Silma

Offline programming,
advanced simulation tools
and digital twin for 3D metrology

Inspect with confidence

metrologic group®

advanced **3D** measurement software & solutions

Improve your inspection workflow with an outstanding virtual programming software

Silma is the first software enabling complete intuitive offline program creation and simulation. Many claim they can offer simulation, import objects and build digital twin systems, but fail when it comes to simulating the true functioning of both CMM/robot and measuring devices. That's where Silma makes the difference. It handles both CMM/robot and inspection commands in one single-part program. Operating on a powerful software foundation, Silma provides the digital mirror of the complete real-world 3D measurement environment and much more: point cloud simulation, measuring equipment capabilities, operation, interactions and visibility rules for the most precise 3D measurement planning.

Using Silma, you can:

• Program all of your CMM/robot using one universal software, independent of machine size, brand or configuration,

• Simulate the measurement workflow and detect collisions using a digital twin – the virtual representation of your real-life CMM environment/ robot cell,

• Prepare your inspection reports without using your online software, while your equipment is up and running,

• Perform post inspection analysis including report generation, best-fit analysis and additional GD&T evaluations,

• In addition, Silma X4 i-Robot, allows you to fully line up both measuring and robotic equipment by programming accurately and without the risk of collisions, prior to the production cycles. It paves the way for automated inspection.

Silma X4 utilises digital data from engineering allowing inspection programs to be created and validated even before the first part appears on the manufacturing line.

Currently, two versions of the software are available:
• Silma X4 dedicated for CMM offline programming and 3D measurement simulation. But, portable device simulation is also possible!
• Silma X4 i-Robot, designed for measuring robots directly on, or just beside the production line.
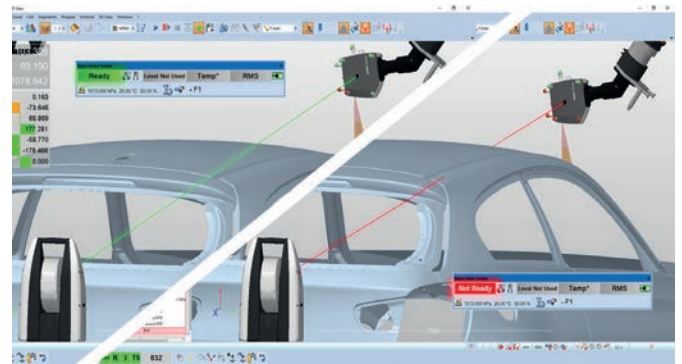
Digital twin – tool visibility rules with Silma.
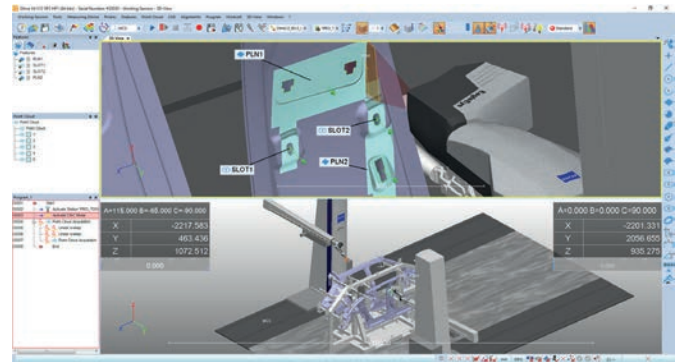
Silma density cloud simulation according to the equipment datasheet.
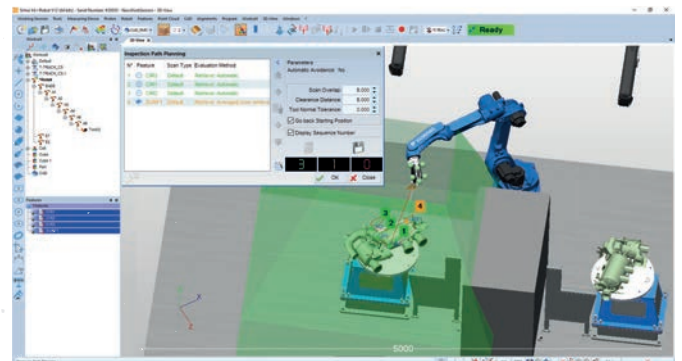
Advanced robot path planning module. Optimized collision-free, singularity- and overspeed-free path.

