OLYMPUS STREAM™ ENTERPRISE
Data and Image Management Software for Manufacturing and Industrial Research

EVIDENT

Fast, Efficient Inspection Workflows

Olympus Stream™ Enterprise data management software offers intelligent step-by-step workflows to acquire sharp, crisp images that are ready for quantitative measurements and professional reporting based on the latest standards. Users of any experience level can conduct complex image analysis tasks, from image acquisition to standard reporting, under any imaging condition. Designed for flexibility, Olympus Stream™ Enterprise software enables you to conduct fast and precise observation sessions on a large variety of samples while maintaining data security and measurement reliability.

Optional solutions enables you to adapt Olympus Stream™ Enterprise software to your application, including quality analysis, research and development, process development, and quality control.
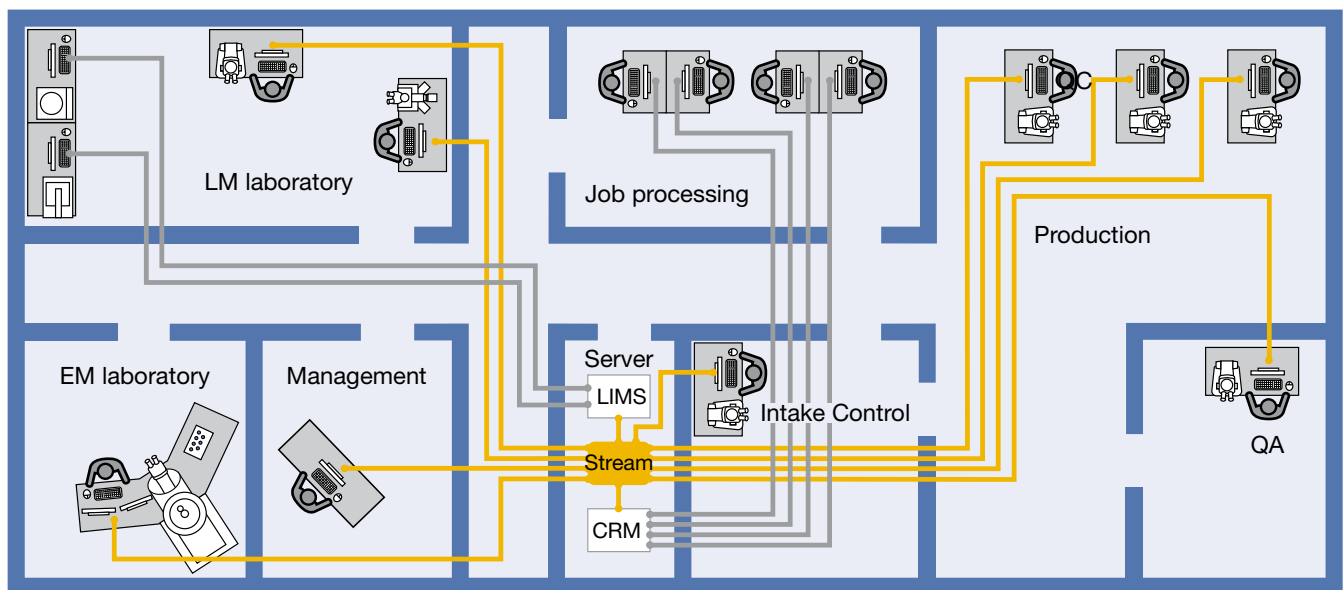

Image Capture
All supported cameras (color, monochrome, IR, and SWIR) are integrated into the easy-to-use camera control and connected to the Evident microscope for secured magnification and calibration information. You can acquire large, all-in-focus images using either a manual or motorized stage.

Measurement
The software enables you to conduct a large variety of geometric measurements interactively or using advanced image processing. Standard compliant measurements can also be produced using the Materials Solution workflow.

Data storage and Sharing
The data are securely stored on the local network using client-server technology based on Microsoft SQL Server. User rights and data security can be enhanced with the Secure File Repository package.

Documentation
Take advantage of powerful reporting tools that use Microsoft Office 365 and connect directly to the database.

Getting the Best Possible Image

Simple Layouts

The software's organized layouts contain the minimum necessary functions for performing the required tasks. Simplified layouts help streamline the inspection workflow and efficiently guide users through the inspection process.
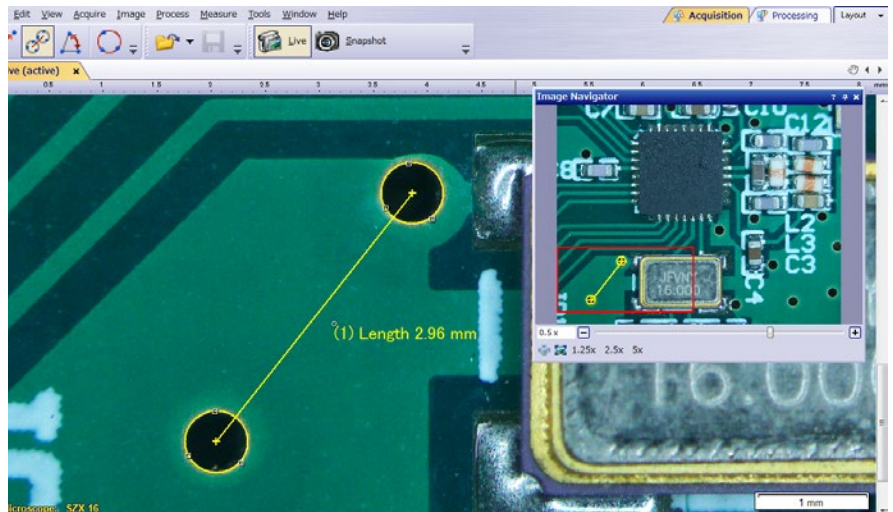

Fast measurements on a live image with just a few clicks of your mouse

Quick Panoramic Images and Extended Depth of Focus

Quickly create high-resolution panoramic images of samples that extend beyond the standard depth of focus. The instant Extended Focus Image (EFI) function uses the fine focus adjustment to combine many images taken at different Z-levels to build a single combined image that is entirely in focus. Instant Multiple Image Alignment (MIA) enables users to create panoramic images simply by moving the XY stage; a motorized stage is no longer necessary.
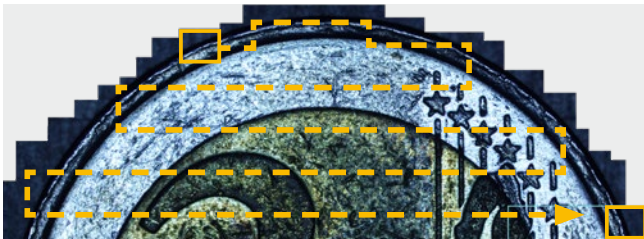

Instant MIA image of a coin
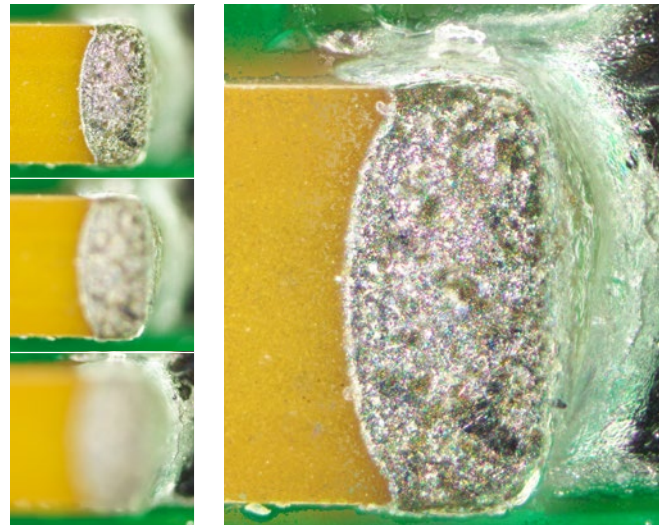
Instant EFI image of a capacitor on a printed circuit board

