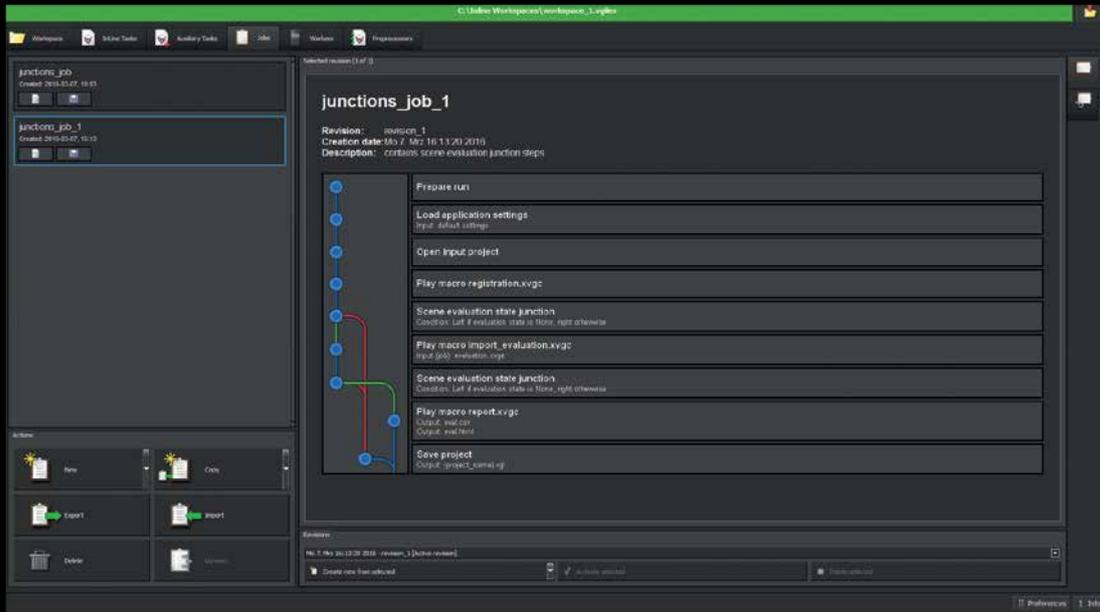




VGinLINE

The Software for Automated CT Inspection



View the content of your inspection tasks at a glance

Scan—Analyze—Evaluate—Repeat ...

VGinLINE inspects your parts automatically and non-destructively with industrial computed tomography (CT). It's simple to set up and works with almost every CT system on the market—right out of the box.

Automation for Every Requirement

VGinLINE automatically or semi-automatically inspects your parts with a recurring analysis pattern:

- > Fully automated, in-line: 100% inspection in industrial production
- > Fully or semi-automated, at-line: small batch series inspection in industrial production or quality labs
- > Semi-automated: sample tests in quality labs or at service providers

Broad Feature Set

VGinLINE Complete offers all relevant features of VGSTUDIO MAX, i.e., coordinate measurement, wall thickness analysis, nominal/actual comparison, defect detection (pores, voids, inclusions), fiber orientation analysis, and foam structure analysis.*

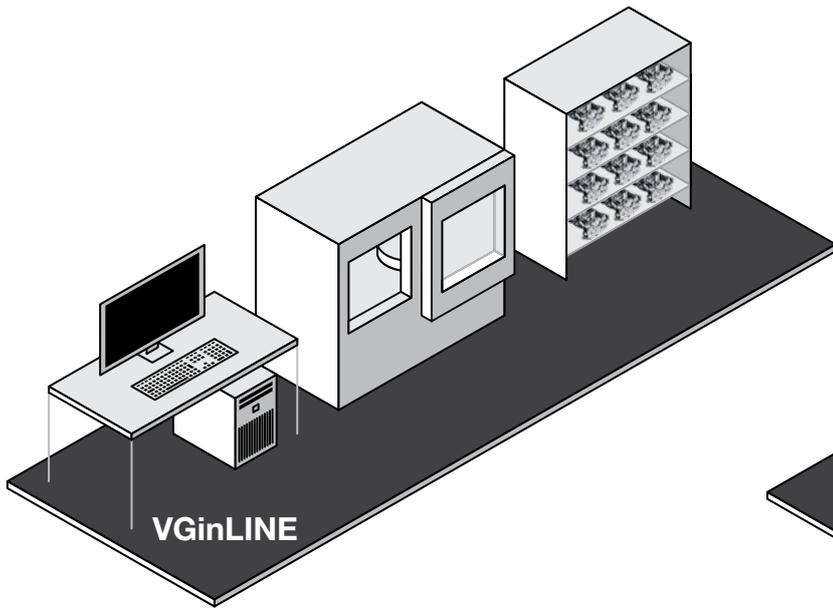
Maximum Flexibility

You can easily reconfigure VGinLINE yourself, whether you need to adjust for small changes to the product design or want to inspect a totally different product. Individually developed inspection systems are often geared to just one task, typically making changes difficult and very expensive to implement.

