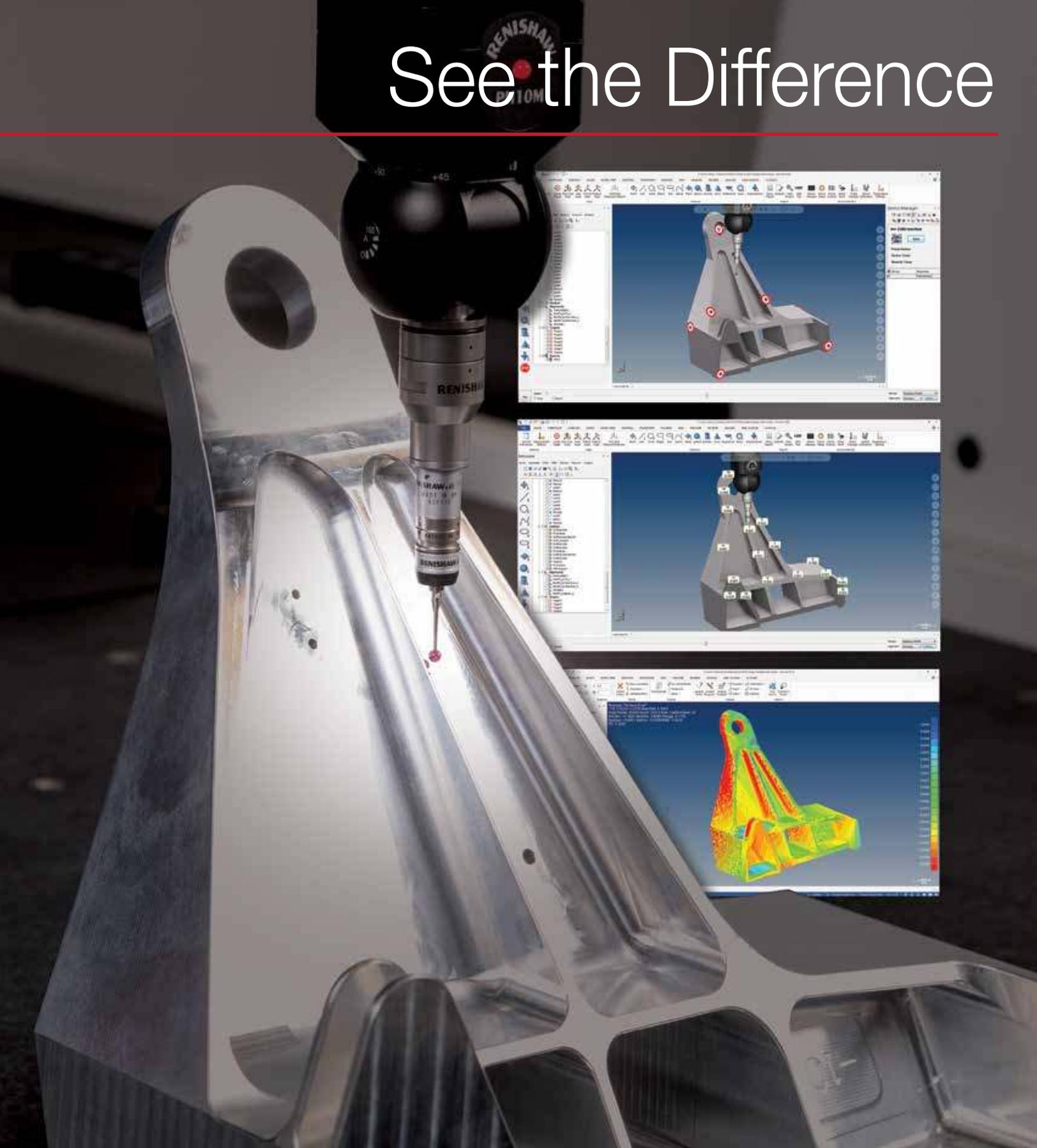# See the Difference

Verisurf Model-Based Inspection Software

VERISURF

3D Measurement Solutions

VERISURF®

MODEL-BASED MEASUREMENT GLOBAL LEADERSHIP

With roots as a machining facility engaged in manufacturing aerospace wind tunnel models, Verisurf was the first company to develop PC-based software that could compare physical part measurements to the surface of a CAD model. A reputation for innovation; industry-seasoned technical staff; and pragmatic, customer-driven products set Verisurf apart from other metrology software suppliers.

Today, with customers on every major continent, Verisurf Software is an established, global leader in 3D metrology solutions. Verisurf products and services are used by large and small manufacturers alike as well as by educators engaged in manufacturing technology and engineering academics.

Industries Served:

- Aerospace
- Defense
- Energy
- Automotive
- Marine
- Medical
- Heavy Equipment
- Shipbuilding
- Machine Shops

Used in **53** Countries

24/7 Internet-Based Training and Education

15 Global Verisurf Offices

Worldwide Sales and Support

Global On-Site Customer Training

Model-Based Measurement and Inspection

Meeting quality objectives requires confirmation that finished dimensions consistently meet design specs. Successful manufacturers build and maintain their reputation for quality by integrating 3D metrology systems like Verisurf into their overall production processes.

