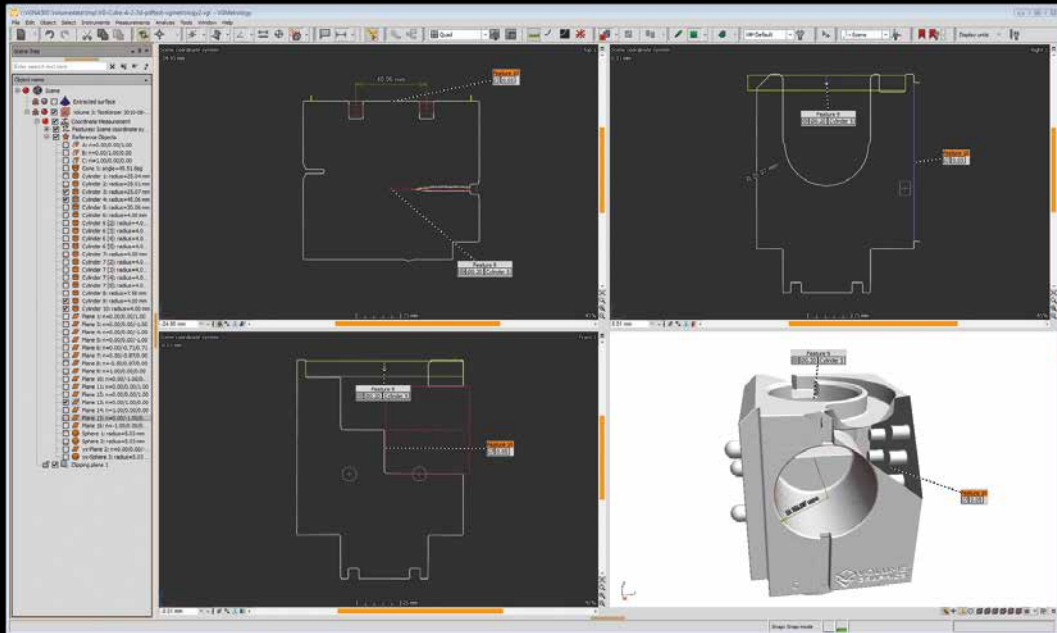




# VGMETROLOGY

Maximum Precision, Minimal CT Data Set Sizes



Full-featured but nonetheless easy-to-use – VGMETROLOGY is made for metrologists.

## The Universal Metrology Solution

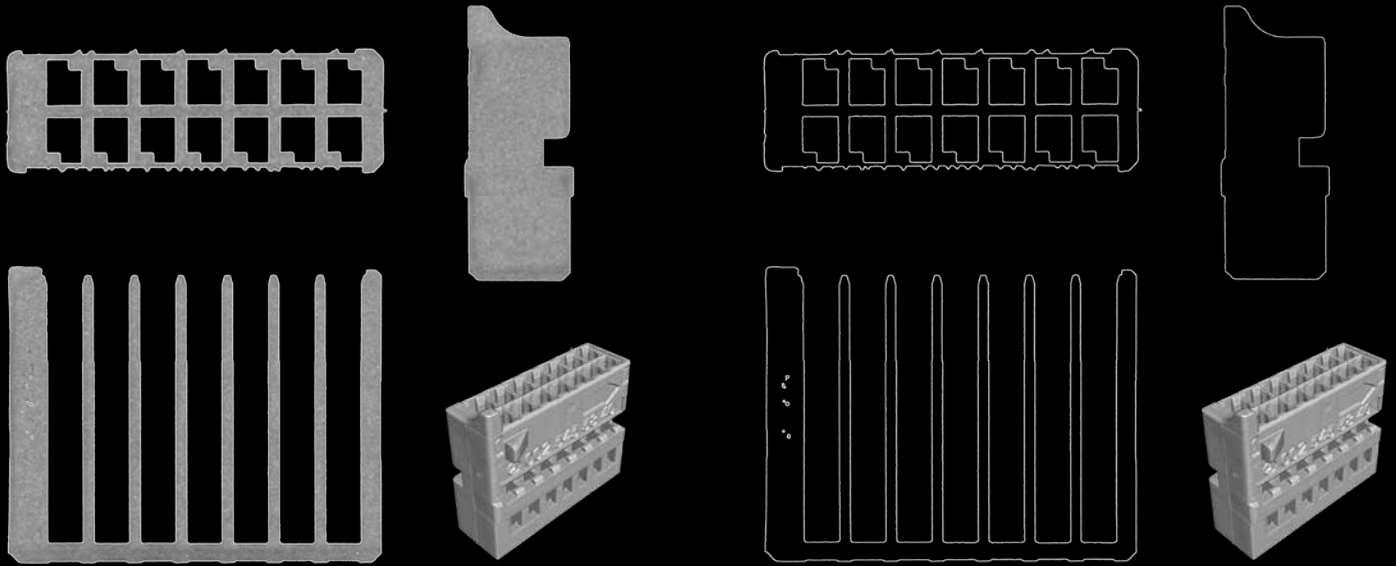
VGMETROLOGY is made for metrologists. Our universal metrology solution turns your computed tomography (CT) scanner into a comprehensive and precise metrology device.