Extensive Compatibility

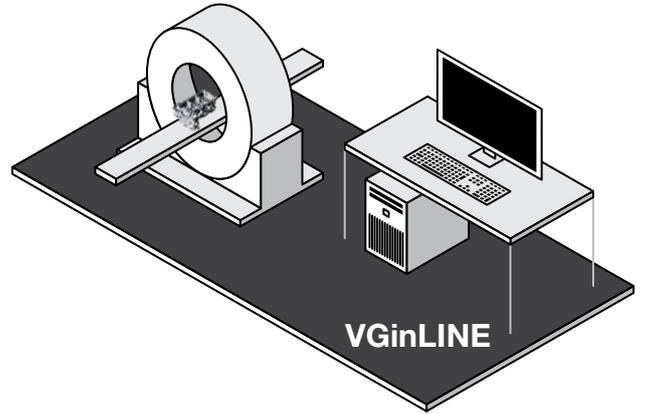
VGinLINE can work with almost any format—reconstructed CT volumes, even in proprietary formats (upon request), as well as projection images taken by your CT scanner, which VGinLINE can automatically reconstruct. No CT scanner? VGinLINE also supports point clouds and meshes in addition to voxel data.

* VGinLINE Cast & Mold Extended is especially tailored to the foundry sector and includes the add-on modules Coordinate Measurement, Nominal/Actual Comparison, Wall Thickness Analysis, and Extended Porosity/Inclusion Analysis (includes P 201/VW50097 and P 202/VW50093).



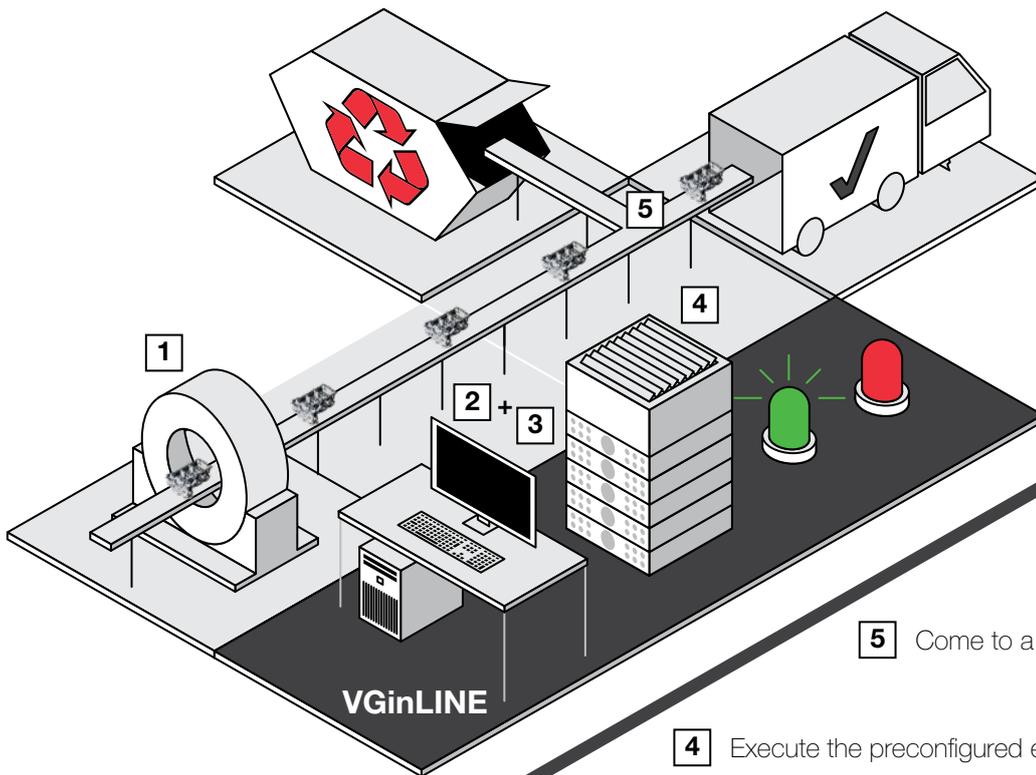
VGINLINE

In quality labs/for service providers



VGINLINE

In industrial production



VGINLINE

Optional: Review and manually re-approve results with the web software VGINLINE APPROVER.