3D Solution

This solution creates height maps from stacks of images acquired automatically or manually at different Z-positions. The resulting image can be visualized in three dimensions using the surface view. Measurements, such as 3D profiles and height differences between two or several points, can be performed, and the results exported into Microsoft Excel spreadsheets.
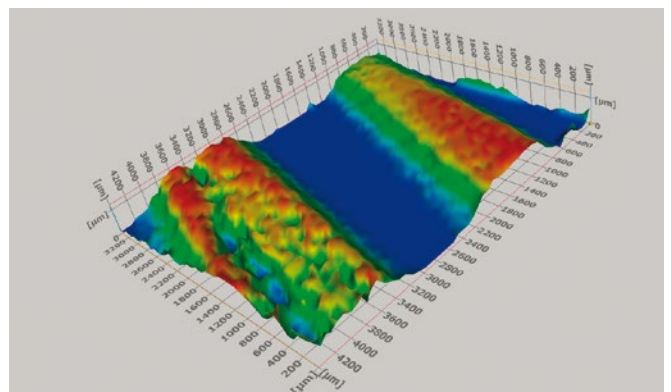

3D profilometry of wear track

Optimized for the Industrial Lab

Guided Operation for Dedicated Analysis

It can be difficult to remember the correct order of functions when performing image analysis. Olympus Stream™ Enterprise software offers intuitive tools to perform complex image analysis tasks in compliance with most common international standards. This reduces the amount of operator training required to conduct the analysis, leaving more time to complete the task rather than remembering how to do it. When using a motorized stage, the alignment feature speeds up your work on multiple sample locations.

1. Acquire Image   **2. Analyze Image**   **3. Classify Results**   **4. Create Report**
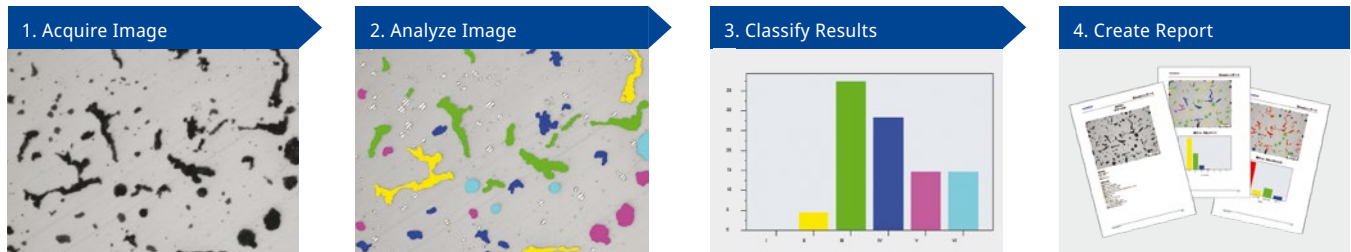
Cast iron analysis

Automated Inspection Tools

The software's automated tools can create a very large set of data in just a few minutes. Automatic magnification calibration using a calibrated grating reticle helps ensure that your images are displayed with the proper scale bar and that your measurements are confirmed. Images of very large areas can be acquired automatically using motorized XYZ stages, enabling the creation of images of large parts with high resolution.
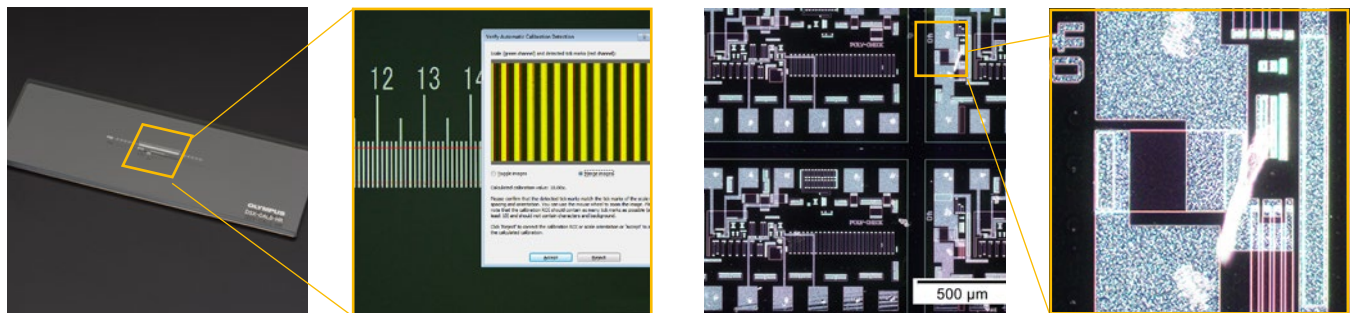

Auto calibration helps eliminate human variability in the calibration process, leading to more reliable measurements

Sharp and high-contrast MIA image of an integrated circuit (IC) pattern (darkfield observation with a 20X objective lens)

Efficient Report Creation

Creating a report often takes longer than capturing the image and taking the measurements. Olympus Stream™ Enterprise software provides intuitive report creation to repeatedly produce smart and sophisticated reports based on predefined and customized templates. Editing is simple, and reports can be exported to Microsoft Word, Excel, or PowerPoint. In addition, the software's reporting tool enables digital zooming and magnification on acquired images. Report files are a reasonable size for easier data exchange by email.
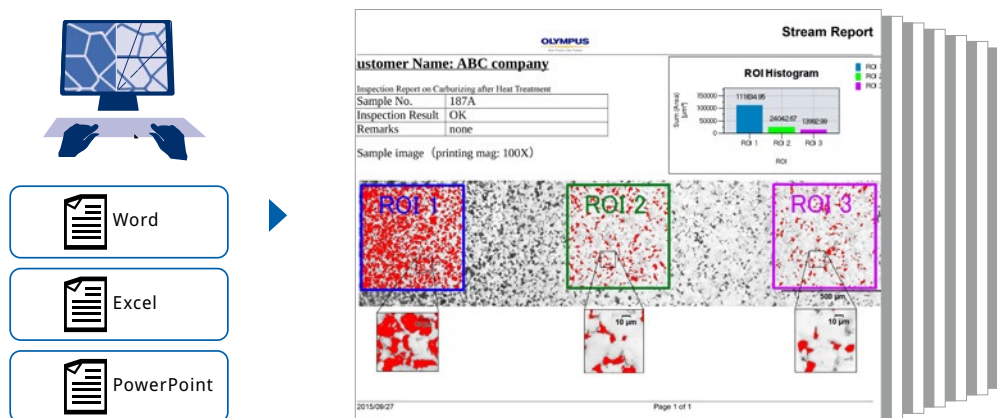
Professional report that summarizes particle count data, including image details using digital zooming