3D METROLOGY ADVANTAGES

Verisurf 3D metrology applications are most commonly used for quality inspection to verify design intent, but are also used for reverse engineering, tool building, guided assembly, and more. Manufacturers commonly employ 3D metrology to overcome a number of challenges:

- Complete work they can't otherwise perform
- Consolidate multiple apps into a single system
- Comply with customer quality requirements
- Confirm conformance to design specs
- Improve inspection throughput
- Automate manual inspection processes
- Build a CAD model from a physical part
- Precision detail positioning during assembly
- Verify manufacturing processes
- Equip new metrology devices with software

THE VERISURF SYSTEM

Verisurf empowers manufacturers with 3D measurement solutions that assure product quality, reduce waste, and improve business profitability. Composed of integrated metrology modules offered in specific combinations, or suites— Verisurf is ideally suited to the most common manufacturing challenges.

> "*Verisurf metrology software is doing its part in maintaining precision in the shop and on the launch pad. We use it for everything from tooling fabrication to pre-launch preparation.*"
>
> **Larry Mosse**
> *Tooling Operations Manager*
> *SpeceX Inc.*

OPEN PLATFORM COMPATIBILITY

Verisurf is committed to supporting open standards that deliver the most flexible, hardware- and software-independent solutions possible. Work-flows include all digital and print-to-digital, when only blueprints are available.

Supported CAD File Formats
Native CAD: Mastercam, SolidWorks, AutoCAD, Inventor, SpaceClaim, Solid Edge, Rhino 3D, KeyCreator, Cadkey, Alibre, CATIA V4, V5,V6, PTC Creo, Siemens UG/NX

Neutral CAD: STL, STEP, IGES, ACIS, Parasolid, VDA, HPGL
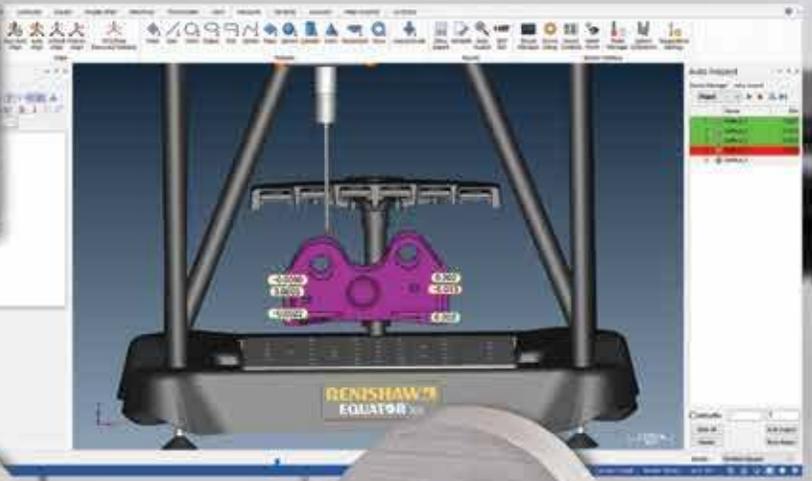
Supported Reverse Engineering Input
OBJ, PLY, Collada, ASCII, XYZ Cloud, XYZRGB Cloud

Supported Report Formats
3D PDF, Excel, PowerPoint, Word, HTML,Text, Database

Through its Windows-standard interface, Veriurf software opens all popular CAD file formats, and works with all CMMs, including portable arms, CNC CMMs, laser trackers, scanners, laser projectors and photogrammetry systems. Reports can be generated using a variety of business presentation formats.

Scan Arms
Scanners
Optical Trackers
Laser Projectors
Laser Trackers
CMMs

Open Platform Device Compatibility

THE BUILDING BLOCKS OF VERISURF SOLUTIONS

Verisurf software solutions consist of integrated application modules; each with specialized functionality. As customer needs have evolved, so has Verisurf. Building outward from its foundational CAD module, Verisurf is able to connect interrelated disciplines and processes around a common open platform, including: Automated Quality Inspection and Reporting; Scanning and Reverse Engineering; Tool Building, and Assembly Guidance.

CAD

The CAD module is at the foundation of all Verisurf measurement solutions, and is a required component of every configuration.

- Read any proprietary or universal CAD file format
- Import, create, and edit associative MBD (GD&T)
- Interrogate CAD model for dimensions
- Create and edit solid CAD models
- Create colorful reports in multiple formats

MEASURE

- Use any portable or stationary measuring device
- Guided, graphical device/part/model alignment
- Instantly analyze and display surface deviations
- Teach mode builds inspection plans while measuring
- Generate reports in a variety of business presentation formats

ANALYSIS

- Analyze deviations of pointclouds and meshes to CAD
- One click alignment, deviation analysis, and report creation
- Automatic probe radius compensation
- Best fit points and pointclouds to surfaces and holes
- Embed annotated, full-color plots in reports

AUTOMATE

- No programming! Build plans for CMMs graphically
- Automatic CAD feature recognition when constructing plans
- Display probe paths and simulate motion before running
- Simple, form based parametric control of probe movement
- Use saved inspection plans on any measurement device

BUILD

- Position objects in 3D using live graphical feedback
- Position or adjust object to assigned tolerance values
- Build arrow shows direction and distance to nominal
- Use with gravity-based devices to plumb and level objects
- Position scribe and trim lines on complex surfaces easily

REVERSE

- Create manufacturable CAD models from physical parts
- Build mesh surfaces and solid models
- Easily align multiple, scanned pointcloud objects
- Create CAD geometry from pointcloud or mesh cross sections
- Fully automated CAD surfacing from pointclouds and meshes

PROJECT

- Position objects using all common laser projection devices
- Import CATIA composite ply data to create projection programs
- Replace or eliminate hard tooling and templates
- Program and edit layouts on the fly to see effects immediately
- Reveal features not visible on projection surface

NIST TESTED   PTB CERTIFIED

VERISURF

VERISURF SOLUTION SUITES
Everything You Need to Improve Quality and Productivity.

