improve quality & workflow speed

IMAGIC: WHO WE ARE & WHAT WE DO

ABOUT US: IMAGIC BILDVERARBEITUNG AG

Since Imagic's founding over 20 years ago, when digital images were virtually learning to walk, we've been searching for solutions to automate and simplify workflows in material testing with digital images.

Over these years, together with hundreds of our clients in research and quality control labs, we have implemented ideas how to execute all image-oriented tasks, from acquisition, processing, measuring, and analysis to quality reports, making them easier, quicker, more reliable, and more productive.

We place value on supporting each of our clients individually. To allow the smooth interaction of all components, from image sources and microscopes, your personal workflows to your entire IT landscape, we offer a complete one-stop solution including consulting, provisioning, go-live, and long-term support: For all questions and problems you may encounter, you'll have the same responsible contact supporting you with all your image-oriented tasks.

As a strictly independent provider, we collaborate with all leading manufacturers: We're able to deploy the technically and economically optimal components for any requirement profile.

With this brochure, we'd like to give you a short overview over our image management solution IMS. You will find further information about IMS, our range of hardware components, and services on our website:
http://www.imagic.ch/en/industry.html
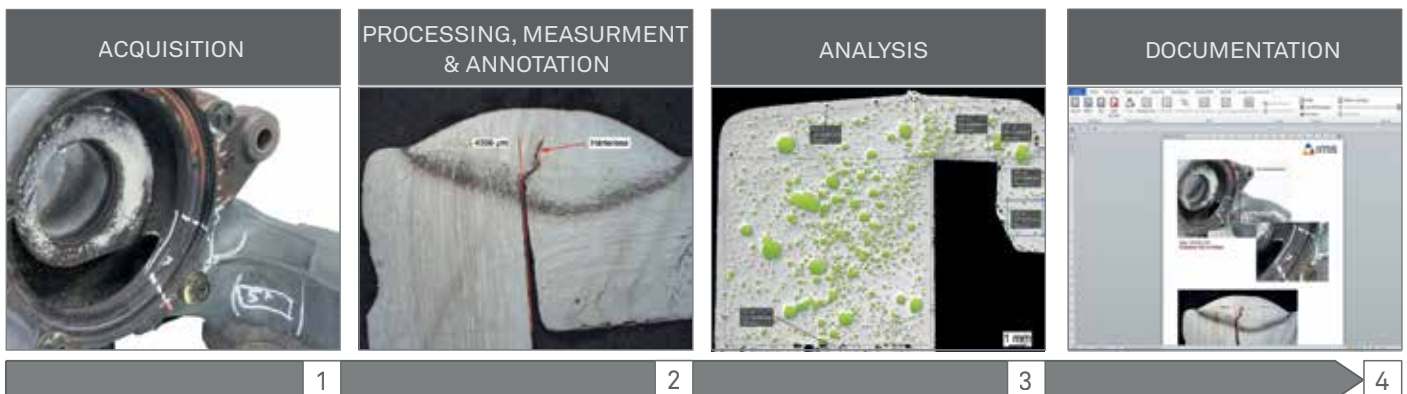
IMS: FROM ACQUISITION TO REPORT

IMS's main goal is the intuitive, device-independent control of all image-oriented tasks, from acquisition to report.

We want to free you from continuously switching between applications. Starting with image acquisition using any of your image sources, to analysis, and processing of images, to gathering of meta data of individual image formats for a report – and last but not least, while processing your images and data for the report itself.

Once you can perform all these tasks in a single application, you save an enormous amount of time for your essential tasks in the lab – and automatically become more productive.

IMS achieves this broad range of functionality with flexibly adaptable workplaces which are tailored to the individual scope of duties. No matter whether you're acquiring panorama images at a microscope station, get a 3D image computed at a macro station, analyze an image series in your office, or finish an automatically generated report with the recorded images and data: You always work with the same familiar user interface.

IMS consists of modular components and flexibly adapts to your needs and desires for extension: IMS scales from a cost-efficient single-workstation lab system to multi-location, company-wide solutions with distributed databases, automated data synchronization, coordination with LDAP user management, and LIMS project management: IMS automates all of your image-oriented tasks.

From acquisition to report in one user interface

IMAGE ACQUISITION: READING & CONTROLLING

ONE APPLICATION FOR ALL IMAGE SOURCES

No quality control or research lab has consistently uniform hardware components and applications at its disposal, since no single manufacturer can fulfil all requirements from image acquisition with macro tables, stereo and light microscopes to electron microscopes. A typical lab therefore unavoidably operates a multitude of various hardware and software components.

This leads to a high internal training effort, since learning about and mastering many different applications and appliances is time-consuming and therefore expensive. On top, the constant switching between individual appliances and applications asks for a lot of attention, and gathering and unifying the required documents and data distracts from the actual work in the lab.