Integrated Data Management

Olympus Stream™ Enterprise provides comprehensive access authorization for data and functions within the entire network. This system architecture enables simpler installations with minimal maintenance.
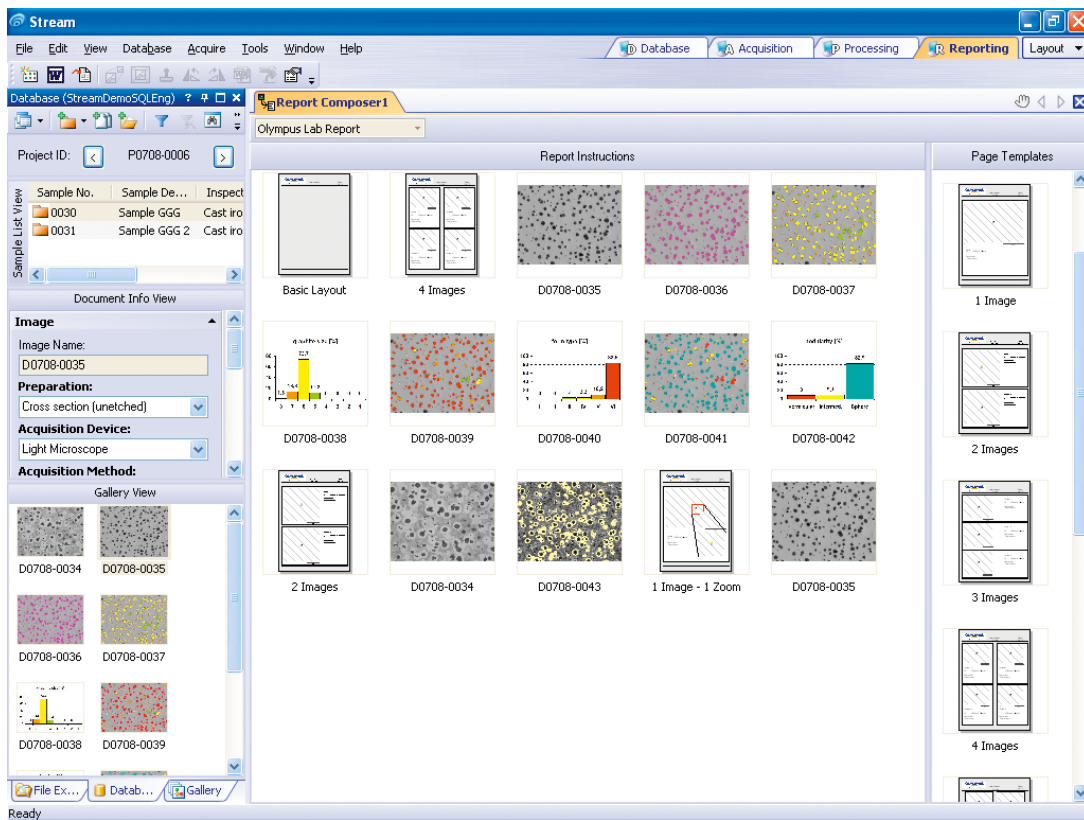
Software Requirements
Olympus Stream™ Enterprise uses Microsoft SQL Server 2019 (or SQL Server Express).

User Rights
User rights are assigned under four default roles—administrator, power user, user, and guest. Each can be modified for added flexibility. In addition, each project or data record can be assigned access rights to specific individuals or members of a group. Authentication is possible using a SQL login when starting Olympus Stream™ Enterprise or via integration with an existing active directory and lightweight directory access protocol (LDAP) to provide single sign-on (SSO) capabilities.

Secure File Repository
For data security, Olympus Stream™ Enterprise offers an optional secure file repository (SFR) package. As an extra layer of security, the SFR works with Olympus Stream™ Enterprise to handle file requests based on a user's access permission.

Integration
Olympus Stream™ Enterprise can be set up to interface directly with existing order management, LIMS, ERP, and CRM systems. For additional flexibility, the software has built-in interfaces for digital communication protocols, such as component object models (COM) and open database connectivity (ODBC), which enable easier interfacing with other programs. Application programming interface (API) functionality has also been added to enable the use of Olympus Stream™ Enterprise processes by other programs.

Optimized for the Industrial Lab

Solving Your Inspection Challenges

Industrial labs often have demanding conditions and require repeatable and reproducible results as part of their standard operating procedures. Olympus Stream™ Enterprise facilitates inspection, measurement, and analysis with a simple and reliable workflow. The software offers a variety of tools for various materials science analyses, so you can be confident in your results.

TruAI™ Deep-Learning Technology

The Olympus Stream™ Enterprise TruAI solution offers image analysis options beyond any classical algorithmic possibilities. Trained Neural Network can be applied for higher reproducibility and robust analysis. Selection between semantic or instance segmentation methods is possible for improved neural network training, enabling users to tackle difficult applications in one step.

**Data obtained:** Accurate and automated image segmentation
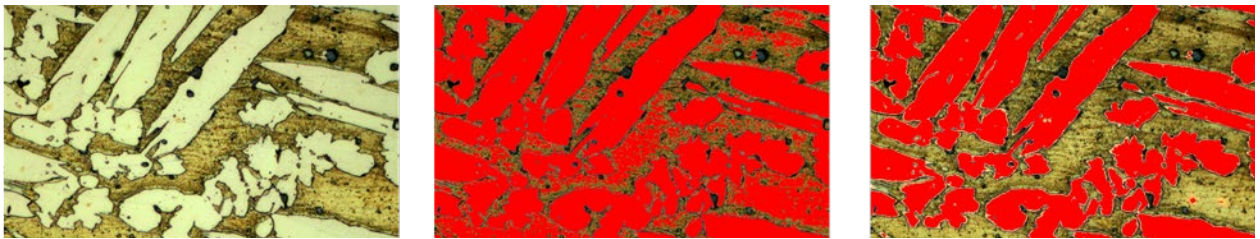
Multiphase analysis of composite materials is a typical industrial image analysis application using deep-learning technology. After image deep-learning segmentation with Olympus Stream™ Enterprise TruAI solution, different phases can be distinguished and detected accurately. Combined with Olympus Stream Enterprise Count & Measure solution, users can easily extract repetitive and quantitative results out of the samples. left: Original image of a etched copper. middle: image segmentation using conventional thresholding methods. right: deep-learning image segmentation

Three-Dimensional Measurement and Line Profiles

New materials, new techniques, and the drive toward nanotechnology demand higher standards of measurement and quality control. Without the appropriate tools for 3D imaging, it is impossible to quantitatively analyze images from a sample. The Olympus Stream™ Enterprise 3D solution provides coded and motorized Z-control and instant EFI with height mapping capabilities to measure a three-dimensional sample.

Data obtained: 3D surface view, 3D measurement, 3D profile measurement
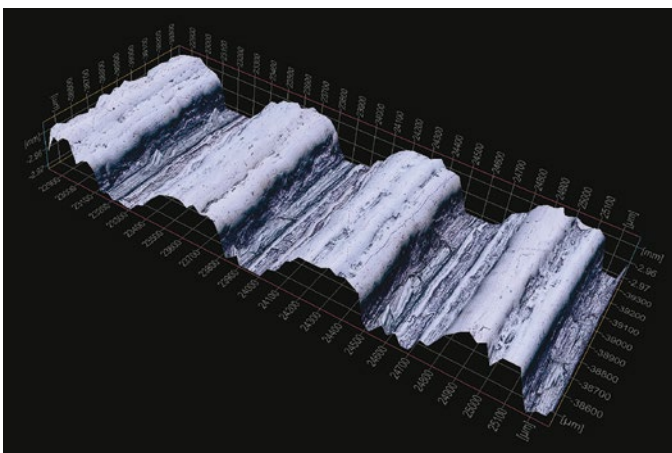
3D surface view (roughness test sample)
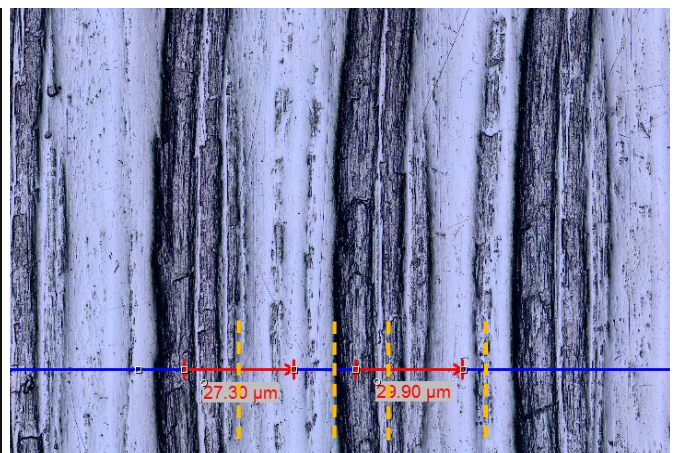
Single view and 3D profile measurement