Verisurf Software Solution Suites are designed to address today's most common measurement and reporting needs. Pulling from Verisurf application modules, the Solution Suites deliver high performance, efficiency, and cost-effective answers for quality verification and increased productivity in manufacturing. All Solution Suites are scalable and additional application modules can be added later should the need arise. As with all Verisurf software, Solution Suites are compatible with all new and existing hardware.

> "To say AIT utilizes Verisurf metrology software would be an understatement; AIT relies on Verisurf for virtually every aspect of our development and production workflow."
>
> **Jaimie Kempen**
> *Quality Manufacturing Systems Manager*
> *Advanced Integration Technology*

INSPECTION SUITE

Quickly verify finished parts against nominal 3D CAD data or blueprints. Complete first article inspections and generate meaningful reports in minutes.

The Verisurf Inspection Suite is easy to learn and easy to use with its rapid Align / Inspect / Report workflow. The solution includes Verisurf CAD and MEASURE modules and supports all CMMs. When creating inspection plans, intelligent GD&T data can be edited, and additional annotations created to conform with all quality reporting requirements. The Verisurf Inspection Suite is cost effective and easy to expand as needs increase.

- Extensive CMM arm and laser tracker support
- Fast, easy device-to-part alignment
- Extensive geometry file type read ability

- Inspect to blueprints or nominal CAD
- Annotate and edit associative GD&T
- Extensive report customization and export
- Build and save inspection routines with AutoInspect

CMM PROGRAMMING AND INSPECTION SUITE

Significantly reduce inspection plan setup from hours to minutes with almost no learning curve. Utilize on any fixed CMM in a revolutionary, click-and-build visual interface.

The Verisurf CMM Programming and Inspection Suite includes all of the capabilities you'll need to build, edit, preview, monitor, and re-use inspection programs on your CNC CMM.

The suite includes Verisurf's CAD, MEASURE and AUTOMATE modules and sets a new standard for ease-of-use when authoring automated inspection programs for CNC CMMs. Using the suite's intuitive graphical interface, simply point and click on the model features you want to include in your inspection plan. Enjoy full control over every possible parameter of probe motion. Easily drag, drop, and group inspection steps. You can even simulate full or partial CMM gantry and probe motion prior to running the plan live on your CMM.

Already have a CNC CMM? With Verisurf's optional Universal CMM software, you can program and drive any common brand of CNC CMM without the expense of a controller or probe head upgrade.

- Full probe motion and indexing control
- Point and click CAD features recognition
- Drag and drop inspection step resequencing
- Edit probing details on the fly
- Probing pattern tools for any feature or profile
- On-screen probe path and motion visualization
- Add and easily relocate control points
- Create plans for other parts while program runs

3D SCANNING AND INSPECTION SUITE

Inspect anything; use any device; probe, scan, or use a tracker to produce actionable results fast!

The Verisurf 3D Scanning and Inspection Suite integrates Verisurf's CAD, MEASURE and ANALYSIS modules and tackles inspection challenges head-on. Verisurf's unique, CAD-based architecture can read any file format, interoperate with any common, portable CMM (including arms, trackers, and scanning systems) and has the most flexible reporting capabilities available. Create colorful deviation plots highlighting any nonconformance between measured parts and nominal CAD—all in a Windows-standard graphical interface that always delivers a superior user experience.

- Flexible best fit options reduce scrap and rework
- Embed stunning color results in your reports
- Use any arm, tracker or CMM

- Fastest align-inspect-report
- Measure any 2D or 3D feature type
- Memorize steps to create reusable plans
- Full MBD (GD&T) import and annotation
- Compare as-built to any nominal CAD source
- Advanced best fit increases conformance rates

VERISURF®

3D SCANNING AND REVERSE ENGINEERING SUITE

Create manufacturable, 3D, solid CAD models starting from any physical part in record time. A unique product designed exclusively for pointcloud to solid model workflows.

Verisurf's 3D Scanning and Reverse Engineering Suite includes CAD, MEASURE and REVERSE modules and is uniquely suited for any reverse engineering project. The suite features an extensive set of tools for collecting, editing, meshing, and surfacing pointcloud and mesh data. Because all Verisurf solutions are CAD-based, the suite also includes an extensive tool set for completing the 3D CAD model using your measurement or scan data.

Verisurf is fully compatible with the Mastercam NC programming application—allowing you to scan, measure, mesh, and model your part and then use Mastercam (sold separately) to program and drive CNC or additive manufacturing equipment to complete the manufacturing process using a single file.
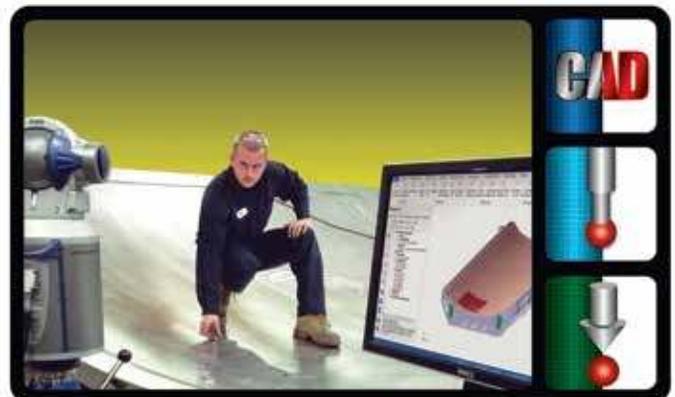

- Collect scan or probe data from any connected device. You can even start with a drawing
- Verify solid model to part conformance
- Extensive pointcloud meshing and surfacing tools
- Align multiple pointclouds to each other or to CAD
- Fit contiguous smooth surfaces through pointclouds and meshes with Power Surface
- Extensive editing, smoothing and best fit tools

TOOL BUILDING AND INSPECTION SUITE

Verify design conformance faster. Identify precise detail location and orientation through direct comparison to CAD. Set tooling details in seconds with real-time visual feedback right on the shop floor.