With IMS, we offer a unified way of operating all appliances (see homepage) with a single, manufacturer-independent application:

- Automated calibration of all images for immediate measurements, analysis, and report generation

- Controlling of Canon EOS cameras and reading of EXIF and IPTC data from standard SLR cameras [1]

- Controlling of motorized microscopes and reading of encoded microscopes by Leica and Zeiss [2]

- Controlling of cameras by Jenoptik, IDS, Leica, and Zeiss on any light microscopes [3]

- Reading of relevant meta data from digital microscopes by Keyence, Hirox, Leica, and Olympus, from scanning electron microscopes by Bruker, Camscan, Ditabis, EDAX, FEI, Gatan, Hitachi, Jeol, Oxford, Philips, Point, and Zeiss, as well as from laser scan microscopes [4]

| 1 | MACRO STAND WITH CANON EOS CAMERA | 2 | MICROSCOPES BY LEICA & ZEISS |

ACQUISITION CLIENT (IMS)

| 3 | OTHER MICROSCOPES WITH VARIOUS CAMERAS | 4 | DIGITAL, ELECTRON & LASER MICROSCOPES |

IMS is the central control station for all image sources in the lab

REPRODUCIBLE MICROSCOPY: TIME-SAVING & ERROR-FREE IMAGE ACQUISITION

As a microscopy professional, the problem of perfect image acquisition is all too familiar to you: Adjusting camera and microscope can be very time-consuming, depending on the acquisition mode. Days or weeks later, you need to acquire a similar image, and start adjusting camera and microscope from anew.

IMS offers, for all supported cameras and motorized microscopes, reproducible microscopy: With a single click, camera and microscope are reset to the settings of a previously acquired image. From now on, all images are acquired with the same identical settings – without any further adjusting of the microscope.

Acquisitions with complex settings can be executed quickly, even by less experienced users. On top of the time you save by not having to adjust the microscope for every image, you also automatically ensure that no errors are introduced, and that your image acquisitions follow a systematic workflow, as required by your ISO certification.

IMAGE ACQUISITION: SPECIAL MODES

**«DIFFICULT» SAMPLES – NO PROBLEM WITH IMS!**
Overexposed sample areas, insufficient depth of field, too small image crops: Compromises in image quality can become expensive quickly if small errors or defects are ignored, and the corresponding images have to be acquired again.

IMS offers you a comprehensive palette of acquisition modes such as HDR, Multifocus, Scanning, and Image Stitching, each of which you can use in manual or automated mode.

On top, IMS offers a unified user interface for all camera and microscope models, as well as storable templates which allow reproducible image acquisitions.

HDR: CONTROL REFLEXIONS AND CONTRAST
It's not always possible to avoid reflexions or over- and underexposed areas in complex images. With the automated HDR acquisition mode, you are now able to easily acquire per-
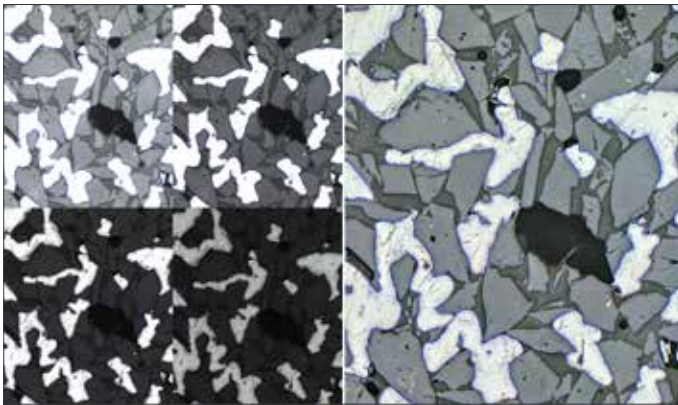

HDR ensures even brightness distribution

fect images even from samples previously known to be tricky: You expose for each the brightest and the darkest area of the sample. IMS then determines the optimal number of individual images, controls the camera/microscope system for the acquisition of the entire series of individually exposed images, and computes a result image which is free of over- and underexposed areas: All with just one click.

MULTIFOCUS: INFINITE DEPTH OF FIELD
Whether you're working at the microscope or at the macro table: Often, not all important sample areas can be captured sharply with the desired magnification. Now, with the fully automated Multifocus acquisition mode, you're also able to acquire these images with infinite depth of field: You focus the top and bottom parts of the sample. IMS determines the optimal number of individual images of consecutive focal planes, controls the camera/microscope system for the acquisition of the entire series of individual

images, and computes an optimized image with infinite depth of field: With just one click.
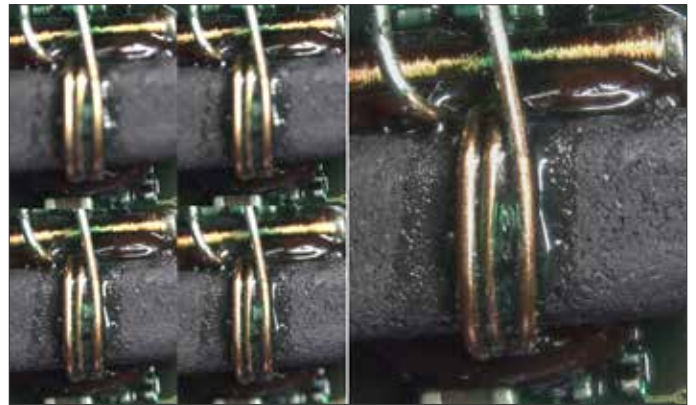
Infinite depth of field thanks to Multifocus image acquisition

Multifocus in manual mode is just as easy: Simply adjust for each focal plane needed, and click once for each individual image.