### VGMETROLOGY

- > **Full-featured.** VGMETROLOGY offers you the full metrology-related functionality of VGSTUDIO MAX including GD&T functionality.
- > **Uncompromisingly accurate.** VGMETROLOGY gives you the complete picture of all object surfaces – and saves it in the very compact .mvgl format.
- > **Universal.** VGMETROLOGY works natively on voxel, point cloud, mesh, and CAD data.
- > **Easy-to-use.** The focused range of functionality makes VGMETROLOGY easily accessible for new users.
- > **Seamless.** You can exchange files between VGMETROLOGY and other Volume Graphics products.
- > **Affordable.** VGMETROLOGY costs significantly less than a comparably equipped VGSTUDIO MAX.

**The Volume Graphics Metrology Kernel in VGMETROLOGY (Windows 64 bit) has been verified by the Physikalisch-Technische Bundesanstalt (PTB).\***

\* PTB (Germany's national metrology institute) tested the algorithms based on the minimum-zone method ("Chebyshev") and on the least-squares method ("Gauss"). These algorithms are used for coordinate measurement in VGMETROLOGY.



Left: conventional CT data, right: VGMETROLOGY data

## CT Gives You the Full Picture – Conventional Methods Can't

**In contrast to tactile and optical methods, industrial CT holistically scans all surfaces of an object, even if they are inside your part or difficult to capture.**

CT is the ideal basis for metrology applications. While tactile coordinate measurement methods are also non-destructive, CT is also non-intrusive. This means measuring on CT doesn't deform the part. And unlike optical methods, CT still works accurately even if the part reflects or is translucent.

## It's Time to Retire Those Meshes

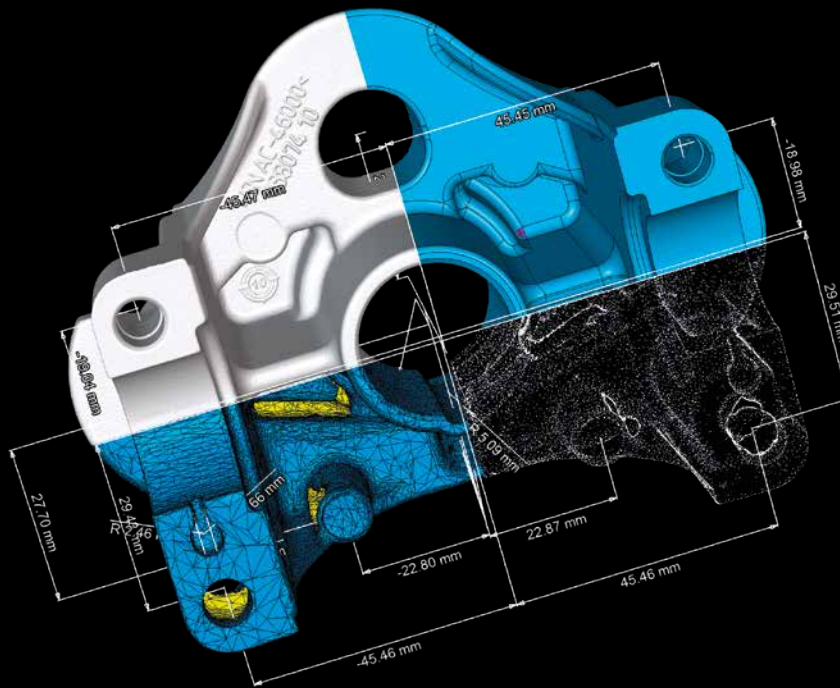
**A .mvgl file contains the best possible object surface without any loss in quality.**

At the same time, a .mvgl file is smaller than a .stl file with comparable precision. But unlike the .stl format, a .mvgl file is small because it contains only the surface of the object. In a .stl file, a polygon mesh approximately describes the surface of the object. The smaller the .stl file, the less accurate the mesh.