Why simulation is so important for building your quality inspection?

• Better throughput

First, when metrologists program offline inspection tasks on complete simulated twins of their actual environment and equipment, the CMM or the robot are free to continue measuring and monitoring.

• Improved efficiency

Second, when inspection programs have been simulated and virtually tested, they are error- and collision-free once applied to the manufacturing process.

• Faster programming & results interpretation

Third, an offline simulation program like Silma X4 or Silma X4 i-Robot can work directly with native or neutral CAD files and automatically interpret GD&T.

• Training & Education accelerator

Our simulation software, Silma, can also be used for training purposes, as an e-learning tool.
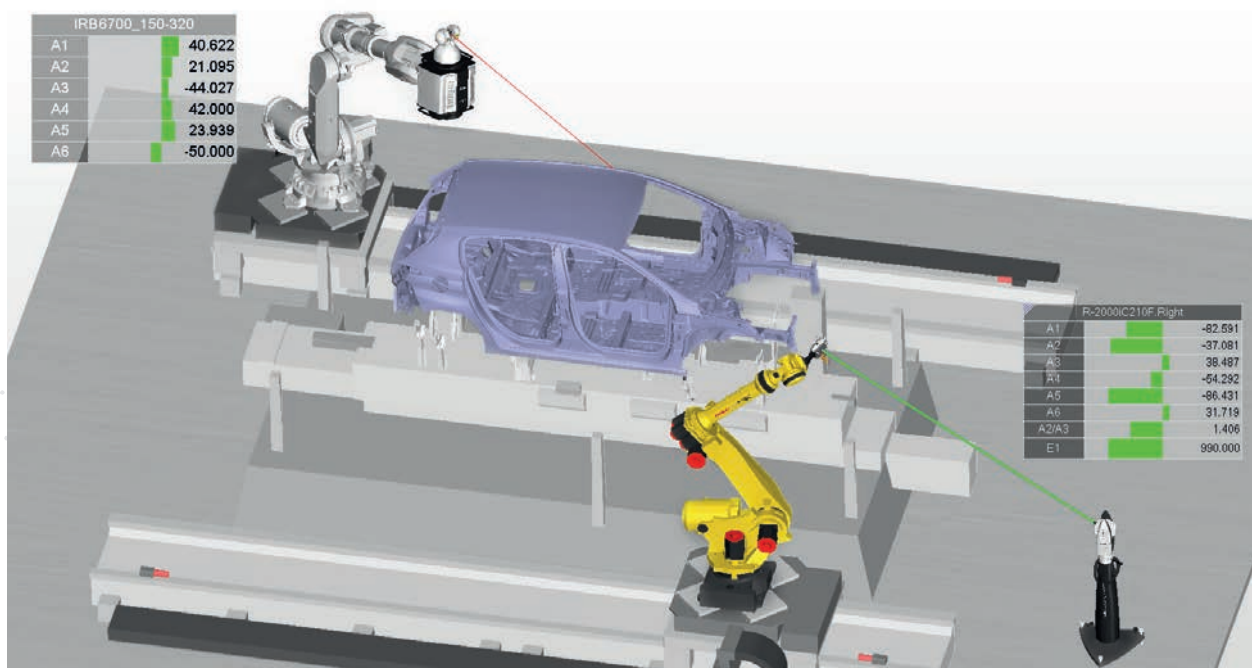
Twin configuration performing 7-axis measurement simulation with Silma X4 i-Robot on a body-in-white.