Count and Measure Solution

Detecting objects and measuring size distribution are among the most important applications in digital imaging. The Olympus Stream™ Enterprise Count and Measure solution uses advanced threshold methods to reliably separate objects, such as particles and scratches, from the background. More than 50 different object measurement and classification parameters are available, including shape, size, position, and pixel properties. Two classification parameters can be selected simultaneously. Olympus Stream™ Enterprise with the Count and Measure solution can also be used to support the DSX1000 digital microscope for particle analysis common to metallography evaluation and similar applications.
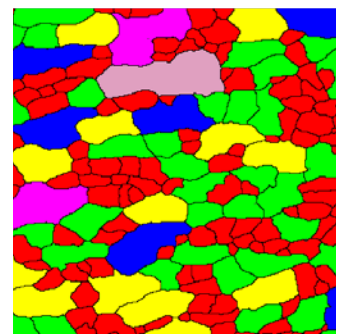
Data obtained: number of detected particles, individual measurement results, and class histograms.
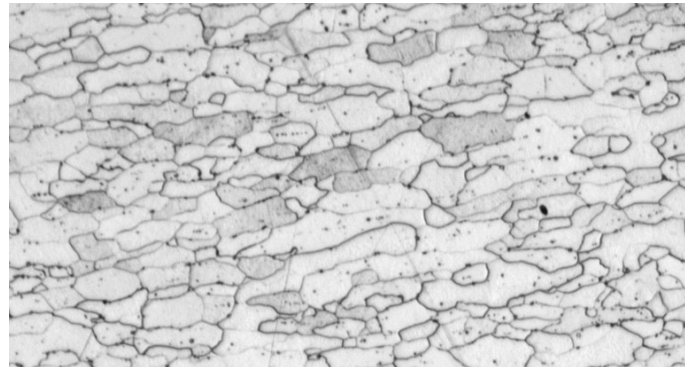
Etched steel microstructure (original image)
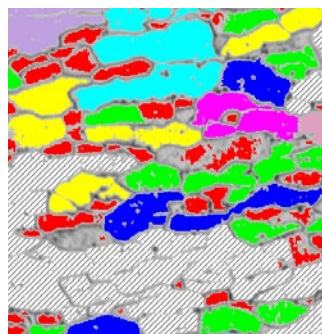
Grain boundary detection with conventional software

Grain boundary detection using the powerful Separate Objects filter
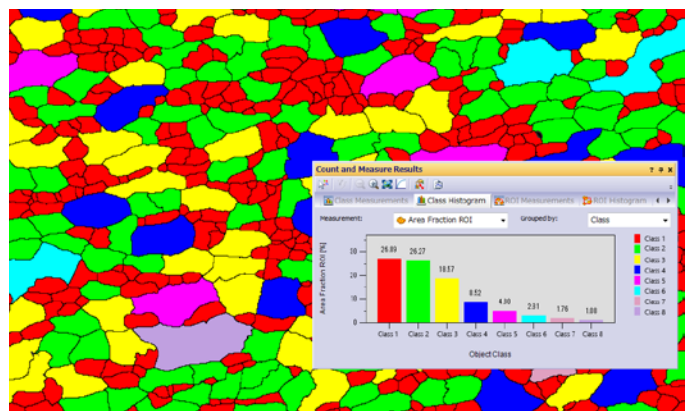
Recommended Functions

Efficient Analysis

Users can preset complex imaging and measurement tasks with the Macro Manager. The set of tasks can then be performed with a single click. This capability helps ensure consistent output when different operators are using the Count and Measure solution.

Powerful Image Filters

Olympus Stream™ Enterprise has a variety of useful filters for edge detection, smoothing, and other purposes. For example, the Separate Objects filter, DCE (Differential Contrast Enhancement) filter, and Grayscale filter help make threshold settings and particle detection easier.
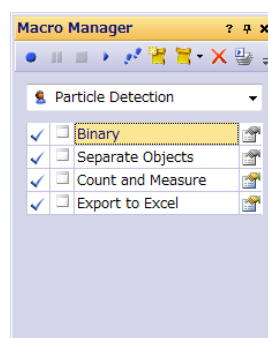
Example of Macro Manager setup for Count and Measure
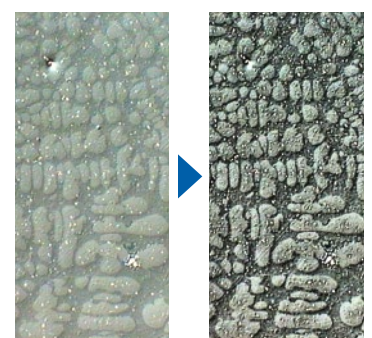
Enhanced contrast using the DCE filter (Dendrite in an aluminum casting)

Specific Application Solutions
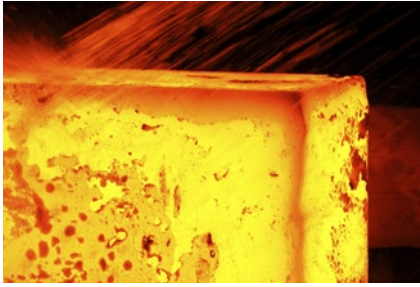
Solutions for Metallography

Traditionally, metallography is the study of metal and alloy microstructures using optical, digital, and laser scanning microscopes. By analyzing a material's microstructure using this Olympus Stream™ Enterprise solution, its performance and reliability can be better understood. Today, metallography is used in materials development, incoming inspection, production and manufacturing control, and failure analysis.

Grain Sizing in Microstructures Using the Intercept Counting Method

This solution is for manual ferritic or austenitic grain size measurement of steel. It gives a single averaged value using the different available standards (ASTM E112-13 (2021), ISO 643:2020, JIS G 0551:2013, JIS G 0552:1998, GOST 5639-82, GB/T 6394-2002, DIN 50601:1985, ASTM E1382-97(2015)).

| Key Features	Typical Applications	Associated Functions	
· Count the number of grain intercepts with patterns · Direct visualization of the pattern and grain boundaries · Select from multiple standards · Area percentage of secondary phase	· Metallic materials and other types of materials with a geometric structure · Non-twinned materials (ferrite, aluminum, BCC metals)	· Various image filters · HDR	

Grain sizing intercept solution
(Microstructure with ferritic grains)
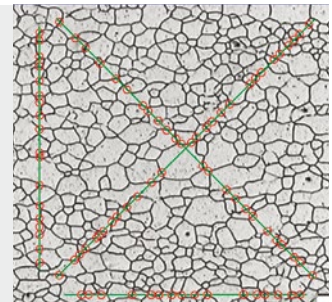
Grain Sizing in Microstructures Using the Planimetric Method

This solution is for automatic grain size distribution measurement on etched microstructures (it also works on aluminum microstructures) using the different available standards (ASTM E112-13 (2021), ISO 643:2020, JIS G 0551:2013, JIS G 0552:1998, GOST 5639-82, GB/T 6394-2002, DIN 50601:1985, ASTM E1382-97(2015)).