ACQUIRE 3D IMAGES
A 3D perspective of a sample is often more significant than a lot of words. With your motorized Z drive, adjust the focus for each the top and bottom parts of the sample, and - click: IMS automatedly acquires a 3D image of your sample. The interactive 3D viewer allows viewing of the sample, and saves any desired perspective as a 2D image together with the sample images in IMS with just one click.
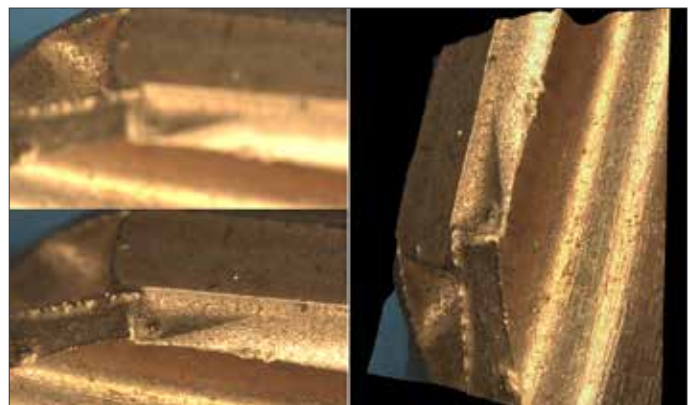
3D images allow realistic perspectives of samples

AREA SCAN: MAXIMAL OVERVIEW
Even with high-resolution cameras, it is often impossible to acquire images of large samples in high resolution in one step. With the intuitive Scan Controller, you just need 3 clicks to acquire even complex overview images:

Using the live image, find the top-left start position, then the bottom-right end position [1].

With a click, the entire sample is now scanned automatedly, and individual images are acquired and displayed [2].

The individual images are automatically composed to a final image, all color and brightness transitions such as shading are eliminated completely: The perfect overview image is finished [3].
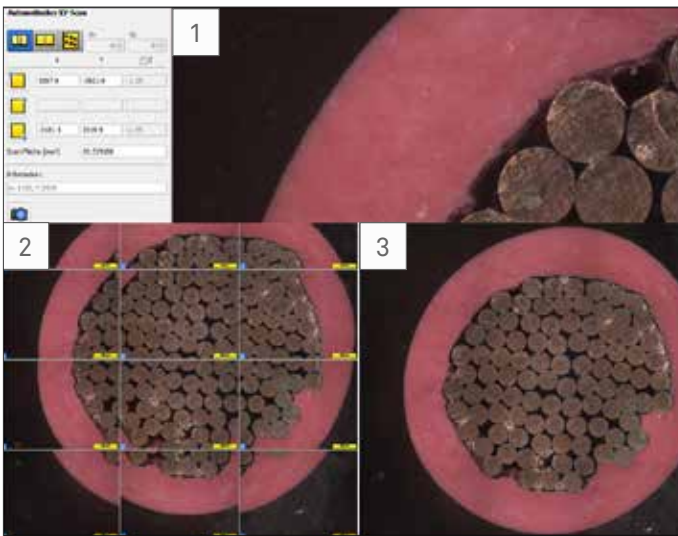
Scan large samples, and compose overview images

With the intuitive Scan Controller, you perform area scan acquisitions in any mode with just a few clicks:

The Overlap Mode, as described above, eliminates all position imprecisions, and thereby grants for optimal quality even if the images are acquired with less precise XY tables or older microscopes with significant shading.

The Neighbor Mode also automatedly scans the entire sample, but fits the images precisely next to each other to compose a result image. This mode is very fast, since no overlap computations are necessary, but requires a precision XY table and shading-free illumination.

The Distance Mode acquires individual images over the sample area in definable distances, which you may use for statistical analysis of the sample area.

For non-planar samples, the Scan Controller adjusts a motorized Z drive during acquisition to grant for perfect focus over the entire image area. If your microscope doesn't have a motorized Z drive, we'll be happy to show you motorized scanning tables from various manufacturers to upgrade your microscope.

IMAGE STITCHING: WATCH LIVE IMAGE CREATION

Photographing long or irregularly formed samples quickly can become difficult, and a large area of the image contains less interesting areas of the sample.
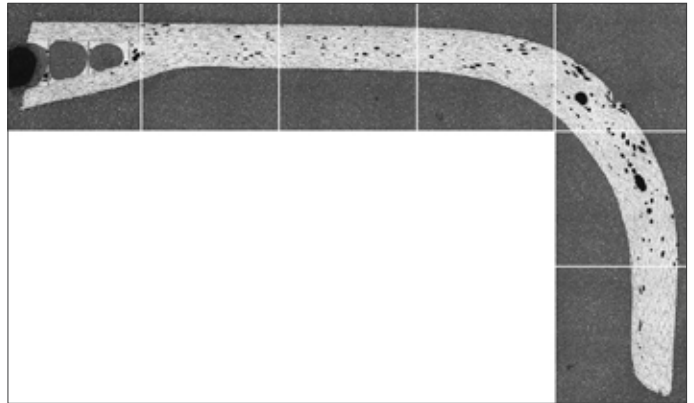
Stretched, irregular sample

Automatic image stitching supports you in this situation with an acquisition mode for interactive scanning of an image. Start the acquisition, and scan the desired sample area with your manual XY table, using the live image: IMS continuously stitches the scanned sample areas, and displays the current overview image directly onscreen.

MORE QUALITY AND COMFORT: COMBINE ACQUISITION MODES

On top of offering the special acquisition modes HDR, Multifocus, Scanning, and Stitching, the Acquisition Window also offers these modes in almost any combination. Simply select the desired modes, e.g. HDR and Multifocus, and let IMS compute the result image in a matter of minutes fully automatedly, with just one click.