Key features

| Smart offline programming | Quickly generate robot and CMM paths | Acquisition group creation | Set the parameters for extraction | Potential collision detection & automatic avoidance | Path optimization | Singularity- and overspeed-free, for Silma X4 i-Robot |

Offline programming solutions that pay off

Prepare & program

Silma X4 is used to simulate existing measurement programs, as well as creating new ones using the CAD file. All without machine downtime. No additional know-how is required; reality merges with virtual reality to create the impression of sitting in front of a machine. Silma X4 sets the standard for all other software to aspire to.
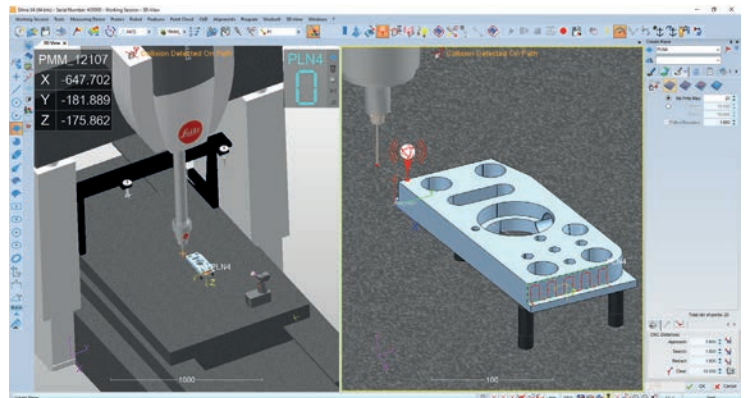

CMM with moving table. Inspection path creation with collision detection and automatic avoidance.

Workcell and virtual environment definition

Silma X4 is a time saver as it takes over the cost-intensive work cell and virtual environment definition: scanning, self-centering, rotary tables, tool changers can all be realised offline. Besides this, commonly available robots or CMMs, detailed probe heads, probes, styli and accessories from the extensive CMM library are right at your fingertips. We support all commonly available brands: Wenzel, Zeiss, Leitz, Mitutoyo, Hexagon, API, Creaform, Faro, Kreon, Leica, Mora, Nikon, Renishaw and so many more… Still having a doubt? Then check with us!
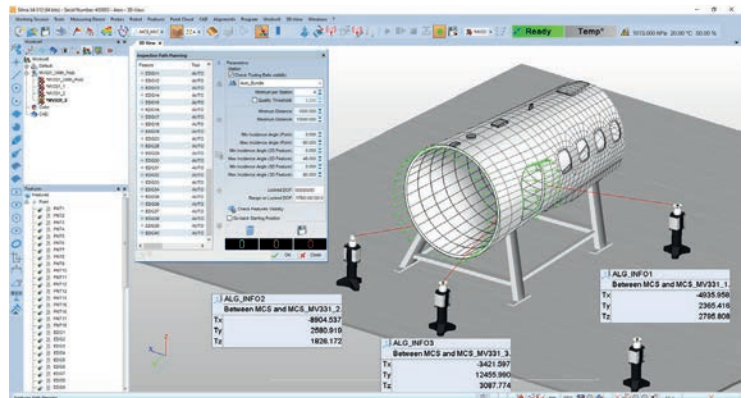

Advanced module for automatic portable device positioning.