5 Come to a pass/fail decision.

4 Execute the preconfigured evaluation schemes.

3 Supervise project data folders with VGINLINE.

2 Save project data in dedicated folders.

1 Scan several items in-line (at-line, in the lab).

Complex Inspections Made Easy

**VGINLINE is based on a simple idea:
It monitors directories for incoming CT data sets.**

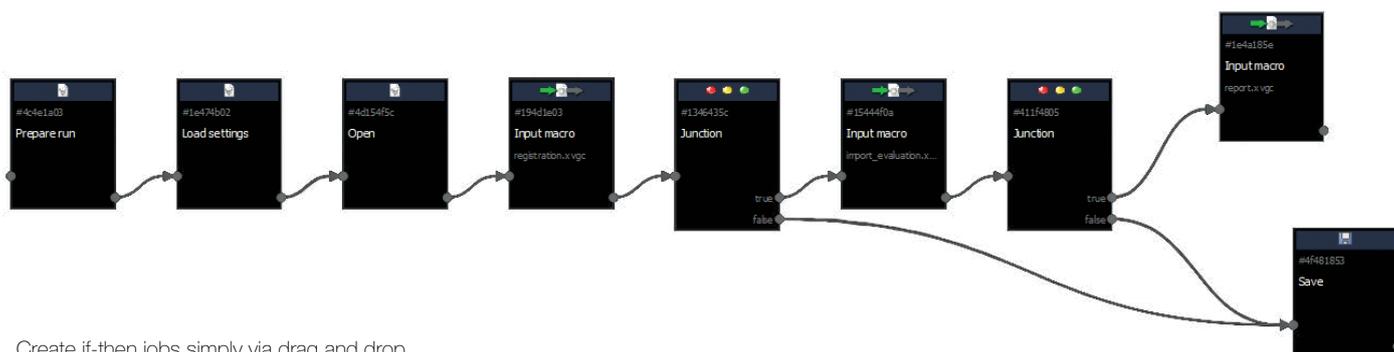
Let's say your CT scanner saves the scan data of part 1 in one directory and the data sets of part 2 in another directory. If configured accordingly, VGINLINE knows to run a defect analysis on part 1, but to apply a measurement template and run a nominal/actual comparison on part 2.

If-then statements in jobs allow for even more complex inspections. For example, you can determine if you're currently dealing with part A or B and, as a consequence, run different analyses. Or maybe further analyses are unnecessary if the first analysis finds an insufficient wall thickness, for example.

How It Works

- > With jobs, you define what VGINLINE does with CT data sets.
- > Use VGSTUDIO MAX to create macros and templates while drawing from the full scope of available analyses.*
- > Build a new job from scratch by combining macros and templates, or duplicate and modify an existing job.
- > In VGINLINE, you can include if-then statements in your jobs if necessary—simply via drag and drop.
- > To save time, you can tell the software to execute recurring steps within the inspection process only once.

- > More important jobs will be calculated first based on the priority you assign.
- > Our software assists you with setting up jobs and finding inconsistencies.
- > If an inspection could not be finished (e.g., because of a computer or network problem), VGINLINE ensures it will be processed again.
- > The dashboard keeps you informed about the status of your inspections and the results for every part in real-time.



Create if-then jobs simply via drag and drop

* Depends on license (VGINLINE Complete or VGINLINE Cast & Mold Extended)

Open

VGinLINE integrates efficiently into your production process.

It reconstructs incoming CT data sets efficiently on the fly. They do not need to be saved on a hard drive nor reloaded. Outgoing data such as statistics or analyses are passed along to other software via built-in interfaces, including a Q-DAS interface to Quality Management software. An SDK opens up VGinLINE to external systems such as a shop floor control system. Cavity markers in the CT scans can be recognized, stored and used to select the corresponding inspection plan.

Reliable

With Volume Graphics software, you always have total control of your system and your data.

No file will be deleted unless you explicitly tell VGinLINE to do so. To improve accountability and security, our software supports the Windows event log to log every relevant action. Access control to the system can be easily realized via the familiar Windows permission system, e. g. allowing only certain users to change configurations.