Key Features	Typical Applications	Associated Functions	
· Count the number of grains included in the image · Powerful grain boundary reconstruction by the separator filter · Area percentage of secondary phase	· Metallic materials and other types of materials with a geometric microstructure · Thermally processed metals	· Various image filters · HDR	

Grain sizing planimetric solution
(Microstructure with ferritic grains)
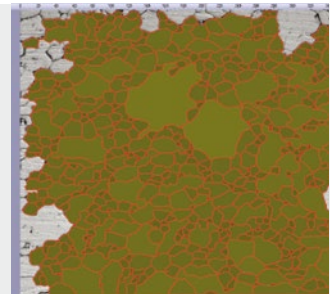
Graphite Nodularity Evaluation

This solution automatically evaluates graphite nodularity and content in cast iron samples (nodular and vermicular types). The form, distribution, and size of graphite nodes are classified according to EN ISO 945-1:2018, ASTM A247-17, JIS G 5502:2001, KS D 4302:2006, GB/T 9441-2009, ISO 16112:2017, JIS G 5505:2013, NF A04-197:2017, ASTM E2567-16a (for nodularity only) standards. This solution also assists with determining the ferrite-pearlite ratio in cast iron cross sections.

Key Features	Typical Applications	Associated Functions	
· Measure both the ferrite-pearlite ratio (on etched samples) and graphite distribution (on non-etched samples) · Measure the distribution of vermicular graphite using standard charts · Select from multiple standards	· All cast iron samples (metallic parts requiring high strength, castability, etc.)	· Grayscale mode	

Cast iron solution
(Ductile cast iron showing nodular graphite)

Rating Non-Metallic Inclusion Content in Certain Steels and Alloys

Olympus Stream™ Enterprise software offers two methods to detect and classify non-metallic inclusions in certain steels and alloys. One is to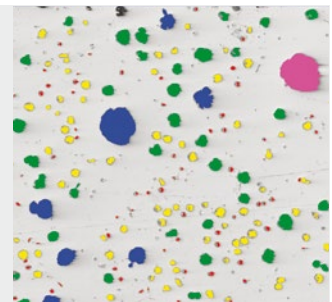 detect the largest/worst inclusion, and the other is to run statistical evaluations of all inclusions in the scanned area. The inclusion worst field results are in accordance with ASTM E45-18a (method A), SEP 1571:2017 (method M), DIN 50602:1985 (method M), ISO 4967:2013 (method A), GB/T 10561-2005 (method A, equivalent to ISO 4967), JIS G 0555:2003 (method A, equivalent to ISO 4967), UNI 3244:1980 (method M), EN 10247:2017 (methods P and M), and EN 10247:2017 (methods P and M). Individual inclusions are displayed and can be edited by the user. The statistical evaluation of inclusion content on the entire scan are examined according to ASTM E45-18 (method D), ISO 4967:2013 (method B), SEP 1571-2017 (method K), and EN 10247:2017 (method K).
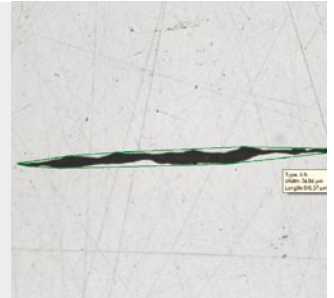
Key Features	Typical Applications	Associated Functions
· Requires minimal training · Select from multiple standards	· All high-purity steels · Roll bearing, special steels, controlled dilatation steel, etc.	· Various image filters · HDR

Non-metallic inclusion content solution
(Steel with non-metallic inclusions)

Comparing Sample Images with Reference Images

Easily compare live or captured images with autoscaled reference images. This solution includes reference images in each available chargeable set (ASTM E112:2013(2021), ISO 643:1983, ISO 643:2012, DIN 50602:1985, ISO 945-1:2019, SEP 1520:1998, SEP 1572:2019, EN 10247:2017, and ISO 4505:1978). The solution also supports multiple modes, including live overlay display and side-by-side comparison. Additional reference images can be purchased separately.

Key Features	Typical Applications	Associated Functions
· Not dependent on microscope magnification · Intuitive comparison with known standards · Works with live and captured images · Select from multiple standards	· Metallic and other materials · Thermally processed metals	· Easy focusing and capturing tools

Chart comparison solution
(Microstructure with ferritic grains)

Dendrite Arm Spacing

This solution automatically measures the mean secondary dendrite arm spacing in solidified aluminum alloys. Secondary dendrite arm spacing is directly connected to the alloy's solidification time, which is automatically calculated when the material-specific constant is used. The measured parameters are the total length, the number of dendrite arms, and the average and median DAS values.

Key Features	Typical Applications	Associated Functions
· Manually or automatically measures the dendrite arm spacing using thresholds · Works with live and still images · Displays the DAS result on the image with editable points	· Aluminum (die castings and gravity castings) · Lightweight alloys	· Easy focusing and capturing tools
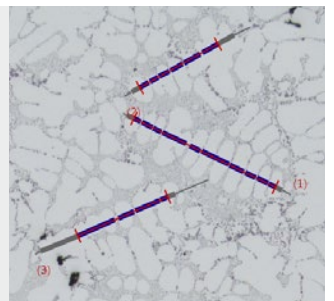
Interactive determination of
the mean dendrite arm spacing

Other recommended solutions: Count and Measure, Particle Distribution, Porosity, Extended Phase Analysis, Weld Measurement, 3D

Solutions for Machinery Processing (Automotive/Machined Parts Industries)

When cutting, drilling, polishing, and milling metal parts, many types of small defects may occur. To ensure the high quality of these parts, they must be strictly scrutinized during the production process to identify any scratches, cracks, pore size, or contamination.

Welding Distortion

Olympus Stream™ Enterprise offers an optional solution for measuring the geometric distortion induced by heat during welding. With this solution, it is easy to perform asymmetry, multiple perpendicular lines, and A-throat measurements, enabling detailed and quantifiable measurements of the welding distortion. These measurements are important for assessing the quality of the weld.

Key Features	Typical Applications	Associated Functions	
· Measures throat thickness, asymmetry, and the thickness of welds · Geometry is shown on the live image	· Fillet-welded joints (tee, lap, and corner joints) · Arc-welded joints	· MIA and EFI	

Weld measurement solution
(A-throat measurement in a weld seam)
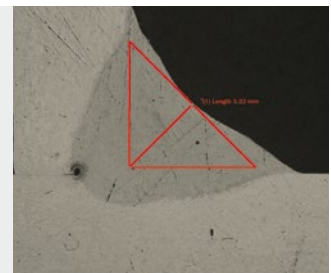
Phase and ROIs Measurement

The software is used to measure multiple phases in a microstructure by selecting color or gray level intensity (threshold). Sixteen different phases can be defined as well as multiple regions of interest (ROIs) (including the magic wand). Several color spaces can be used (RGB or HSV), and minimal size criteria can also be defined. The results are then expressed as phase fraction area calculations. To create reproducible results, the ROIs can be defined using discrete sizes for comparative measurements.

Key Features	Typical Applications	Associated Functions	
· Selecting different phases using multiple thresholding techniques · Multiple ROIs (including magic wand) can be selected · Results are calculated per ROI and per phase	· Welding quality check · Die casting · Steel microstructure · Composite materials	· MIA and EFI	

Advanced phase analysis solution
(Phase analysis in dual phase polymer)

Particle Distribution

Measuring the physical characteristics of particles is a common task in a wide range of industries and is often a critical parameter in the manufacture of many products. The Materials Solution Particle Distribution classifies particle parameters based on their morphology, including characteristics such as size, diameter, area, color, and elongation, and build a graphical representation of the distribution. Class bins can be defined with color codes to give a better understanding of the results.

