CLEMEX
Pixel-Perfect Analysis

Reliable inclusion rating solution

CLEMEX CIR

Non-metallic inclusion analysis in steel

Speed, accuracy, intelligence

Clemex CIR can analyze areas of 160mm² in less than 2 minutes. Display accurate and repeatable results classified by heat and sample.

Analyze multiple samples

Save time by analyzing up to 24 unmounted samples from multiple heats in the same run, in less than an hour.

Understanding your challenges

Easy to learn software

Withits user-friendlyinterface, our automated inclusion rating system is advanced yet simple to operate. On-site commissioning is performed by an applications expert.

Mounted samples may not be uniform

Samples varyin size and are usually not set in exactly the same location on the mount. We have added a convenient edge-tracking feature to make sure no time is lost on manual adjustments.

Specific sample holder

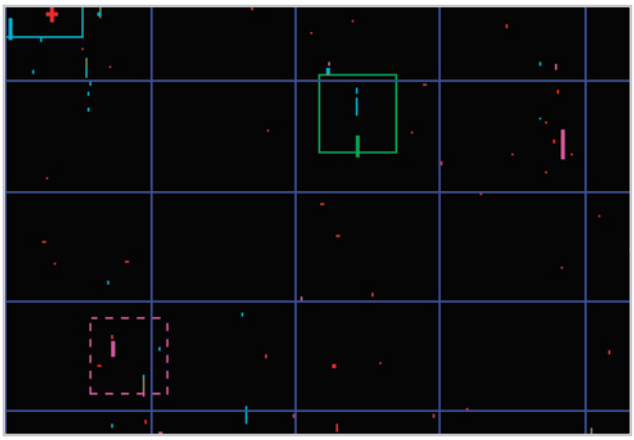
Choose fromourrange ofoptional sample holders for mounted or unmounted samples. We can also design one specifically for you.

International standards

Conforms with ISO 4967(A, B), EN 10247, ASTM E45 (A, C, D, E), DIN 50602 (M, K), JIS G 0555. Clemex CIR is flexible enough to adapt to various standards.

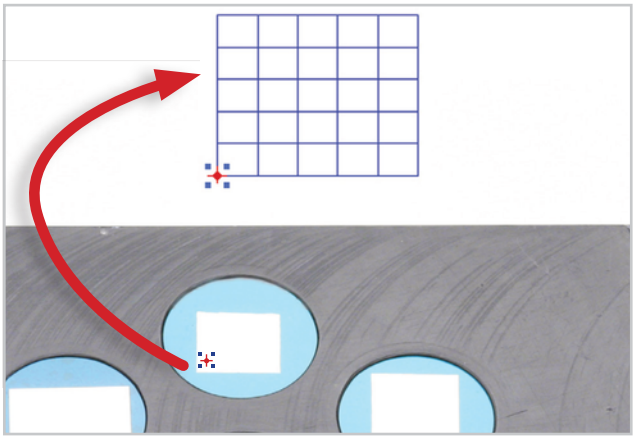
The fastest & most reliable inclusion rating solution

When it comes to quality, laboratories and steel mills choose Clemex CIR to meet corporate and industry specifications for inclusion rating. This solution allows laboratories to vastly improve their productivity by analyzing inclusions automatically with impressive speed, accuracy, and repeatability. Clemex CIR can analyze an area of any size. The standard 160 mm² for ASTM E-45 takes less than 2 minutes and 200 mm² for ISO 4967 takes less than 3 minutes.



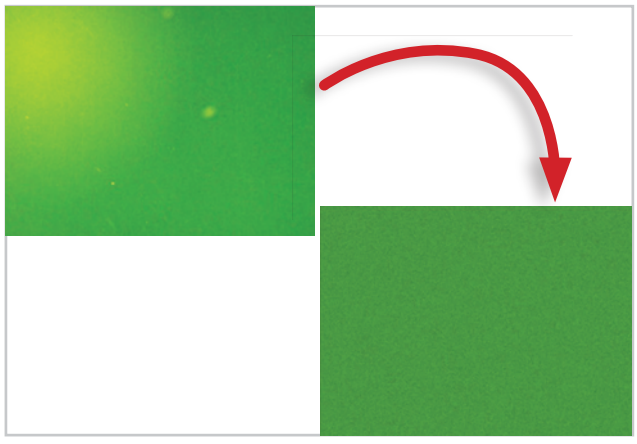
Multi-field mapping of entire sample

Locates and maps inclusions of the entire sample area, aligned vertically or horizontally. Worst fields are identified rapidly and artifacts can be removed. Operators switch from one sample to the other with ease. The blue rectangles represent microscope fields, while colored squares are worst field frames.



