the 3D laser model by zooming, panning, and removing obstructions.
3. Hyperlinks 3D laser models to 2D drawings, asset data sheets, best practices, etc.
4. Import and display CAD models with the 3D laser models.
5. Clash detection between imported CAD model and 3D laser models.



Actual PRISM 3D Image with a CAD Model for a Refinery

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