Reduced part programming capacity

The virtual measuring machine is even more convenient and quick to operate thanks to smart algorithm that lies within the Inspection Path Planning (IPP) module. Instead of programming a whole measurement routine - only a click-away - Silma X4 computes the best measurement trajectory, with:
• Automatic head orientation
• Automatic obstacle avoidance
• Optimized path, with minimum crossing points - smart and fast, independent of type of probe, be it touch or optical.
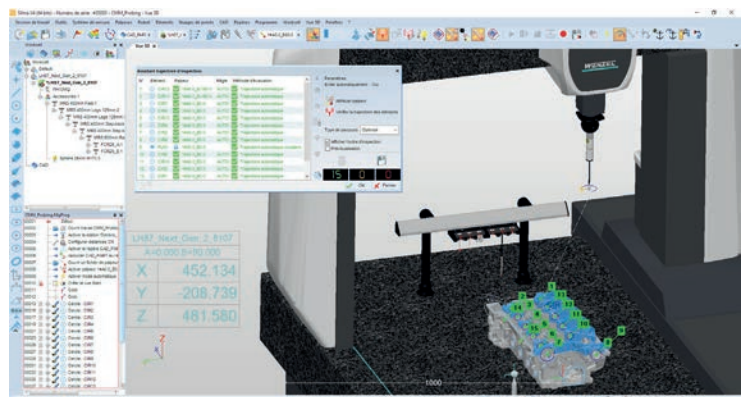

Path planning module for CMM. Optimized and collision-free path. Automatic head orientation. Real kinematic head replication.

Offline programming smart & easy

Not only can you create and simulate part programs with Silma X4, but it also entirely validates and troubleshoots them using advanced probing and measurement routines. Based on a programmer-orientated and user-friendly interface, part program proofing is fast and easy.
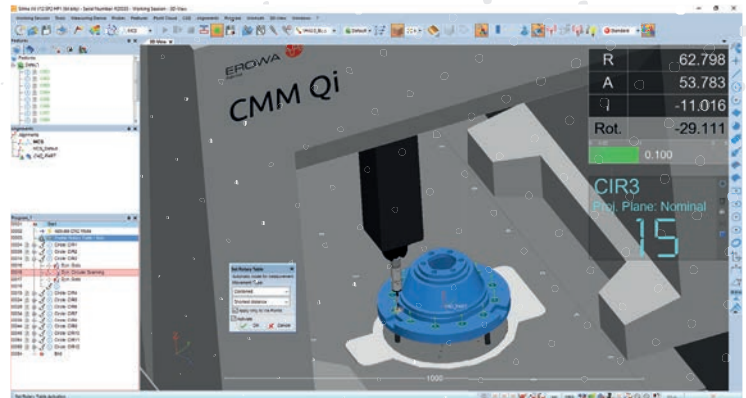

4-axis measurement simulation. CMM with rotary table using a touch probe.

Safe part program validation

Having doubts about part program validation? Do not worry anymore; program consistency is validated thanks to a genuine 3D inspection and analysis engine. In addition to collision detection, automatic obstacle avoidance gives you the overview and possibility to optimize your entire probing path.
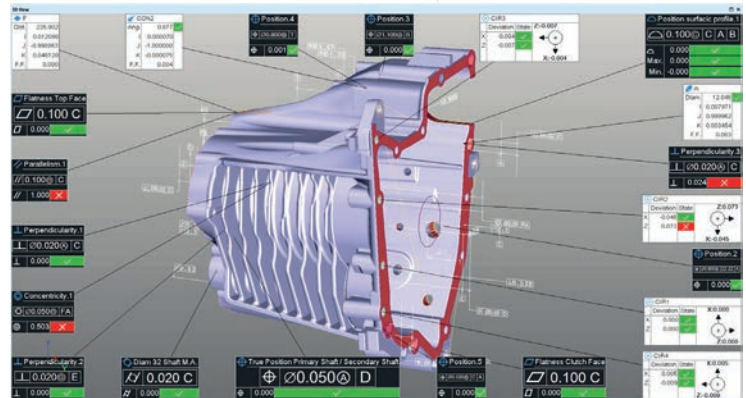

Silma takes advantage of extensive analysis capabilities from X4 software foundation. Embedded GD&T within CAD file.