Auto-detection of sample edges

Automatically finds the physical edge of each sample to create stage patterns that cover the required surface area. For mounted samples, when the steel sample is not exactly the same size or in the same position each time.



Unique shading corrector feature

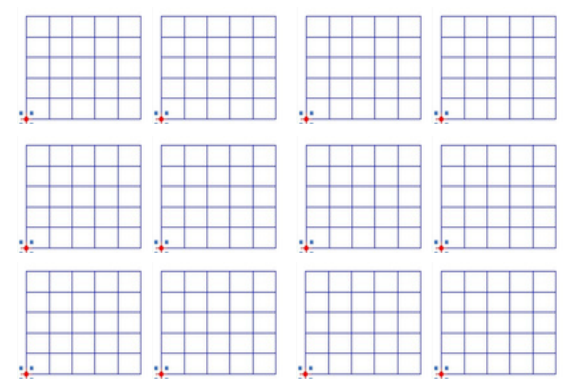
Ensures even illumination for all images, for an accurate classification of inclusions and artifacts. The image on the left was captured without a shading corrector. A pseudo-color LUT was applied to show the differences in gray level variation.

Inclusion rating in 3 easy steps

Clemex CIR's easy to use interface allows operators to master the program's functionality with minimal training. Once easy-to-follow setup procedures have been established the system can analyze up to 24 samples with virtually no operator intervention. After completing the run, results can be validated using Clemex CIR's inclusion map.