Key Features	Typical Applications		
· Counts the number of particles in one or multiple images (motorized solution) · Classifies according to a selected dimension among a large number of choices · Codes and validates results according to a user's standards	· Reactivity of dissolution rate (ex. catalyst, tablets) · Stability in suspension (ex. sediments, paints) · Efficacy of delivery (ex. asthma inhalers) · Texture and feel (ex. food ingredients)	· Appearance (ex. powder coatings and inks) **Associated Functions** · MIA and EFI	

Particle distribution
(Particles extracted on membrane filter)
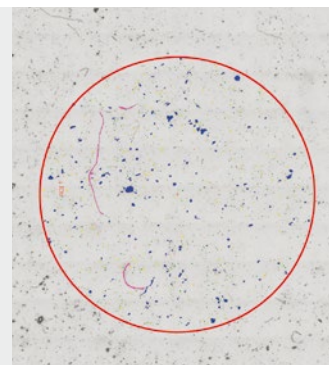
Other recommended solutions: Count and Measure, Cast Iron, Non-Metallic Inclusions, Grains Intercept, Grains Planimetric
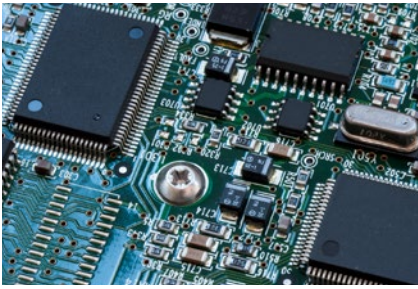
Solutions for Electronics (Electronic Device/Semiconductor Industries)

As electronic devices such as computers, cameras, and smartphones continue to shrink, components like lead frames and connectors are also getting smaller. For example, the average distance between electrical connector pins is now only 0.2 mm. In printed circuit boards, very thin plates are coated, and verifying the homogeneity of this coating is a key element of product quality.

Throwing Power Measurement

Use this solution to measure the distribution of copper plating thickness in through-holes or micro-vias and to perform all the steps necessary to make critical measurements of printed circuit boards (PCBs). This includes dimple depth or the difference in height between the copper plating within a via and around its perimeter.

Key Features
· Manually measure selected points on a live image in a cross-sectioned sample
· Extensive user guidance through all points, according to the sample geometry

· Automatic result correction for samples not fully cut through the center of the hole
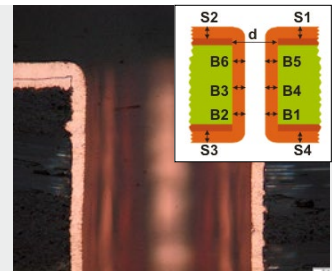
Typical Applications
· HDI printed circuit boards

Associated Functions
· Easy focusing and capturing tools

Throwing power solution
(Cross section of a through-hole of a PCB)

Automatic Critical Dimension Measurement

Use this solution to create edge-detection-based measurements in a live image with pattern recognition. Use the software to create scanners to measure distances (point-to-line, circle-to-circle), circle diameter, circle roundness, and bounding boxes (width, length, and area). The integrated validation tool provides a pass/fail flag for every measurement.

Key Feature
· Expert users can define a measurement routine
· Execute the measurement recipe using a controller without changing the measurement parameters or the tolerance

· Immediate "Fail" or "Passed" flag

Typical Applications
· Semiconductor products

Associated Functions
· Easy focusing tools

Automatic measurement solution
(Wafer structure)
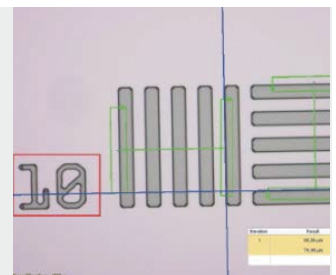
Three-Dimensional Measurement and Line Profiles

This solution creates height maps from stacks of images acquired automatically or manually at different Z positions. The resulting image can be visualized in three dimensions using the surface view. Measurements, such as 3D profiles and height differences between two or several points, can be easily performed. The results can then be exported into workbooks and Microsoft Excel spreadsheets.

Key features
· 3D image obtained with the focus-variation method without any size limit
· Extract a 3D profile by selecting a line and measure the orthogonal distances on the profile with feedback on the image

· Export 3D profiles for compatibility with roughness calculation by using third party software

Typical applications
· 3D profile for evaluation of surface flatness
· Failure analysis

Associated functions
· Easy focusing tools

3D solution
(IC chip on a PCB)

Other recommended solutions: Count and Measure, Particle Distribution, Porosity, Extended Phase Analysis

Solutions for Surface Coatings and Thin-Film Deposits (Coating Industries)

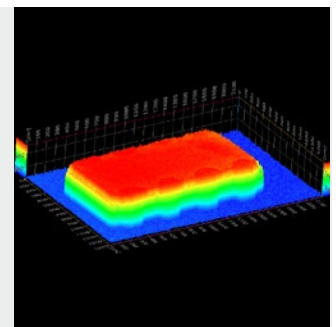Surface coatings are any mixture of film-forming materials that contain pigments, solvents, and other additives, which, when applied to a surface and cured or dried, yield a thin film that is functional and often decorative. Surface coatings include paints, drying oils and varnishes, clear synthetic coatings, and other products that protect the surface of an object from the environment. These products can also enhance the aesthetic appeal of an object by accentuating its surface features or concealing blemishes.

Thin Coating Thickness Evaluation (Calotest Method)

This solution enables coating thickness from top-view images using the Calotest method. Results can classified according to ISO 26423:2016. With the Calotest method, a grinding sphere wears a tiny crater through the coating. The software uses the sphere and sample geometry to calculate the coating's thickness.

| Key Features	Typical Applications	Associated Functions
· Guides the user through a selection of shapes and print morphologies · Measurements are easy to perform · Complies with international standards	· CVD, PVD, plasma spray coatings · Anodic oxidation layers · Surfaces treated by ion sputtering or ion plating · Chemical and galvanic deposits · Polymers, paints, and lacquers	· Various image filters

Coating thickness solution
(A printed thin coating on a metal substrate obtained with the Calotest method)
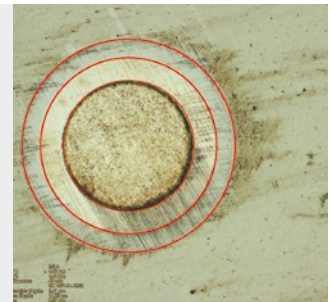
Layer Thickness Measurement

Measures layer thicknesses either perpendicular to neutral fibers, via the shortest distance, or with a parallel method. Users can now measure layers with even or uneven boundaries. Layer thickness measurement software calculates mean, maximum, and minimum values as well as statistical data for each layer. Layer boundaries can be specified using automatic detection, magic wand, or manual mode. Individual measurements can be added or deleted later.

| Key Features	Typical Applications	Associated Functions
· Select different phases using automatic, magic wand, and manual measurement modes · Automatic layer measurement is performed using the neutral fiber as reference layer · Flexible selection of multiple points or inter-distance	· CVD, PVD, plasma spray coatings · Anodic oxidation layers · Chemical and galvanic deposits · Polymers, paints, and lacquers	· EFI and MIA