The various acquisition modes are combinable

IMAGE MANAGEMENT
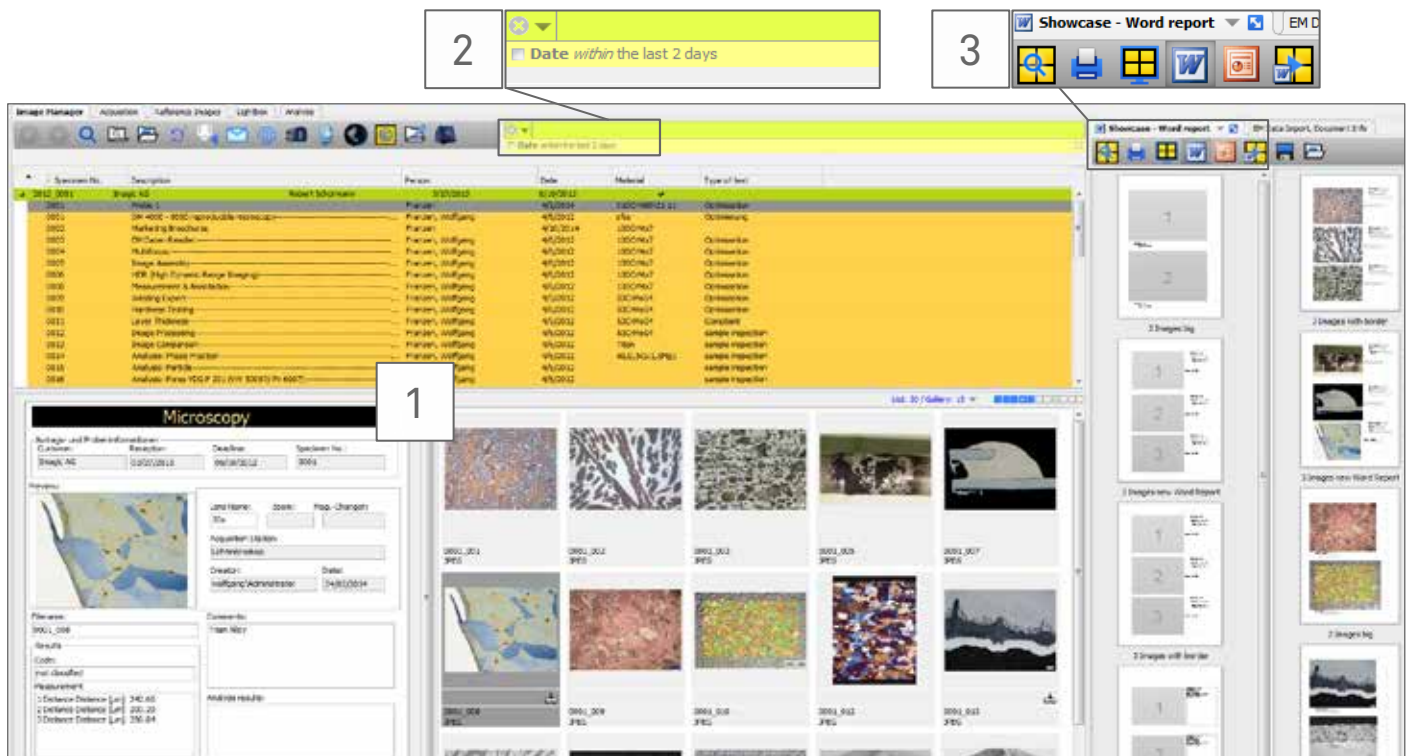
The IMS Image Manager is the starting point for all image processing tasks

An industry lab produces countless images, analyses, and reports in thousands of hours of work every year. The value of the data and knowhow gathered in this way over the years probably exceeds the value of many a production machine.

From this point of view it seems even more useful to have easy and fast access to this knowledge at any time.

IMS stores your entire lab data, including information about tasks, centrally and over many years, allowing you to access new and older images, measurement data, and documentation, without any latency, at any time.

ALL DATA AT A GLANCE [1]

The Image Manager included in your IMS workplace is the command center for all your image-oriented tasks and data. In a deliberately simply designed user interface without any overlapping windows, you get a quick and comprehensive overview of your tasks and samples, documents, analyses, and reports. With just one click, details are displayed, and you still keep a good overview at all times.

No matter whether you acquire an image in the lab, analyze it later on a different computer, or then use it to create a report in your office: All your data is centrally stored and available to you on any computer at all times.

INTERNET–LIKE QUICK SEARCH [2]

Even with thousands of tasks, samples, and images, you won't have to spend time browsing in lists or galleries for the desired image or document. Just as when searching on the Internet, type any search terms such as task or sample number, image source, measurement value, or words in a comment in any order into the single search field: In a matter of seconds, all matching tasks, projects, samples, and images are displayed. Trim down the found entries further by adding more terms: You've never had more intuitive access to your entire task, sample, and image data inventory.

FLEXIBLE PROCESSING [3]

From this overview, all available functions in the workplace are at your disposal: Image acquisition, processing, analysis, measurement & annotation, as well as reporting.

Whether you start an entire workflow with a click, or move the images manually by drag-and-drop: The intuitive user interface executes all functions in fullscreen mode. Your work is focused and efficient, without any distractions. And you're back in the Image Manager, ready for the next task, with a single click.