VGinLINE can export data for archiving purposes. The software ensures that this data is complete: For example, VGinLINE stores a CAD file that it used for inspection together with the result when exporting.

Production processes evolve, and inspections may have to be adapted. Revisions enable you to incrementally change jobs while still maintaining a history. Unique IDs provide tracability, and switching between revisions is easily possible.

Capabilities Increase. Costs Don't.

VGinLINE has got you covered—even when your needs change or grow.

Simply prepare new analyses in VGSTUDIO MAX or reuse parts of existing jobs. Custom-built in-line inspection solutions can't match this degree of flexibility.

Scalable and Fail-Safe

You can easily distribute inspection tasks to several workstations in order to achieve the necessary data throughput or ensure the required redundancy in your process.

This makes VGinLINE not only flexible and scalable, but also fail-safe. If more workstations are necessary, just add them. Additional workstation licenses are offered at a steep discount.

Smart

Use a reference volume calculated from actual manufactured parts that have been classified as 'good' for your automated inspection tasks.*

This teaches the software how a 'good' part should look and what deviations are 'normal'. Based on the reference volume, VGinLINE performs, e.g., a nominal/actual comparison. This is not only much faster than conventional analyses, it also detects a wider variety of defects.

Supported by Experts

We're here to assist you, from the decision-making process right through to implementation.

And once implemented, we help you to further optimize your inspection process. Just contact our experts for advice!



* The calculation of reference volumes is a service that has to be performed by Volume Graphics at an additional cost.



VGINLINE APPROVER is your dashboard to review and manually re-evaluate results of an automated inspection. You can easily access the dashboard with any modern web browser—from desktop PCs as well as from mobile devices.

Scan—Analyze—Evaluate ... Re-Evaluate?

With the web application VGINLINE APPROVER, you can review and manually re-evaluate inspection results.

A manual re-evaluation of automated test results may be mandatory for safety-relevant parts. In addition, a manual re-evaluation can minimize scrap if the expert eye considers some cases of automatically rejected parts to be of sufficient quality. VGINLINE saves the automatically generated inspection results, measured values, 2D views, a 3D rendering of the component, and metadata in a password-protected database. Auditors with access rights can view the data from their desktop PC or mobile device—conveniently in any modern web browser.

If necessary, an auditor can manually change the pass/fail decision of the entire part or individual inspection features (e.g., defects or dimensions). It is possible to

enforce that individual results of an automated inspection have to be reviewed either completely or until the first manual reject decision is made. The operators can also be required to add a reason for each individual decision from a customizable drop-down list.

The results of the manual inspections are stored in the database together with the information about the auditor. Inspection results can be shared either as .pdf files, which include the results of both the automated inspection and the manual revision, or in .vgrf report files for further use in third-party quality management software.



Volume Graphics—Enabling Better Products

Volume Graphics customers all over the world in both industry and science know that Volume Graphics software gives them a decisive advantage: The ability to gain reliable insights and make better products. It's time you join them.

With the Volume Graphics product family, comprising VGSTUDIO MAX, VGSTUDIO, VGMETROLOGY, VGinLINE, and myVGL, you can carry out all kinds of analyses and visualizations directly on data from industrial computed tomography (CT).

Recognized Market Leadership

With a market share of around 80%, Volume Graphics holds a leading position in the industrial CT software industry, as recognized by the global business consulting firm Frost & Sullivan with the “2018 Global Industrial CT Software Market Leadership Award”.*



By choosing Volume Graphics, you can rely on more than 20 years of experience in the development of software for non-destructive testing. Today, global customers, e.g., from the automotive, aerospace, and electronics industries, use Volume Graphics software for quality assurance in product development and production.

Peace of Mind Included

When you choose Volume Graphics, you get the peace of mind that comes with knowing that you have a team of experts with a deep understanding of your tasks at your side. This begins when our sales experts help you configure your Volume Graphics software and continues long after the purchase: an optional update/service agreement keeps your software up to date, a competent team of specialists with short response times is there to support you, and training courses at VG Academy get you up to speed in using your software. In addition, our consultants are at your side, especially when it comes to automating complex analysis tasks.

* Source: Frost & Sullivan Award Write Up www.volumegraphics.com/en/frost



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Enabling better products



Volume Graphics GmbH has subsidiaries in the US, Japan, China, and Singapore. To broaden our global footprint even more, we can rely on a worldwide network of distributors.

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