Trusted part program execution

You can send the virtually generated part program to the real machine for on-line validation confident that it is error-and-collision free. This affords complete time compression - with the program written and validated virtually, and often long before the first off is available, there is no downtime on the real machine while the program is verified, and hence no interruption in production!
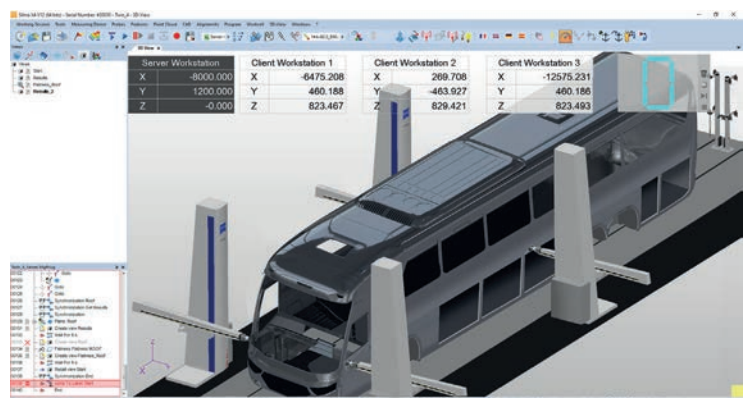

CMM quadriplex simulation with tool changer.

Scale your quality inspection fast and make sense of your 3D measurements

Your End-to-End 3D inspection solution to streamline your worksflow.

Take your quality inspection to the next level with the combination of both simulation and measuring software. Gain peace of mind with Silma for preparing and programming before you inspect and Metrolog X4 for on-machine execution and analysis. The most comprehensive and universal 3D measurement software solution on the market.
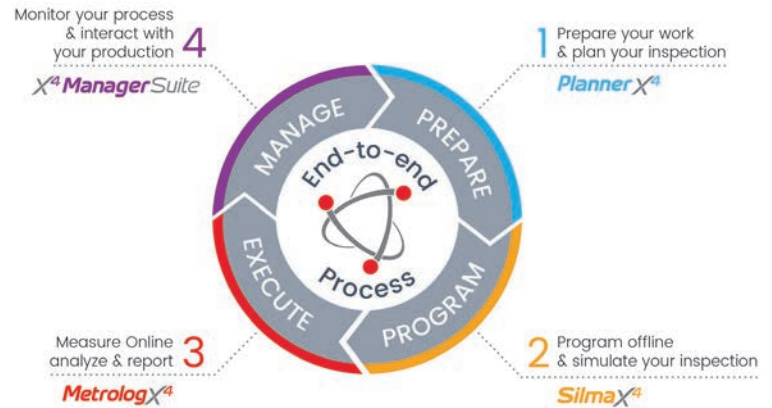
Let us show you how it works

Contact us for a free onsite demo. Using your own part and measuring device, we'll demonstrate specifically how we can help make your processes more efficient, cost-effective and easier.

About Metrologic Group

Metrologic Group empowers its customers to solve complex 3D measurement challenges and boost their measuring device operation using the most innovative hardware, independent 3D measuring software solutions and dedicated electronics. In the 3D metrology market since 1980 with the well-known Metrolog software, with offices and distributors throughout the world, Metrologic Group solutions are considered the reference in industries like automotive, aerospace transportation, energy, watchmaking and medical, to name a few.

The company is part of Sandvik Applied Manufacturing Technologies (AMT), bringing together more than 150 years of Sandvik's manufacturing expertise with the latest developments in digital technologies. Its work spans the full manufacturing value chain, from design and planning to preparation, production, verification, and evaluation. Together with its world-class network of partners, Sandvik AMT provides a one-stop shop for component manufacturers looking to be at the forefront of a new generation of digital manufacturing.

Metrologic Group by the Numbers

110+	+3000	60+	30+	19
Direct Machine Interfaces	Simulation Data Library	Countries with Metrolog X4 Users	Countries with Local Support	Interface Languages

ANY DATA | ANY TECHNOLOGY | ANY APPLICATION

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