PROCESSING, MEASUREMENT & ANNOTATION

IMAGE OPTIMIZATION

Even with the best acquisition technology, you may sometimes wish to process images after the acquisition, be it for elimination of artifacts or to simply crop the image.
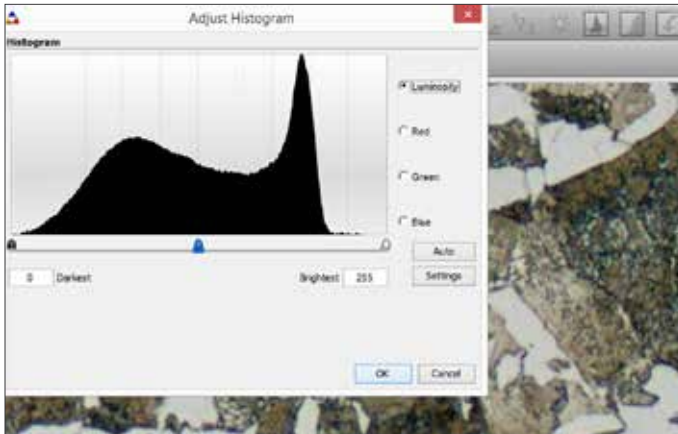

Interactive and automated image processing functions

IMS offers you an entire palette of image processing functions which you may use individually and interactively, combined, or automated with your own macros directly during image acquisition.

MEASUREMENTS & ANNOTATIONS

Measuring and annotating image elements is one of the main tasks when creating a quality report. IMS provides all basic measurement functions such as single and multiple distance, area, circle, and angle measurement, as well as an object counter, callable with a single click directly within the image, and pixel-perfect thanks to precision calibration for any magnification. You automatically execute all tasks in accordance with ISO standards.
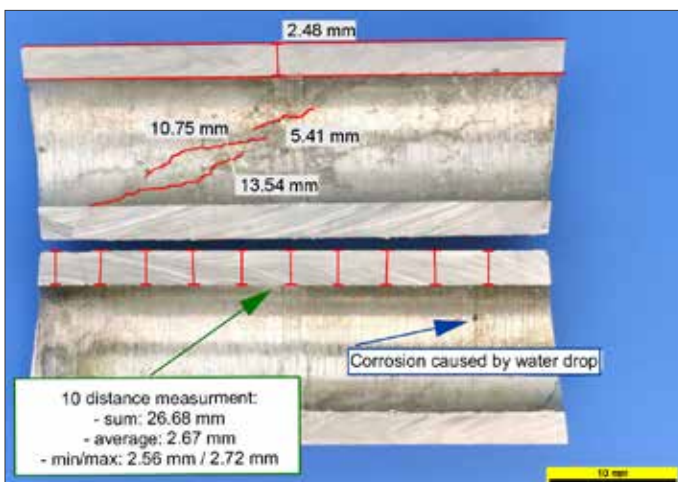

Measurements and annotations for documentation

SPECIALIZED MEASUREMENTS

To measure parallel courses, multiple distances from a base line, layer thicknesses, weld seams, and hardness indentations in seconds, specialized functions are at your disposal. Or you use IMS to acquire a 3D image of a sample, and perform an automated surface roughness analysis.

LIVE MEASUREMENTS

You don't always have to acquire an image to measure it: Perform measurement series directly in the live image with automated export of the measurement data to Excel® to simplify and speed up statistical analysis of sample series: Use IMS as a live measurement workplace.
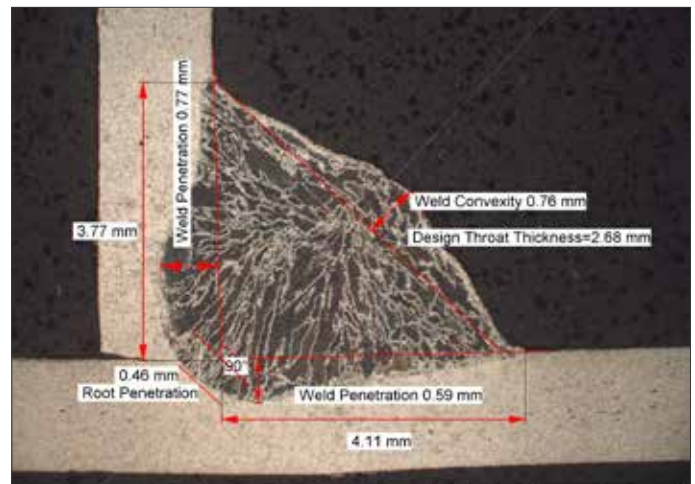
Efficiently measure weld seams with guided processes

AUTOMATED WORKFLOWS

Create your own measurement workflows with step-by-step user guidance to also allow less experienced users to execute complex multiple measurements without any previous training.

ANNOTATION OPTIONS

To emphasize image contents, annotation functions such as line, arrow, circle/ellipse, rectangle/square, and text field are available. You may insert task, sample, and image data, as well as watermarks, into the image.

OVERLAY VISIBILITY

All measurements and annotations are executed on their own layer, and can be switched on or off individually without changing the original image. When exporting the image as a file or as an e-mail attachment, you may select measurements and annotations you wish to merge with the image.

IMAGE ANALYSIS

1 IMAGE SELECTION	2 ANALYSIS SELECTION	3 REPORT

From image selection to completed analysis report in 2 clicks

Once a matter of hours and only achievable by analysis specialists, quantitative image analysis including report generation can now be executed automatedly using the IMS modules described below.