Verisurf's Tool Building and Inspection Suite addresses both manufacturing and alignment tasks by combining the capabilities of Verisurf's CAD, MEASURE and BUILD modules. The BUILD module dynamically displays a large, color-coded deviation arrow in real time as a CMM probe or laser tracker SMR is manipulated on the physical part surface. The color, direction, and magnitude of the Build arrow is displayed along with numerical readouts to indicate deviation from the nominal position. The Tool Building and Inspection Suite is ideal for confirming that tooling form or assembly attachment details are within allowable tolerances during fabrication or assembly.

- Dynamic, on-screen Build arrow shows deviation
- Color, size, and orientation indicates positional offset, magnitude, and direction from nominal
- Create multiple, customizable digital read-outs (DROs) to display deviation details
- Eliminate or reduce the need for hard tooling
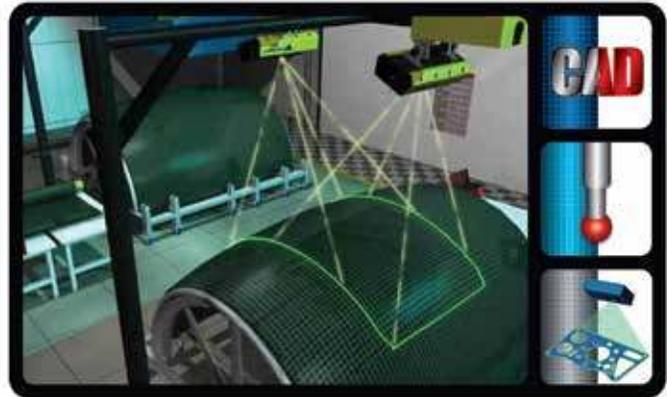- Use multiple devices simultaneously to align details to their exact design location

GUIDED ASSEMBLY AND INSPECTION SUITE

Eliminate costly and awkward hard tooling or templates. Transition from CAD to laser-projection guided assembly in minutes. See the results of projection program changes live on your tooling as you make them in Verisurf.

The Verisurf Guided Assembly and Inspection Suite includes Verisurf's CAD, MEASURE, and PROJECT modules. This suite includes everything you'll need to program laser projectors to accurately project a laser line onto a surface or object using CAD data.

An ideal non-contact solution for both composite layup or part positioning, the Guided Assembly and Inspection Suite imports all standard CAD file formats. Use lines, splines, arcs, points, surface and solid edges to quickly create projection programs and then inspect the finished product to confirm design intent. The Guided Assembly and Inspection Suite is easy to learn and use and works with all major laser projection hardware brands.

- Import CAD geometry from any source
- Build your own projection paths with integrated CAD
- Simple point-and-click to define, edit, and project
- Use points, lines, splines, arcs, surface solid edges to define projected laser boundaries
- Adapts precisely to surface profile curvature
- Segments projections for multi-projector arrays