A .mvgl file contains subvoxel-accurately determined surfaces. To achieve subvoxel accuracy, VGMETROLOGY processes the gray values of individual voxels in such a way that even those details which are smaller than a voxel become visible.\*

Our .mvgl format packs everything metrologists need into one compact, easy-to-handle file. This comes in handy especially when you exchange metrology data sets over the internet.

\* VGMETROLOGY ES and VGMETROLOGY VIEWER can work with subvoxel-precise surfaces, but don't offer surface determination.



No matter the format, VGMETROLOGY can handle it. From top left to bottom right: voxel, CAD, mesh, and point cloud data.

## Equipped for All Common Measurement Methods

- > **Works natively with point clouds and meshes created by tactile and optical scanners in addition to voxel data**
- > Loads CAD models in formats such as CATIA V5, Creo, Pro/ENGINEER – in addition to the import of STEP and IGES formats\*
- > Automatically translates and intelligently evaluates additional part information that is stored in Product and Manufacturing Information (PMI), e.g., dimensioning, GD&T, layers, annotations, or captions\*\*
- > Imports point clouds in ASCII files, .csv files, and plain text files
- > Supports mesh files in the .stl format, both ASCII-coded as well as binary-coded
- > Reduces measurement uncertainty because geometry object fitting is optimized for each supported data type (voxel, CAD, mesh, and point cloud data)
- > Imports textured meshes and colored point clouds for a more meaningful documentation and visual analysis of objects

## Full Metrology-Related Functionality

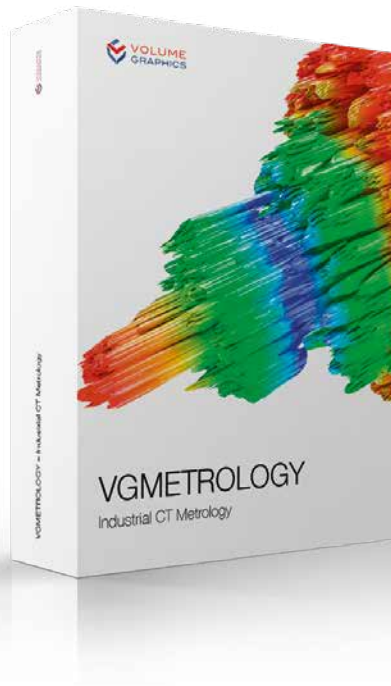
- > **Including GD&T (according to DIN EN ISO 1101)**
- > Object registration by Best-fit, 3-2-1, RPS, or feature-based method
- > Automatic selection of the type of geometry element to be fitted
- > Automated generation of datum systems
- > Creation of common datums
- > Nominal/actual comparisons on CAD, mesh (.stl), and voxel data, including on Regions of Interest (ROIs)
- > Extensive reporting functions
- > Macros, templates, and batch processing for automation

\* Optional add-on module for a fee. Supported CAD formats are: CATIA V5 (R4 to V5-6R2016), Creo (Elements/Pro 5.0, Parametric 4.0). In beta status: CATIA V4 (up to 4.2.5), JT (up to 10.0), Pro/ENGINEER (up to Wildfire 5), Siemens PLM Software NX (Unigraphics V11.0 to NX 11.0), Solid Edge (V19–20, ST–ST9), SolidWorks (up to 2017). CAD translation technology supplied by Tech Soft 3D.

\*\* Optional add-on module for a fee. PMI import is supported for CATIA V5 and Creo. In beta status also for Pro/ENGINEER and Siemens PLM Software NX. CAD translation technology supplied by Tech Soft 3D.



## Three Versions



> **All versions of VGMETROLOGY cost significantly less than a comparably equipped VGSTUDIO MAX.**

- > Stand-alone version VGMETROLOGY: Works with files that your CT scanner has generated (without prior surface determination).
- > Essential version VGMETROLOGY ES: Determine the surface within VGSTUDIO MAX, save the project as a .vgl or .mvgl file, and open this file in VGMETROLOGY ES (except for surface determination, VGMETROLOGY and VGMETROLOGY ES are identical).
- > Viewer application VGMETROLOGY VIEWER: View projects saved in the .mvgl format, change the alignment of objects, and add basic measurements.

### Features

	VGMETROLOGY	VGMETROLOGY ES	VGMETROLOGY VIEWER
Import voxel data directly from your CT scanner	✓		
Import point cloud, mesh, and CAD data	✓	✓	✓
Measure on voxel, CAD, mesh, and point cloud data	✓	✓	✓*
Automate with macros, templates, and batch processing	✓	✓	
Save projects as compact .mvgl files	✓	✓	
Open .mvgl files	✓	✓	✓
Price	Contact us for a quote!	Contact us for a quote!	Free

\* Only alignments and basic measurements



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