With the interactive user interface, you create tailored analysis templates for all of your sample types in a few simple, guided steps:

- Select the images to be analyzed in the Image Manager [1]

- Click on the desired analysis template [2]

- The entire analysis process including the final single-image or cumulative report over all images is being executed and displayed in seconds [3]

If needed, you may manually adjust the process at any time and change individual settings. The analysis is then executed again immediately, and the updated results are displayed. The structure of the report, the included images, result lists, and graphics can be selected individually. The interactive report editor supports you, and displays data immediately in the chosen format.

Store your report as a Word® or PDF file directly in the Image Manager, together with the original images or the intermediate images created during the analysis.

Export the analysis data directly to Excel® for further calculations and evaluations. Also these documents can be stored directly in the Image Manager: You have all original images, reports, and calculations at your disposal in one place.
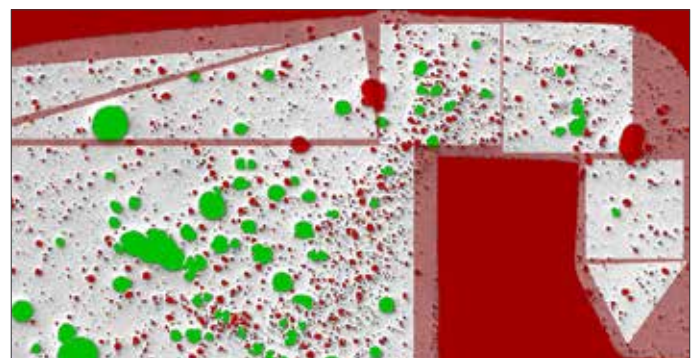
PHASES
Determine phases in materialographic microsections using interactively selectable thresholds.
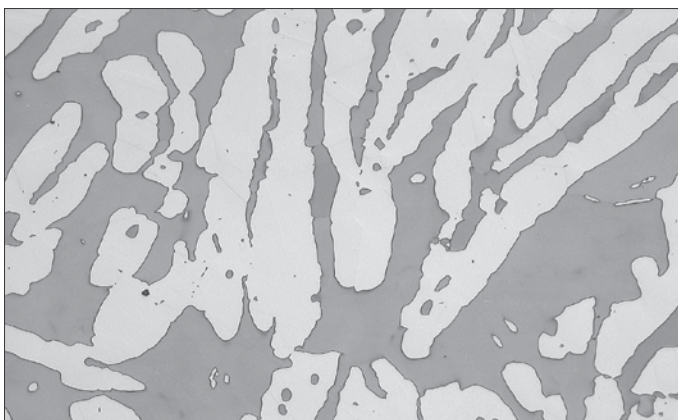
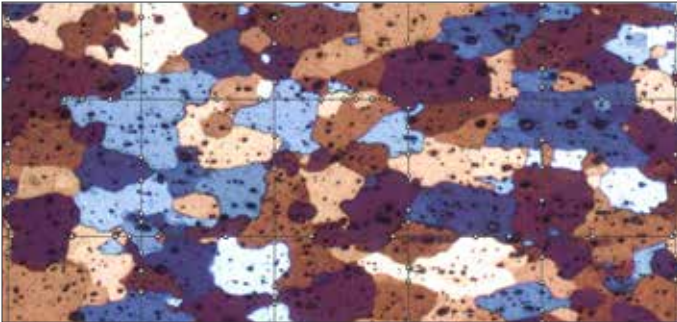Phase analysis

PARTICLE/POROSITY (E.G. VDG)

Particle/porosity analysis

Measure and classify the properties of particles, as well as the porosity in cast components or weld seams in accordance with VDG Reference P201E. Pre-filters, thresholds, regions of interest (ROI), as well as manual and automatic corrections are at your disposal.

GRAIN SIZE (E.G. EN 643 / ASTM E112)

An important and often-used analysis method in metallurgy is grain size analysis in accordance with the standards DIN EN ISO 643 and ASTM-E112.

Grain size analysis

For the determination of the G value, IMS uses the linear intercept method which yields additional measurement values such as the average grain area or number of grains per area, and also allows evaluation of grain area etchings such as Barker etchings.

For difficult samples with indistinct grain boundaries, you may move, erase, and amend boundaries interactively directly in the image.

LAYER THICKNESS

With the module Layer Thickness you will reduce the time used for analyses and for measuring linear and bent layers such as hardenings, varnishes, and coatings to a couple of seconds.


Layer thickness analysis

With manual or automatically determined settings for the desired measurement lines, the module automatically computes up to 8 layers, and compiles all measurement values into a table, which you may export directly to Excel® for further evaluations.

Measurement reports and series of measurements may be stored directly in the Image Manager, and loaded again for further processing.

CAST IRON

Analyze the microstructure of graphite in cast iron according to the EN ISO 945 standard. In addition to graphite size (blade length), graphite form, and graphite array, also the nowadays familiar parameters graphite fraction, nodularity, graphite particles (absolute and per area), and ferrite/pearlite ratio are automatically computed.
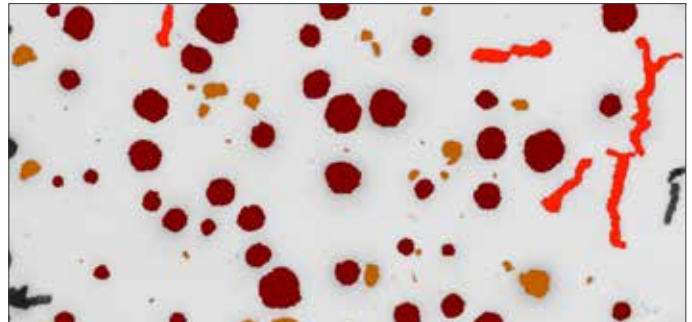

Cast iron analysis

STEEL CLEANNESS

For quality assurance in the steel industry, automatically determine the purity level of steel samples according to the standards EN 10247:2007, DIN 50602:1985, ASTM-E45-05, ISO 4967:1998, JIS G 0555:2003, and NF A 04-106:1984.