METROLOGY ENTERPRISE SUITE

The Metrology Enterprise Suite consolidates all of Verisurf's capabilities in an integrated, easy-to-learn and easy-to-use experience that gives operators the capacity to complete any conceivable metrology project.
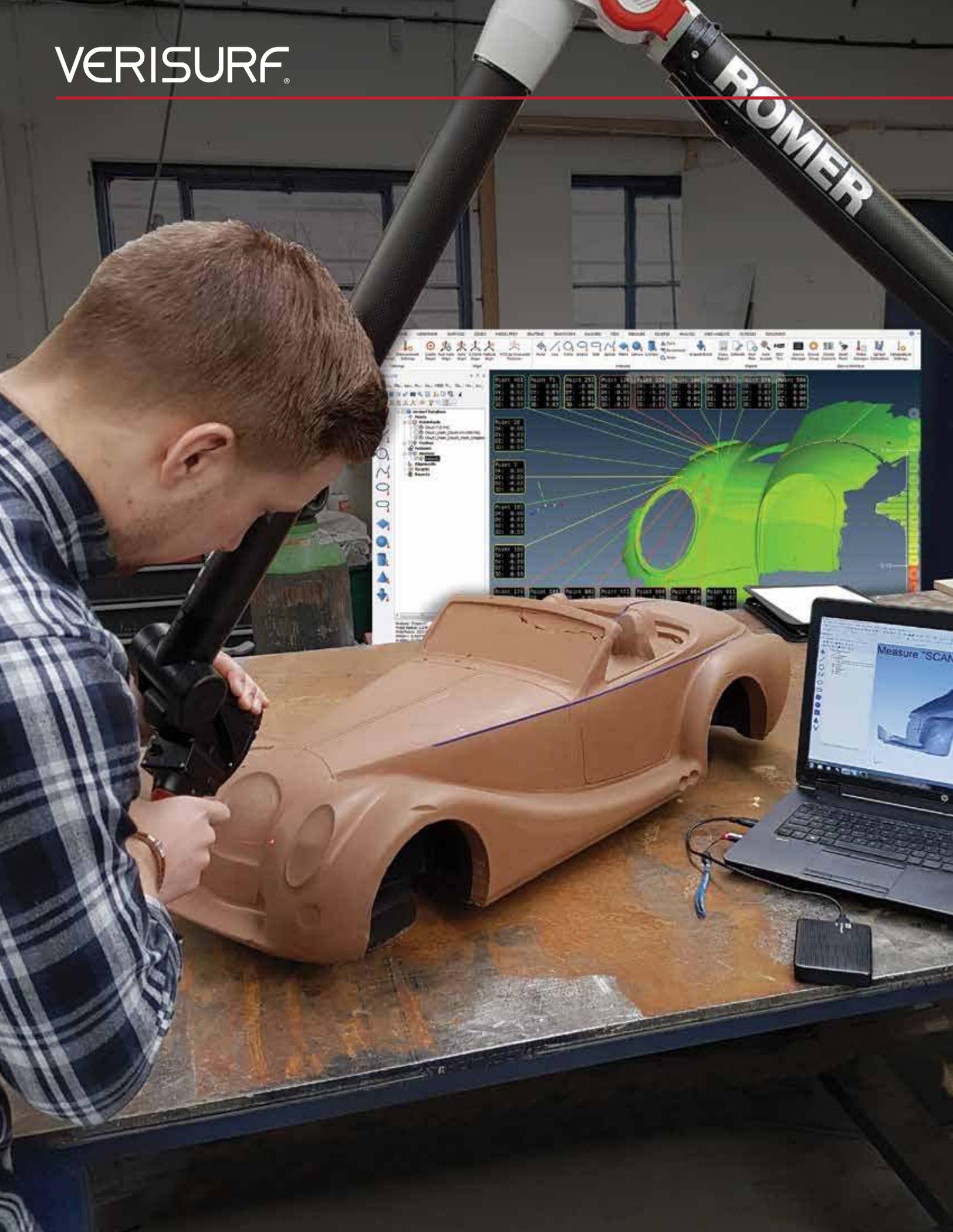
Verisurf Metrology Enterprise Suite is a premium, integrated software suite for full-spectrum metrology professionals who want the ability to complete both general and application-specific 3D metrology tasks. It is also the Verisurf suite of choice for specialty and general-purpose job shops requiring the ability to tackle any conceivable metrology opportunity.

The Metrology Enterprise Suite includes CAD, MEASURE, BUILD, ANALYSIS, REVERSE, and AUTOMATE aggregating all Verisurf system capabilities, including:
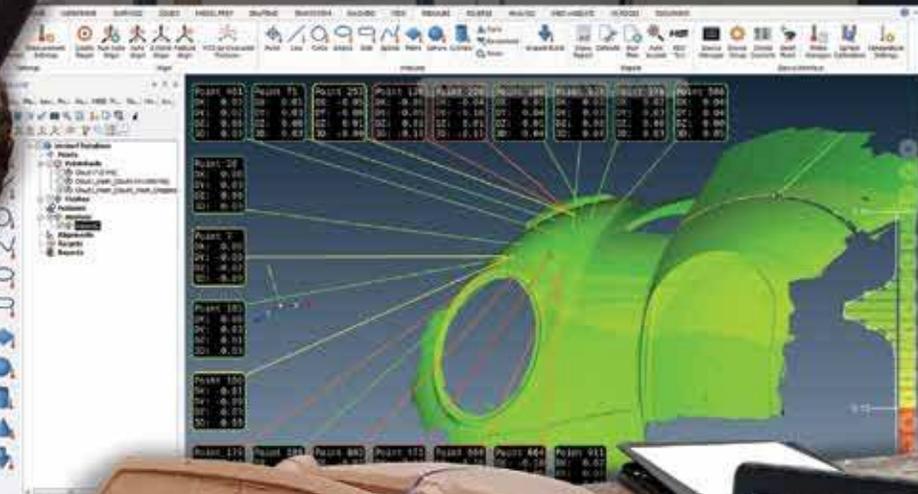
- Full-spectrum inspection (including full CAD modelling)
- Scan and probe data analysis, editing and management
- CMM programming
- Real-time tool building
- Reverse Engineering

UNIVERSAL CMM

A revolutionary and cost-effective, software-only solution that enables Verisurf to run on all common CNC CMMs

Adding Universal CMM means that Verisurf can be used as a common platform running on existing CMMs as well as additional portable devices. And since Universal CMM is a software-only solution, manufacturers can avoid the expense and risk of upgrading or retrofitting controllers and probing systems. Universal CMM communicates between Verisurf's standards-based I++ protocol and CMM controllers, enabling seamless interoperability between hardware and software.

CMM operators avoid any risk associated with adopting new technology because—with Universal

CMM—they can continue to use legacy inspection programs if needed and still enjoy the benefits of using Verisurf. Inspection programs created in Verisurf for a CMM can also be used on portable systems. Human and technology resource utilization improves substantially when all measuring devices can be operated with the same metrology software and skill sets.
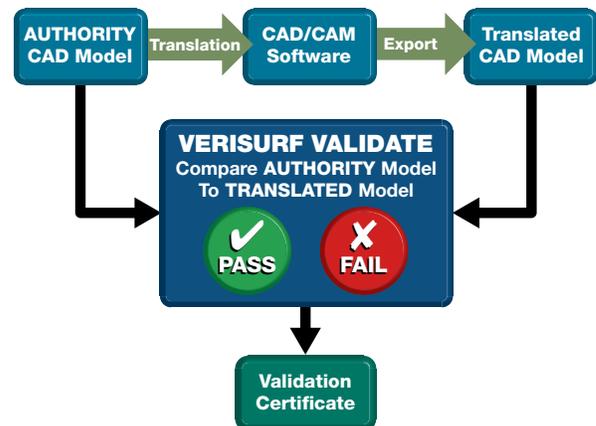

VALIDATE

A single application, integrated with Verisurf—that satisfies OEM DPD compliance requirements for authority data translation accuracy and reporting.