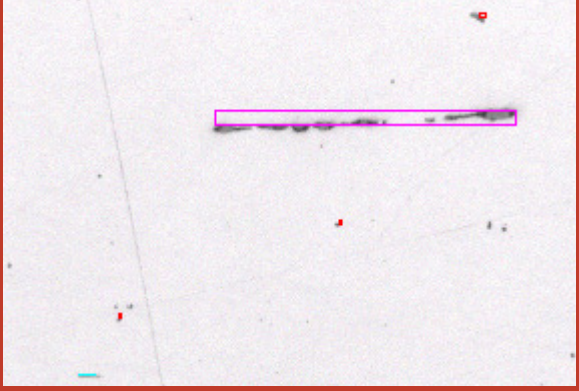
Step 1

Loadthesample holder



Step 2

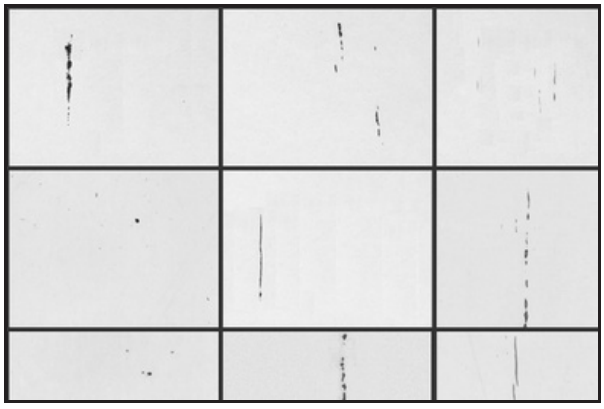
Click Start



Step 3

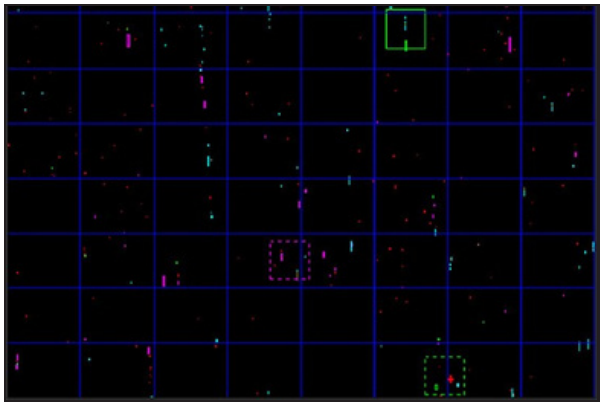
Get results

Product Features



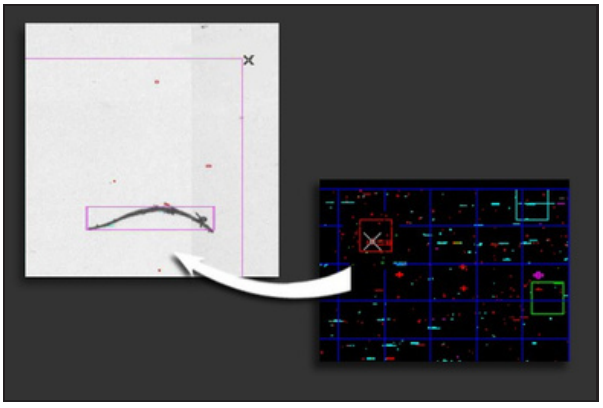
Different Types of Inclusions

Ratings based on international standards. Classify different types of inclusions: Sulfides (A), Aluminates (B), Silicates (C), Globulars (D), Single Globulars (DS), Borides, Carbides, Nitrides (XxCN).



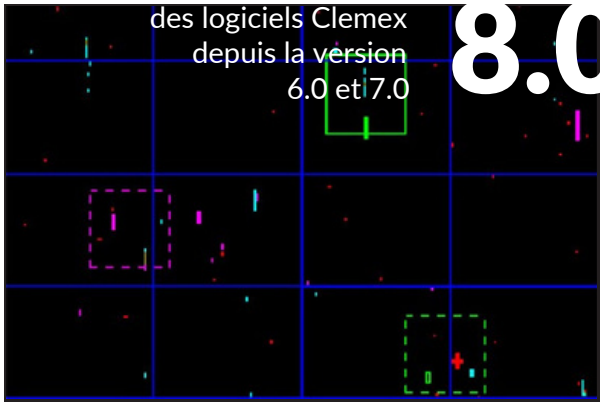
Intelligent Sample Map

The Sample Map feature stores the coordinates of each analyzed object in multiple-field environments. Operators can navigate between different samples and validate inclusions, whether few or hundreds have been detected.



Traceable Objects

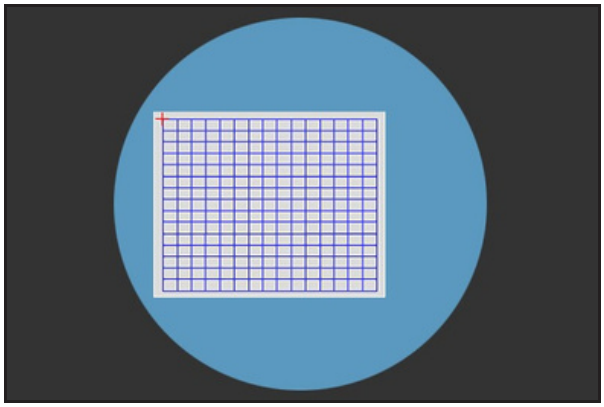
The location of all inclusions and artifacts is registered on the interactive sample map, which allows the user to move the stage to the selected field with a simple click of the mouse. Artifacts can be eliminated from a particular field.



Worst Field Rating

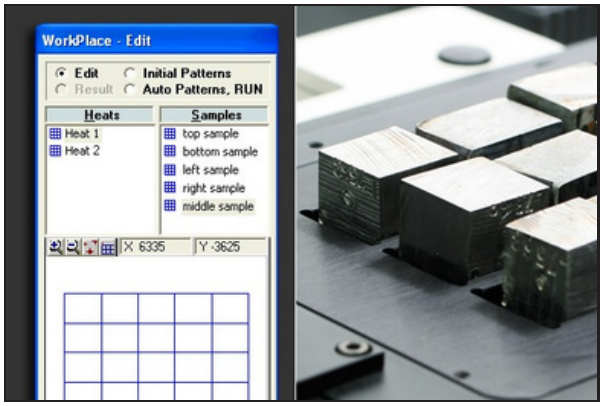
ASTM, ISO or DIN worst fields are identified automatically. Solid lines show heavy inclusions, whilst dotted lines represent thin inclusions. Worst fields are displayed visually on the sample map using colors that correspond to inclusion types.