Sulfide and oxide inclusions are automatically detected, analyzed, and classified. Geometric parameters such as size, form, arrangement, and color are determined. The amount of samples to be analyzed and the size of the measurement areas are virtually unlimited.

Compared to a manual evaluation with visual comparison, you gain objective, reproducible results, and a lot of time.
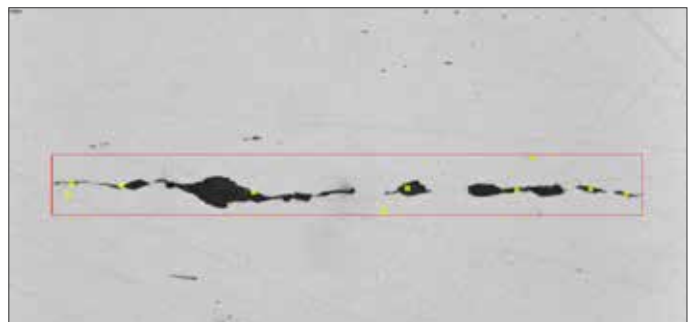
Steel cleanness analysis

DOCUMENTATION

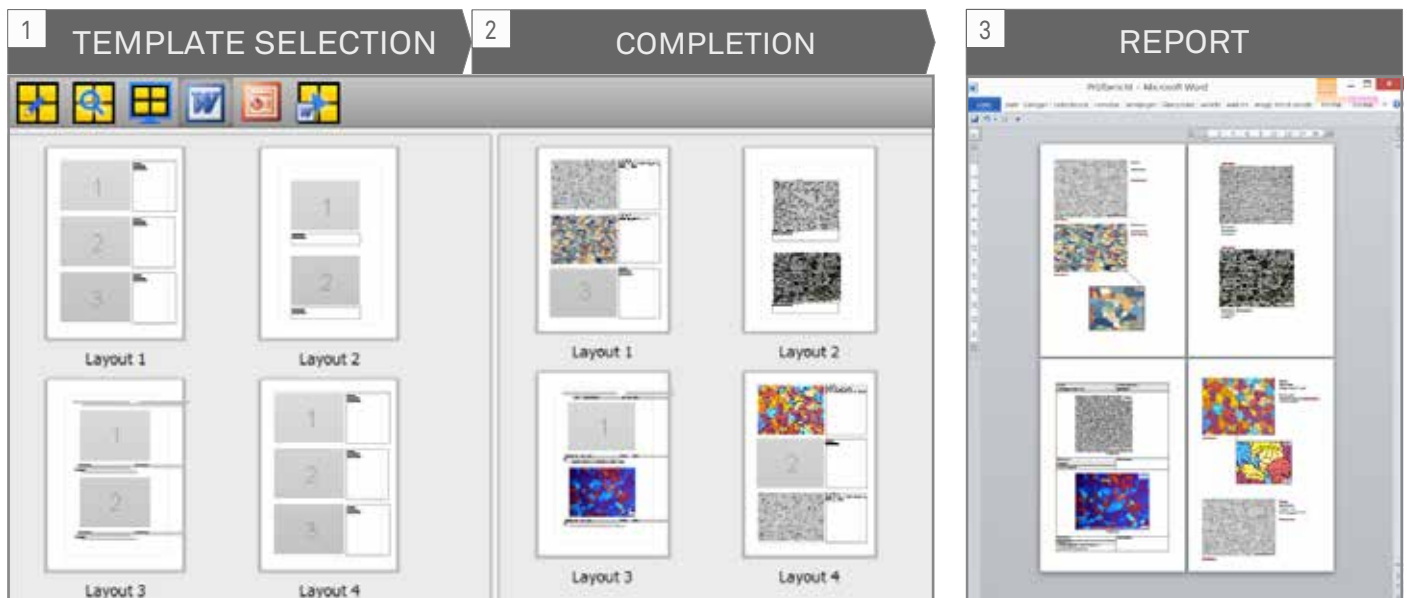| 1 TEMPLATE SELECTION | 2 COMPLETION | 3 REPORT |

Image selection, filling of templates, and completed Word® reports in seconds

Images are acquired, evaluated, and stored. To share the results of these lab analyses with colleagues, customers, and vendors, images are inserted manually into quality and incident reports, meta data is added, the reports are potentially converted to a suitable format, and sent off. Creating reports is typically a very time-consuming process, images and data have to be gathered from various sources, and converted to a unified format.

SHOWCASE: REPORTS WITH JUST ONE CLICK
IMS manages all images and data from your lab image sources in one central place. Using Showcase, creating a report in Word® is a matter of a few clicks:

- Select a report template from the Showcase window [1]

- Drag-and-drop the desired images from the Image Manager to the Showcase [2]

- If needed, simply select another template, combine landscape and portrait, exchange any images per drag-and-drop in the Showcase until you are satisfied with your report

- Click: The Showcase is being converted to a Word® document in a matter of seconds [3]

IMAGE PROCESSING DIRECTLY IN WORD®
Even though the Showcase generates a complete report ready for printing, you still may wish to adjust certain images, e.g. to crop an image, to zoom in to certain image areas, to add zoom reference images, or to add measurements to an image.