Layer thickness solution (Cross section of paint and primer lacquer on steel)
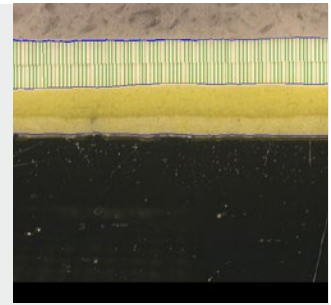
Pore Fraction and Density Measurement

The Porosity solution in Olympus Stream™ Enterprise software measures the area fraction and number of pores on cross-sectional surfaces and coatings. The software uses the threshold method to differentiate between the pores and the substrate on color or gray level images. It is possible to calculate the following parameters: porosity, pore size, number of pores, distance between adjacent pores, and the pore density for every selected region of interest as well as the whole image.

| Key Features	Typical Applications	Associated Functions
· Several thresholding techniques are available · A size limit per pore can be fixed · Measurement per ROI is available · Largest pore is highlighted	· Voids in chemical materials · Level of porosity in foam · Control of air voids in weldments · Additive manufacturing	· MIA and EFI

Porosity solution (Cross section of carbide coating in thermal deposition processing)
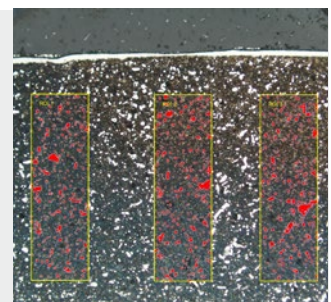
Other recommended solutions: Count and Measure, Particle Distribution, Extended Phase Analysis

Materials Solutions for Every Purpose

	Solutions	Descriptions	Application example	Metal/Casting	Automotive	Glass/Ceramic	Coating	Consumer Goods	Electronic Devices	Semiconductors	Fluids & Oils	Machined Parts	Carbon/Composites	Chemical/Plastic/Rubber	Industrial Scientific Research
														Recommended Industry →	
	Grain Intercept	Steel manufacturers use this solution for measuring and controlling grain size after cross-sectioning, polishing, or etching steel samples. This function is based on overlaying "test lines" and counting the number of intercepts with grain boundaries	Page 8	■	■			■				■			■
	Grain Planimetric	Steel manufacturers use this solution for measuring and controlling grain size after cross-sectioning, polishing, or etching steel samples. This function reconstructs boundaries for each grain and conducts grain sizing with the area percentage of the second phase.	Page 8	■	■			■				■			■
	Non-Metallic Inclusions	Steel manufacturers use this solution for measuring and classifying the shape and size of non-metallic inclusions (oxide, alumina, sulfide, or silicate) in steel.	Page 9	■	■			■				■			■
	Cast Iron	Casting manufacturers who need to measure and control the graphite nodularity and check the mechanical characteristics of their cast products use this solution.	Page 8	■	■			■				■			■
	Chart Comparison	A live or still image can be overlaid onto standard charts for comparison; function preview is available	Page 9	■	■			■				■			■
	Dendrite Arm Spacing	This solution is used to manually or automatically determine the mean dendrite arm spacing in cast aluminum	Page 9	■	■			■							■
	Layer Thickness	One or multiple layers of a cross-sectioned sample can be measured using the Layer Thickness solution. The shapes are defined, and the layers are automatically measured.	Page 12		■		■								■
	Coating Thickness	This solution enables the measurement of coating thickness from top-view images using the Calotest method.	Page 12		■		■								■
	Automatic Measurements	This solution is used for creating measurements based on edge-detection on a live image with pattern recognition.	Page 11						■	■					
	Throwing Power	This solution measures the distribution of copper plating thickness in through-holes or micro-vias.	Page 11						■	■					
	Porosity	This solution enables pores to be measured either for area fraction or the number of surface pores using ROIs (circular, triangular, rectangular, and polygonal) and thresholds.	Page 12	■	■		■	■		■		■	■	■	■
	Particle Distribution	This solution is used to create particle size distribution histograms and tables from multiple images or image series.	Page 10	■	■	■	■	■	■	■	■	■	■	■	■
	Advanced Phase Analysis	This feature offers a new integrated solution to perform phase analysis on a selection of various regions of interest (ROIs) including triangles, circles, rectangles, and polygons.	Page 10	■	■	■	■	■	■	■	■	■	■	■	■

More information is available on the application solution pages of the Olympus website (www.olympus-ims.com/application-solutions).

Olympus Stream™ Enterprise Version 2.5.3 Specifications

Main License Specifications

	■ : Standard ■ : Optional	Enterprise	Desktop
Image Acquisition			
Basic image acquisition including HDR and auto-calibration of magnification and Live HDR[1], and position navigation[1]		■	
Software autofocus[2] and movie acquisition (Avi format)		■	
Time lapse, instant EFI, and instant/manual MIA[3]		■	
Motorized EFI/MIA and Z-stack acquisition		■	
Image and Customization Tools			
Basic tool windows (image history, properties, navigator, and gallery view tool window)[4]		■	■
Annotations, layer management, scale bar, cross hair, info stamp display, and image filters		■	■
Digital reticle/grid, line profile display, My Function, layout management, and Macro Manager		■	
Measurements / Image Analysis			
Basic interactive measurement (distance, angles, rectangles, circles, ellipses, polygons, circle-to-circle distance, angle ruler, and line ruler) and data export to MS Excel		■	■
Phase analysis, magic wand, freehand polyline, interpolated polygon, morphology filter, and image arithmetics		■	■
3D measurements, 3D profile measurements, and 3D surface view		■	■
Reporting[5]			
Report creation (MS Word, and MS Excel formats)		■	■
Presentation creation		■	■
Data Management			
Client/server data management system for an unlimited number of simultaneous database users[6]		■	■
User- or project-oriented administration of images and other documents		■	■
Variable user rights for image and data		■	■
Fast and controllable data access		■	■
High-performance search functions		■	■
Supported DBMS: Microsoft SQL Server 2008 R2 / R2 Express, Microsoft SQL Server 2012 (SP1 and SP2) / Express (SP1 and SP2), Microsoft SQL Server 2014 / Express, Microsoft SQL Server 2017 / Express, Microsoft SQL Server 2019 / Express, Oracle 11g R2 /express, Oracle 12g R2 /Express		■	■
Sophisticated service for secure storage due to Secure File Repository (SFR) technology		■	■
Device Support			
Evident microscopes[7] and Evident cameras[8]		■	
Non-Evident cameras and image source converters[9]		■	
Non-Evident stage controllers[9]		■	

PC Requirements

CPU	Intel® Core i5, Intel® core i7, Intel® core i9
RAM / Hard disk / DVD drive	8 GB or more (16 GB recommended)/2.4 GB or more free space/DVD+R DL compatible
OS[10]	Windows 10 Pro (64-bit) , Windows 11 Pro (64-bit)
.NET Framework	Version 4.6.2 or higher
Graphic card[11]	1280 × 1024 monitor resolution with 32-bit video card
Web browser	Windows Internet Explorer 10, 11, or Microsoft Edge, or Chrome

[1] Requires the DP74 camera, and the Live HDR function requires a 64-bit OS.
[2] Requires an Evident microscope with motorized Z-axis or external motorized Z-axis.
[3] Instant MIA may not work properly with some cameras.
[4] Write and read all major file formats and open Evident proprietary formats (DSX, LEXT and POIR file formats).
[5] Requires Microsoft Word 2013, 2016, 2019, 2021,or Microsoft 365 Apps to be installed beforehand (not provided).
[6] Using Microsoft SQL Server Express.
[7] Supports BX53M, BX2, IX2, GX, GX53, SZX, SZX2, SZX-ZE, MX, MX63, MX63L, MVX, STM7-CB, CBS, BX3M-CB, BX3M-CBFM, BX-REMCB.
[8] Supports LC20, LC30, LC35, DP22, DP23, DP23M, DP27, DP28, DP73, DP74, SC30, SC50, SC100, SC180, UC30, UC50, UC90, XC10, XC30, XC50, XM10.
[9] Please contact Evident for supported device information.
[10] Starting with Olympus Stream™ 2.5.3, Evident cameras DP74, DP73 and SC180/UC90 are compatible with Windows 11/10 only. Windows 7 and 8.1 are no longer supported.
[11] Required configurations for Live HDR in DP74. Graphic board applicable to CUDA made by NVIDIA (compute capability 2.1 or higher). Graphic board driver applicable to CUDA 9.1 or higher.