Manufacturers who need to meet Digital Product Definition (DPD) specs—particularly in the aerospace sector—know that unfavorable audits can result in costly production delays. A core DPD requirement is the ability to verify that CAD models exchanged between different manufacturing applications remains unaltered following any translation process. Demonstrating to auditors that this requirement has been satisfied typically requires evidence of: a written process, staff training, and a review of the translation validation method used.
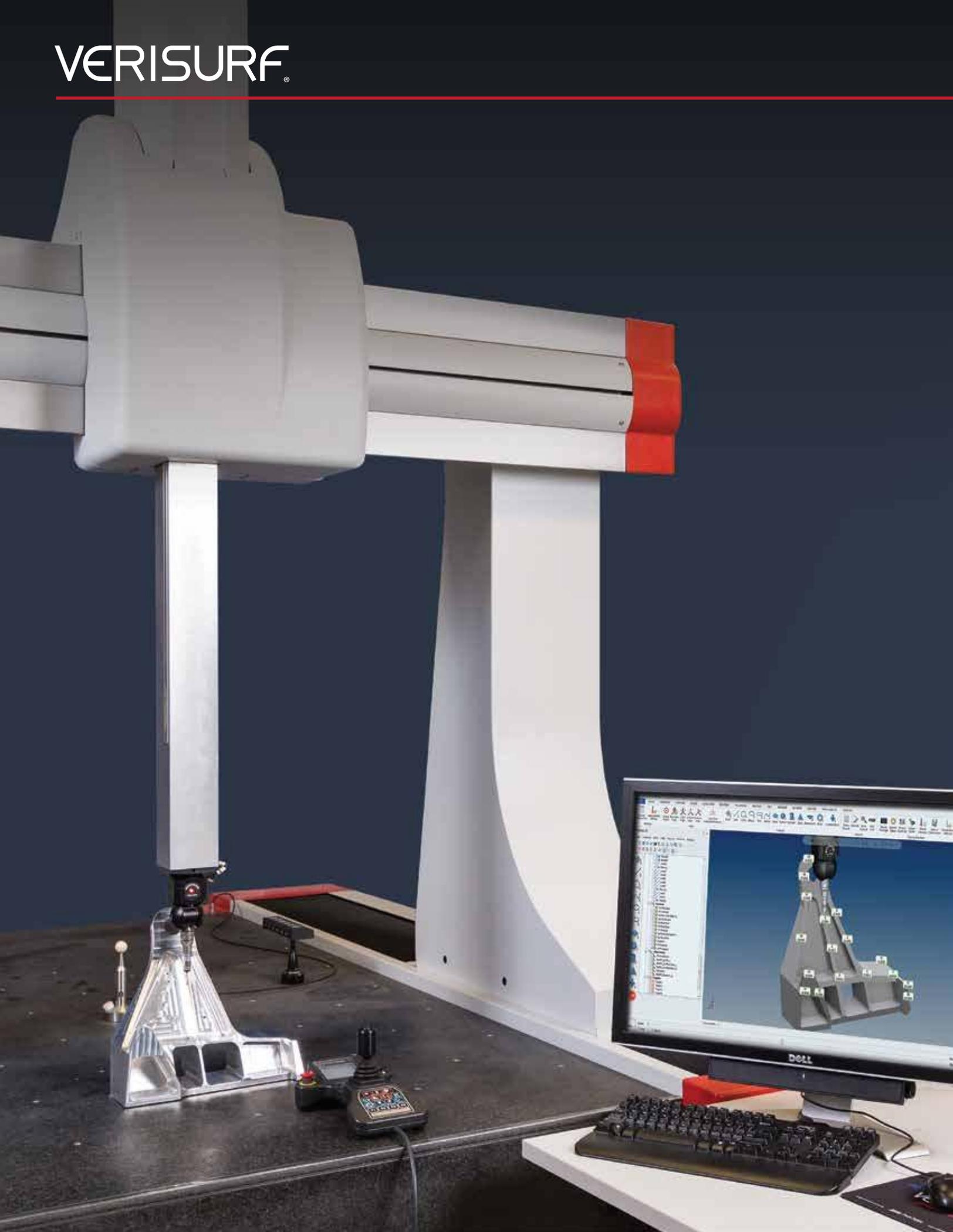
Verisurf Validate compares translated CAD models to the source (or authority) model, indicates a simple

pass/fail result, and generates a complete report that will satisfy auditors the requirement has been met. Verisurf Validate can compare any two file types before and after import (translation) into Verisurf. The optional Validate solution is completely integrated into Verisurf and is easily accessed directly from the main menu.

CAD TRANSLATORS

Maintain import compatibility with the latest CAD versions from: CATIA, NX, Pro/Engineer, and Creo

Every Verisurf configuration natively includes the ability to read virtually any type of geometry file. Additional translators are available to read premium CAD system file formats. These include: CATIA, NX, Pro/E, and Creo file types. Import for selected MBD (GD&T) data types is also available. Verisurf expends continuous effort to maintain compatibility with the most recent versions of all commonly used geometry formats.