The IMS report module, implemented as a ribbon in Word®, offers all of these functions with just a click:

- Change or add a measurement in an image?
  No time-consuming searching for the image, re-processing and re-inserting into Word®: Simply click „Show Image", and the image is found in the IMS Image Manager, opened, and can be directly measured. The updated image is displayed in the report immediately.

- Zoom out from an image section or display in real resolution?
  The report automatically opens the original image, and displays the desired image section in optimal resolution, complete with updated calibration bars and magnification information.

- Insert images automatically in standard magnification?
  Standard magnification as well as fixed magnifications can be selected and adjusted individually for each image.

PUBLISHER: THE IMS WEB VIEWER
Using Publisher, you grant your colleagues or vendors a simple and fast access to selected data. Select the desired files in the Image Manager, and with a click, IMS creates a web link. Send this link via e-mail or chat to your colleagues: A click on the link will open the images for viewing or downloading in the recipient's Internet browser, without having to install a special application.

IT & SERVICES

IMS FITS INTO YOUR IT ENVIRONMENT
The IMS system builds on a client/server architecture, and by this, allows for a cost-efficient scalability from single lab workstation to comprehensive, company-wide solution with multiple servers and distributed acquisition, analysis, and office workstations.

SIMPLE INSTALLATION AND MAINTENANCE
This system architecture allows simple installations with minimal maintenance. Previously a matter of many hours or even days of effort for the IT team, installation, maintenance, and upgrading can now be performed in a matter of minutes using simple file distribution and automated workstation updates – saving hundreds of service hours over the years.

COMPATIBLE WITH IT STANDARDS
IMS is completely compatible with current IT standards, and seamlessly integrates with your individual IT environment. On the user side, IMS runs on Windows, Mac, and Linux. Terminal server solutions such as Citrix are fully supported, also for image file imports. On the server side, IMS is compatible with the current MS SQL Server / Oracle database systems on Windows and Unix.

With a click, IMS adopts your IT's LDAP user management, and thereby facilitates comprehensive access management for data and functions across the entire network. Automated user login through SSO, as well as role-based workplace access rights are also fully supported.

ALL DATA CENTRALLY MANAGED
Automatic task import from your LIMS grants unified workflows and central management of all images, documents, and meta data in your secured database and document servers allow for standard compliant data management.

IMS offers a log history of all document manipulations (audit trail) as well as time-triggered removal from storage of scarcely used documents to cost efficient long-term archives.

For large systems with installations across locations, all data from external locations can be synchronized with a central database in a time-controlled manner. Costly server solutions with large storage and backup requirements are no longer needed at external locations.
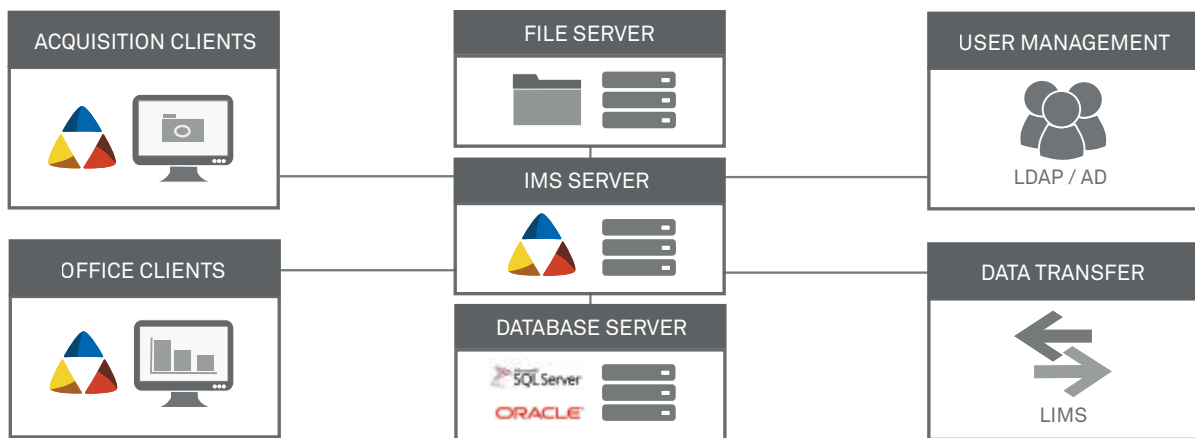
IMS seamlessly integrates with your IT environment

OUR SERVICES: PERSONAL & RELIABLE
As a system provider, we don't only feel responsible for providing you with the best hard- and software components, but also with long-term support. From first contact to installation, training and maintenance of the productive system, your personal Imagic sales and support representatives care for you along the way.

ALWAYS UP-TO-DATE
We offer software maintenance contracts to keep your system up-to-date at any time over its entire lifespan. With the corresponding test system, you may at any time test the

newest functions, additions, and improvements specifically for your environment, in parallel with your running productive system.

HOTLINE
To keep your productive system up even if technical difficulties should occur, our hotline is there for you during office hours. Additionally, we offer the possibility to remotely service your system.

CONTACT

We're there for you at the branches listed above.
Contact us for a personal, non-binding demonstration in your lab,
with your equipment and samples.

We're looking forward to your call.

Your Imagic team.

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IMS