

# Introduction of ultracam software

ultracam analysis software for microscopy with an intuitive user interface and simple to use navigation with a suite of image processing techniques, measurements and enhancement tools that set it apart from other mainstream softwares.

Such image processing softwares are now being extensively used in a number of diverse fields such a medicine, biological research, cancer research, drug testing etc.















#### SALIENT FEATURES

- Any DirectShow Camera
- Time Laps Capture
- Browse Gallery
- Manage Client Profiles

- Annotations
- Advanced reporting(PDF, Excel)
- Windows 10/8/7/VISTA & XP compatible
- Live Measurements

#### MODULES

- Measurements
- Grey Cast Iron
- Nodule Analysis
- Cementite

- Segmentation
- Coating Thickness
- O Count & Classification
- O Ductile Cast Iron
- Grain Size
- Porosity
- O Decarburization

#### APPLICATION SCREEN



















-Industry Pro is an image analysis software for Metallurgy. It is a windows-based application. K-Industry Pro provide various superior tools for image capturing, visualization, enhancement, analysis and report generation. Our Imaging Solution is a powerful integration of software and hardware that enables metallurgist to automatically capture images, performs metallurgical analysis and generates reports. All modules as per international standards. Customized report design support available.

#### **AVAILABLE MODULES**

- Linear Measurements (Measurements)
- Decarburization (Decarb)
  - Total Decarb Method
  - Trace Method
- Coating Thickness
- Nodule Analysis
- Flake Analysis
- Porosity Analysis
- Count & Classification
- Particle Size (Manual Method)
- Phase Analysis (Segmentation)
- Grain Analysis
  - Heyns Lineal Intercept Method
  - Abrams Three Circle Method
  - Heyns Abram Intercept Method
  - Random Line Method
  - Comparison Method
- Cementite (Iron Carbide)
- Inclusion Analysis

## Linear Measurements (Measurements)

There are 14 different linear tools

- 1. Line
- 2. Freehand
- 3. Parallel Line
- 4. Intersection Point
- 5. Perpendicular
- 6. 2 Line Angle
- 7. 3 Point Angle
- 8. Circle from centre
- 9. 3 Point Circle
- 10. Len Circle Centre
- 11. 2 Circle Distance
- 12. Concentric Circle





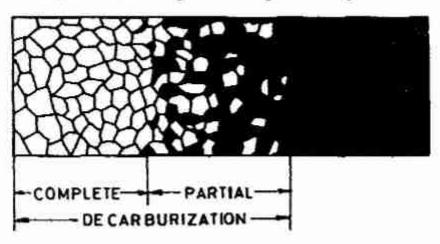
Freehand Area 14. Rectangle

## 1. Decarburization (Decarb) (ASTM -E1077)

Total Decarb Method

#### Decarburization

It is the loss of carbon from the surface layers of steel at high temperatures under oxidizing conditions. Decarburization may be complete or partial

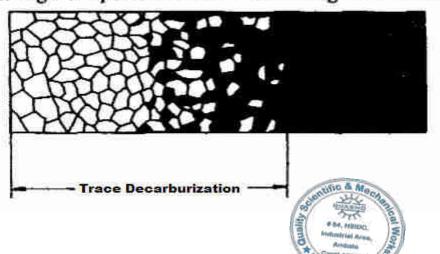


PARTIAL AND COMPLETE DECARBURIZATION

Trace Method

#### Decarburization

It is the loss of carbon from the surface layers of steel at high temperatures under oxidizing conditions.





#### 2. Coating Thickness (ASTM-B487)

- User defined configurations with filter conditions
- Image enhancement functions
- Automatically identifies coating boundary
- Gives MIN/ MAX/ AVG/ STD DEV of results
- Supports multiple samples

### 3. Nodule Analysis (ASTM-247-67/ISO-945-1)

- Using ASTM standard 247-67 and ISO-945-1
- User can define configurations with different filter conditions
- Gives Nodularity by count, Nodularity by area and Nodule size
- Group results using Nodule size 1 to 8

#### 4. Flake Analysis (ASTM-247-67/ISO-945-1)

- User defined configurations with filter conditions
- Detects and group Flakes by type A, B, C, D and E
- Detects and group Flakes by size (1 to 8)
- User can manually set Flake types/correction

#### 5. Porosity Analysis (ASTM-B276)

- User can define configurations with different filter conditions
- User can manually select or unselect a feature
- User can in between switch to Live Video to further analyze a feature by focus adjustment and can select or unselect a feature in processed image
- User can group the selected features intodifferent buckets based on length or area

#### 6. Count & Classification

- o User defined configurations with filter conditions
- o Image enhancement functions for particle detection
- o Analyse and detects particles based on defined configuration/filter
- Analyse particles for length and area
- Can group particles identified into different buckets (user defined) by length, area, width etc



#### Particle Size (Manual Method)

- Analyze and detects particles/features inan image
- User can define configurations withdifferent filter conditions
- Analyze features/particles for length, area, circularity
- o Can group features into different bucketsbased on length and area

#### 8. Phase Analysis (Segmentation)

- o As per standard ASTM E562
- User can define different configurations fordifferent measuring conditions and analysis
- o Can detect Nodules in the image
- Can split phases which has same color range
- O Supports manual point count method forphase analysis

### 9. Grain Analysis (ASTM-E112/E1382-91)

- o Follows ASTM E112, E1382-91, E 1181, and E 930
- Automatically creates grain boundary structure
- Supports Planimetric method
- Supports Heyns Linear Intercept method
- Supports Hillard/Abrams circle intercept method
- User can manually draw grains if structureis not properly visible
- User can add or remove grain boundaryformed
- User can create Custom Grain analysis programs using different image analysis functions that suites different types of grain image

#### 10. Cementite (Iron Carbide) (ASTM-E1268)

- Using ASTM standard E1268
- Can find Carbide percentage

### 11. Inclusion Analysis (ASTM-E1245/E45)

- Using ASTM standard E1245 & E45
- Groups results as per type A, B, C, D andfurther classification as THIN and THICK



## 12. Image functions

- o Image rotation
- o Gray scale
- o Image flipping (horizontal or vertical)
- o Histograms
- o Invert
- o Brightness correction



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