VERISURF SOFTWARE DEVELOPMENT KIT (SDK)

Create Custom Verisurf Applications

The Verisurf SDK is a set of flexible programming tools designed for the creation of custom dimensional metrology applications in conjunction with Verisurf. Create new functionality or post process Verisurf measurement results any way you choose.
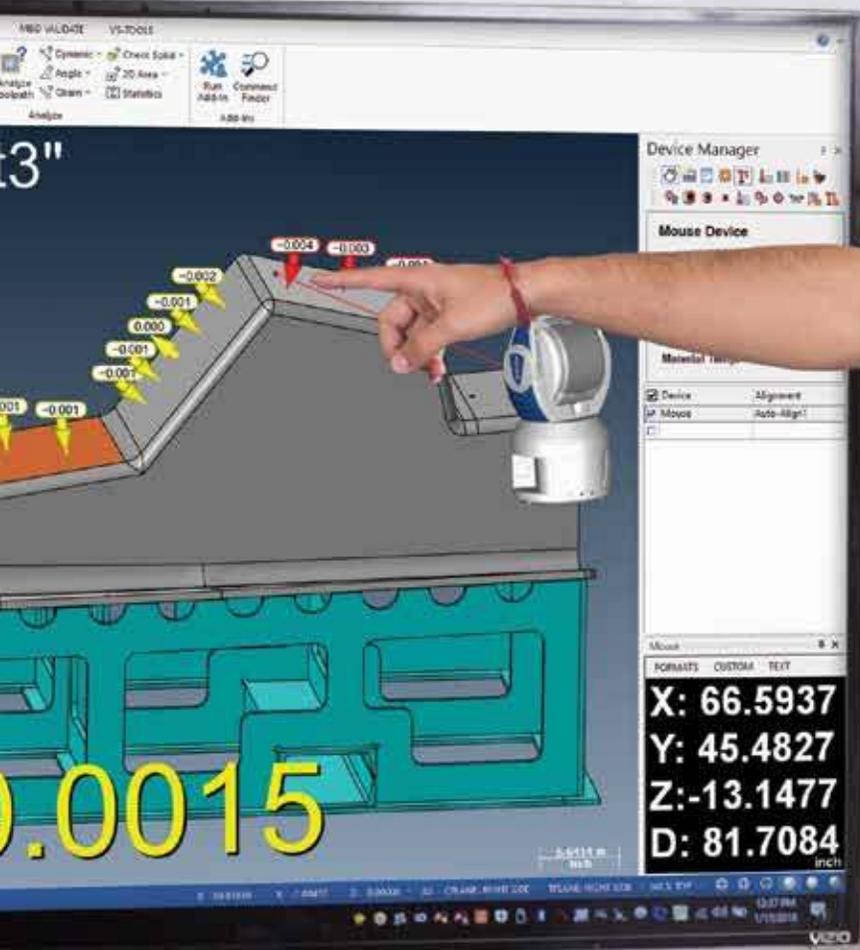
- Access Verisurf features from apps you develop
- Communicates seamlessly with Verisurf
- Works with most popular programming languages
- Easy-to-learn, easy-to-use
- Convenient online support resources

CHECKLIST WHEN CONSIDERING 3D METROLOGY SOFTWARE SOLUTIONS

Verisurf encourages manufacturers and quality professionals to keep the following recommendations in mind when evaluating any new 3D metrology software system

✔ Verify that the task navigation steps in any metrology software system you consider support your most common workflows and are based on the latest open standards.

✔ Select your 3D metrology software before you purchase measuring hardware. Most of your time will be spent performing tasks in the software system.

✔ Already have measuring hardware? Make sure any metrology software you consider works with the equipment you already own.

✔ Select metrology software that can easily exchange data files with other software applications used in your manufacturing process.

✔ Insist on metrology software from a supplier that is hardware-neutral. This gives you the power to choose the most appropriate software for your measurement needs.

✔ Require that the metrology software you select is model-based and built on a CAD platform that supports 3D solid modeling.

✔ Any software under consideration should include the ability to easily build, edit, and reuse inspection plans for all of the measuring devices you use.

VERISURF®

INDUSTRIAL TRAINING

Verisurf's broad industry experience with hundreds of manufacturers has repeatedly demonstrated that successful computer-aided inspection efforts rest on a balanced combination of people (skills), process (QA procedures) and technology (software and hardware).

Verisurf Software sustains an ongoing commitment helping customers achieve successful outcomes using our solutions. One of the ways we do this is by offering flexible training options adapted to each customer's unique needs.

Verisurf offers introductory and advanced instructor-led training tailored to the measuring equipment, part types, and metrology tasks your organization performs. Courses are led by a Verisurf factory engineer and are conducted at a Verisurf training facility or onsite based on customer preference. Class size is typically limited to 4 persons from the same organization to maximize instructor-participant interaction and focus on development of both knowledge and operator skill. Instructors will adapt the Verisurf overview curriculum to spend more time on topics of particular relevance to each customer's needs.