Special Solution Specifications	Compatiblity		Functions
	Enterprise	Desktop	Measurement Type
3D	y	y*	3D Surface View, 3D Measurement, 3D Profile Measurement, Motorized Z-stack/EFI, Instant EFI with height map (requires coded or motorized Z-axis).
Weld Measurement	y	y	Weld Measurement solution (measurements for geometric distortion introduced by the heating during welding).
Count & Measure	y	y	Multiple threshold methods are available (automatic, manual HSV, manual and adaptive) The system can automatically measure multiple parameters on all segmented objects (Area, Aspect Ratio, Bisector, Bounding Box, Gravity Center, ID, Mass Center, Intensity Values, Convexity, Diameters, Elongation, Feret, Extent, Next Neighbor Distance, Orientation, Perimeter, Radius, Shape, Sphericity, etc.), Spreadsheet and charts with individual and distribution measurements.
TruAI™ Deep-Learning Technology	y	y	Training of Neural Networks using semantic (well separated objects) or instance (touching borders objects) segmentation methods.

*Not possible to use the functions relating to image acquisition.

Materials Solutions Specifications

■ : included ▢ : Optional

Solutions	Enterprise	Desktop	Output		Store All Results in the Image Properties	Measurement Type	Supported Standards
			Automatic Report Creation	Workbook with Individual Measurement			
Grain Intercept	▢	▢	▢	▢	▢	Selection of pattern (circles, cross, cross & circles, vertical lines, horizontal lines, horizontal & vertical lines) Definition of the number of test lines for determination of grain elongation Displays the G-value in the Material Solution tool window	ASTM E112-13(2021), ISO 643:2020, JIS G 0551:2020, JIS G 0552:1998, GOST 5639-82, GB/T 6394-2017, DIN 50601:1985, ASTM E1382-97(2015)
Grain Planimetric	▢	▢	▢	▢ *2	▢	Automatic extraction of grain boundaries User interaction using Stream sliders for improved usability Displays the G-value histogram in the Material Solution tool window for direct interaction	ASTM E112-13 (2021), ISO 643:2020, JIS G 0551:2020, JIS G 0552:1998, GOST 5639-82, GB/T 6394-2017, DIN 50601:1985, ASTM E1382-97(2015)
Non-Metallic Inclusions	▢	▢	▢	▢	▢	Automatic detection of non-metallic inclusion using colors, shape, and size Automatic classification of oxides, sulfides, silicates, and aluminates Live display of the detected inclusion with its rating Statistical overview of inclusions on the entire scanned area	ASTM E45-18 (method A), SEP 1571:2017 (method M), DIN 50602:1985 (method M), ISO 4967:2013 (method A), GB/T 10561-2005 (method A, equivalent to ISO 4967), JIS G 0555:2003 (method A, equivalent to ISO 4967), UNI 3244:1980 (method M), EN 10247:2017 (methods P and M), and EN 10247:2017 (methods P and M), ASTM E45-18 (method D), ISO 4967:2013 (method B), SEP 1571-2017 (method K), EN 10247:2017 (method K)
Cast Iron	▢	▢	▢	▢	▢	On polished samples: automatically measures the characteristics of the graphite content (size, shape, and distribution) On etched samples: measures the ferrite to pearlite ratio Integrated workflow that takes into account the sample status (etched or polished)	EN ISO 945-1:2018, ASTM A247-17, JIS G 5502:2001, KS D 4302:2006, GB/T 9441-2009, ISO 16112:2017, JIS G 5505:2013, NF A04-197:2017, ASTM E2567-16a (for nodularity only)
Chart Comparison	▢	▢		▢	▢	Multiple displays available, including live overlay User interaction using Stream sliders for improved usability Calculates statistics on the selected values	DIN 50602:1985, ISO 945-1:2019, ISO 643:1983, ISO 643:2012, EN 10247:2017, SEP 1520:1998, SEP 1572:2019, ASTM E112:13(2021), ISO 4505:1978
Layer Thickness	▢	▢	▢	▢		Layer boundaries can be specified using automatic detection, magic wand, or manual mode (using 2 or 3 points) Individual measurements can be added or deleted later on Measurement of any type of layers (with even or uneven boundaries) is supported Layer thickness measurement calculates mean, maximum, and minimum values as well as statistical data for each individual layer	
Coating Thickness	▢	▢	▢	▢	▢	Prints are measured from top view Calculation of the coating thickness according to the sample geometry	EN 1071-2:2002, VDI 3824: 2001, ISO 26423:2016
Dendrite Arm Spacing	▢	▢	▢	▢	▢	Determines the mean dendrite arm spacing in cast aluminum alloys	
Automatic Measurements	▢			▢		Automatically measures distances (point-to-point, point-to-line, circle-to-circle, point-to-circle, line-to-circle) Automatically measures circle diameter (roundness, bounding box) Automatically measures angles between two lines Definition of tolerances values for measurement and visual validation Expert and user mode for measurement repeatability	
Throwing Power	▢		▢	▢	▢	Manual measurements of selected point of interest on the sample Predefined points that will be triggered by the operator Selection of the vias type and documentation of the analysis Report and automatic calculation according to the manual measurements	
Porosity	▢	▢	▢	▢	▢	Pore detection per ROIs (triangle, circle, rectangle, polygon, or magic wand) with overlapping capability Measurement of the pore density, count, and specific area Measurement of the biggest pore Measurement of a specified size range	VW 50093/ P6093:2012, VDG P201-2002, VDG P202-2010, VDG P211-2010
Particle Distribution	▢	▢	▢	▢	▢	Particles are defined using simplified threshold settings Automatic classification according to a selected parameter (size, color, or shape) Measurement of ROIs and multiple thresholds Definition of validation and coding according to user-defined standards	
Advanced Phase Analysis	▢	▢	▢	▢	▢	Phase fraction per ROIs (triangle, circle, rectangle, or polygon) Magic wand, freehand polyline, interpolated polygon, morphology filter, and image arithmetics also usable Measurement of the total phase percentage per phase and per ROI Selectable minimum area detection	

*2 Stream chart with the distribution can be output.

Tailored Solutions For Manufacturing and Industrial Research

Evident offers an extensive product line for materials science and industrial microscopy. Olympus Stream™ Enterpise is also available as post-processing software (Olympus Stream™ Enterpise Desktop) for the entire range of the LEXT™ 3D measuring laser microscope and DSX1000 digital microscopes. Learn more about the LEXT 3D measuring laser microscope and DSX1000 digital microscopes at www.olympus-ims.com.

Custom Workflow Solutions

To further streamline your inspections, the Evident customization team designs personalized workflows in Olympus Stream™ Enterprise software for specific application scenarios. The software operation process is set up for your requirements so you can quickly solve challenges and achieve goals. To personalize your image analysis workflow, reach out to us today.
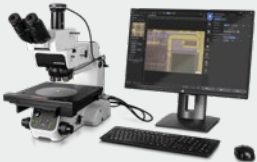
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