Product Features



Auto-Create Pattern

Clemex CIR finds the sample edges to automatically create a scanning pattern of 160 or 200 square mm or the total sample area.

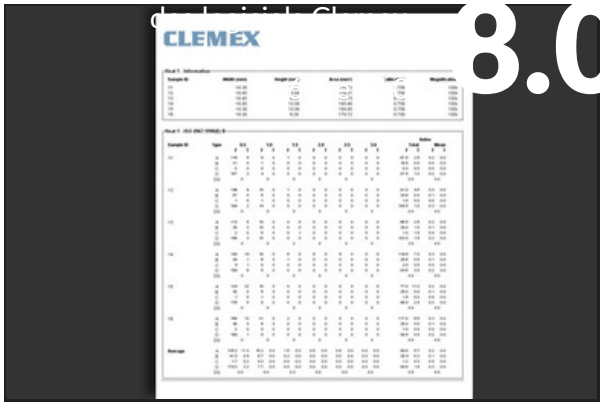


Different Heats in Same Run

Samples can either be processed one at a time or grouped in any combination of heats/samples with up to 6 heats of 6 samples per run.

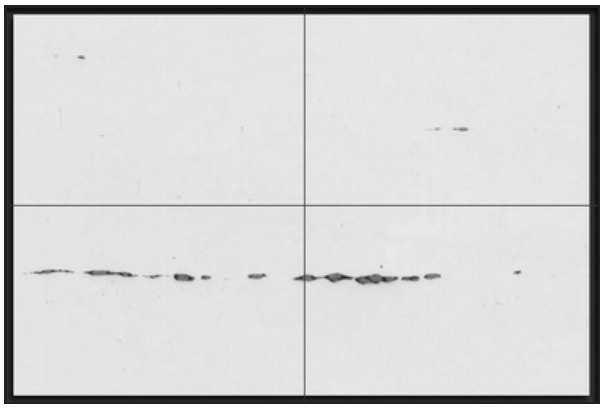
Mounted and Unmounted Samples

High throughput laboratories, such as in steel mills, usually require analyzing unmounted samples in order to save sample preparation time. Clemex CIR analyzes both mounted and unmounted samples.



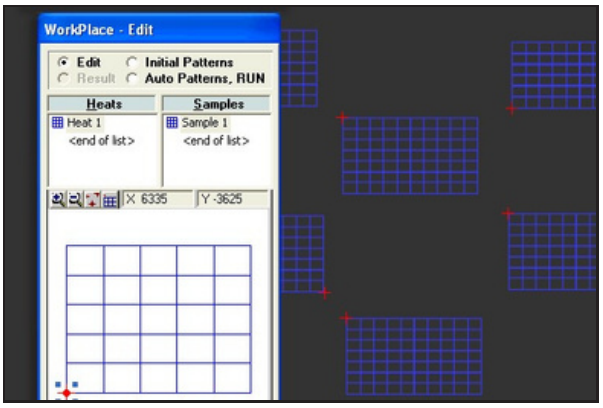
Professional Looking Reports

Reports are automatically generated according to supported standards. Raw data can be exported in MS Excel or Text files.



Inclusions That Cross Fields

Inclusions that run across more than one field are taken in consideration during the analysis, regardless of their size or position relative to microscope field edges.



User Defined Stage Patterns

With its user-friendly interface, Clemex CIR allows you to create custom stage patterns in a matter of seconds.

Related Web Reports

Inclusion ratings in steel

Inclusion rating in steel ASTME45

Inclusion rating in steel DIN 50602

A Commitment to Excellence in Imaging

Clemex is expert in complex and simple microscopic image analysis applications in:

- Raw Materials
- Powders Metal Parts
- Contaminants
- Custom Applications

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