> *I am currently employed as a machinist while studying to earn my Associates Degree and become a Certified CNC Programmer. Adding metrology to my skill set makes me more valuable in my current and future position.*

Steve Dorado
Student, Cerritos College

VERISURF FOR SCHOOLS

A complete and flexible curriculum, software, hardware, and instructional program that produces the real-world know-how in high demand by manufacturing employers
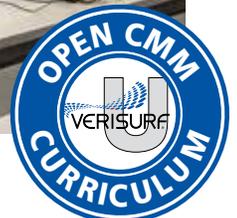
Manufacturing technology and engineering programs can only stay relevant by providing students with the most current knowledge and hands-on skills that potential employers will value.
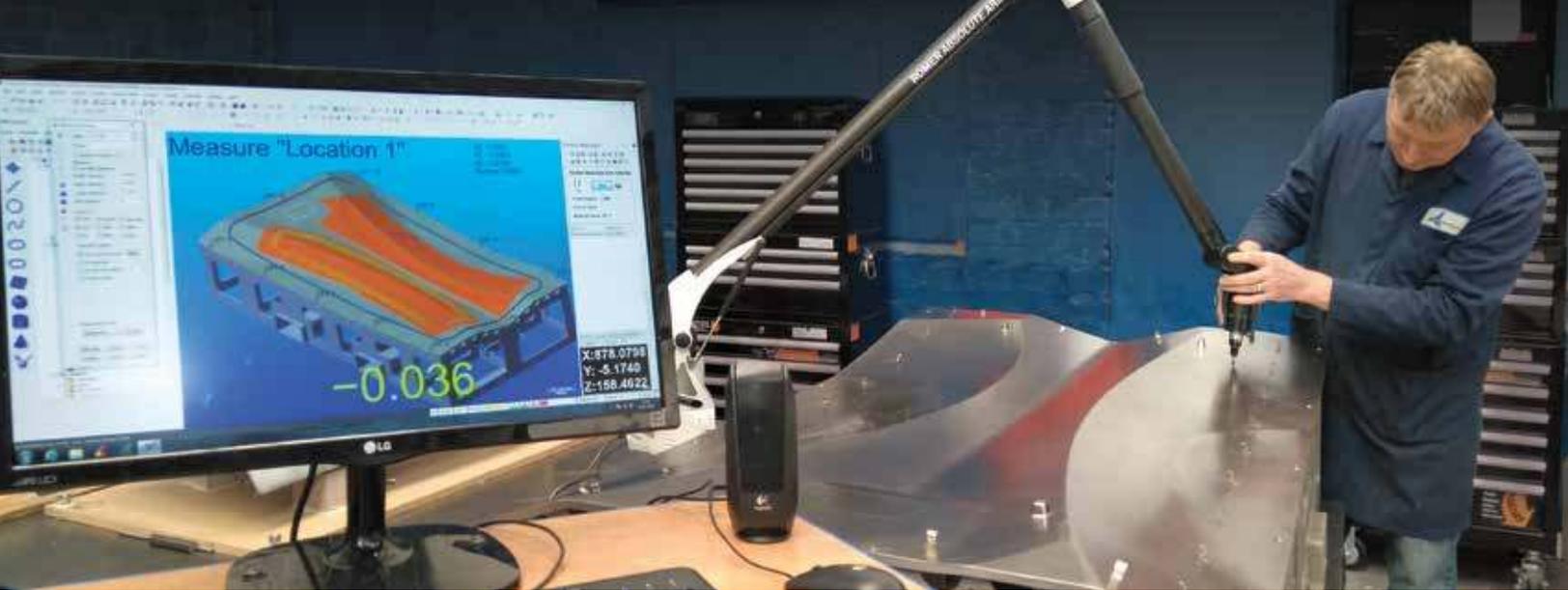
The Verisurf Education Program is committed to helping educators prepare new metrology professionals with the knowledge and skills they'll need when they ultimately enter the workforce. The program provides a complete set of flexible resources that industrial technology instructors can employ to add or improve Dimensional Metrology as a core subject in any manufacturing education curriculum.

The Verisurf Education Program offers:

- Deeply discounted Verisurf software licenses

- The Master3DGage portable CMM arm (NIMMS certification compliant)
- The desktop 3DGage
- Instructor certification training
- Self-paced online video training through Verisurf U
- A student Exercise Workbook
- A flexible curriculum developed by educators and industry experts

OPEN CMM
VERISURF
CURRICULUM

SOFTWARE MAINTENANCE

Verisurf Software works continuously to develop new and innovative productivity features and add products to its metrology portfolio by listening carefully to customer requests and monitoring industry trends.

The annual Verisurf maintenance program provides customers with access to the latest solution updates so you always have the most up-to-date software version. By participating in the maintenance program, you can

always be confident that your Verisurf applications will be compatible with adjacent hardware and software.

As a software maintenance subscriber, you'll receive both major releases and incremental updates as they are released throughout the year. Maintenance also provides you with access to Verisurf's technical telephone support services—a valuable resource that is always available during regular business hours.

EXPERT TECHNICAL SUPPORT

Always available to provide technical assistance

Verisurf considers ongoing customer support excellence to be an integral component of every solution we deliver. Experienced Application Engineers with over 100 cumulative years of combined, hands-on product experience man Verisurf's technical support helpdesk. Engineers

are always available during business hours to help resolve challenges or to help you work through any Verisurf application issue.

Verisurf's technical support team also includes a staff of field Application Engineers geographically distributed to assure optimum onsite availability when customers need local support, training, or consulting services.

Verisurf Authorized Distributor

VERISURF
3D Measurement Solutions

Verisurf Software, Inc.
Corporate Headquarters:
4907 E Landon Drive
Anaheim, CA 92807 • USA
Direct: 714.970.1683 • Fax: 714.701.0280
Toll-Free: 888.713.7201

General Information: info@verisurf.com
Technical Support: support@verisurf.com
Solution Sales: sales@verisurf.com

www.verisurf.com   © 2019 Verisurf Software, Inc.