

# **Industry Pro**

Version 8.0

Date: March 30, 2023

## System Requirements

There are some important guidelines to consider before purchasing or upgrading your computer hardware for use with **Industry Pro**.

### *Rule of Thumb:*

Everything depends on memory and speed. For users who want the best possible experience and product performance we recommend that you review the requirements below and follow-up with a review of the hardware priorities to understand how the whole system plays a part in the applications performance.

	Recommended	High Performance
Operating System	Windows 11 Windows 10 Windows 8.1 Windows 7	Windows 11
Free Disk Space	Multi high-speed SATA hard disks or SSDs; 2GB free on installation drive + free space for images (10 GB+)	High-speed SATA hard disks or Solid-State Drive with at least 16GB of free space. Working with large image files and large image sets may require additional free space.
Processor	2.8 GHz CPU Intel quad-core processor or better	3.0 GHz Intel quad-core processor or better
RAM	4GB memory or higher	8GB-100GB memory, depends on # of open images
Drives	DVD-ROM drive if optional DVD purchased	DVD-ROM drive if optional DVD purchased

	Recommended	High Performance
USB Port	Required for hard licenses and offline license activation	Required for hard licenses and offline license activation
Internet Connection	Internet connection required for online services*	Internet connection required for online services*

Industry Pro is an image analysis software for Metallurgy. It is a windows-based application. **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
- Dendrite Arm Spacing

### Linear Measurements (Measurements)

There are 16 different linear tools

1. Line
2. Vertical Line
3. Horizontal Line
4. Freehand
5. Parallel Line
6. Intersection Point
7. Perpendicular
8. 2 Line Angle
9. 3 Point Angle
10. Circle from centre
11. 3 Point Circle

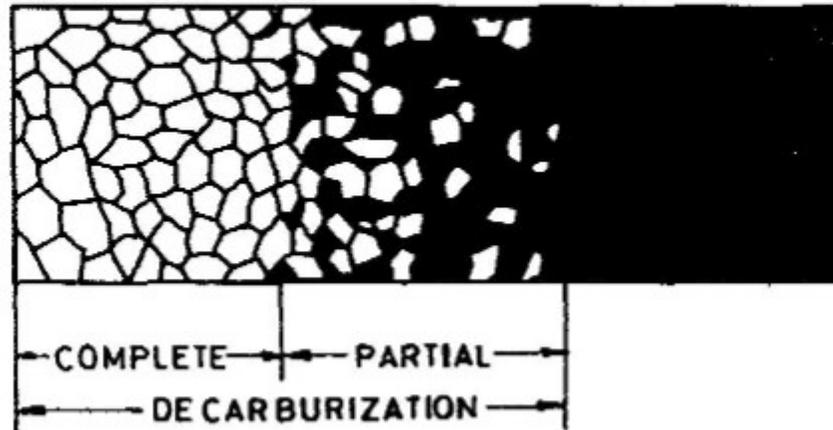
- 12. Len Circle Centre
- 13. 2 Circle Distance
- 14. Concentric Circle
- 15. Freehand Area
- 16. Rectangle

## ✚ 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**

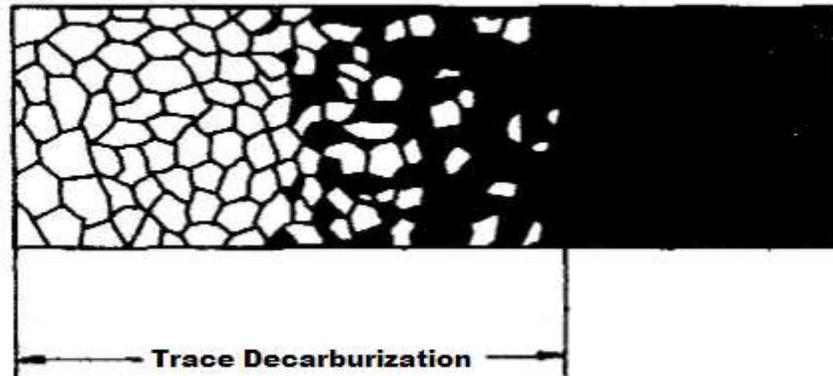


**PARTIAL AND COMPLETE DECARBURIZATION**

- ❖ Trace Method

## **Decarburization**

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



### **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

### **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

### **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

### **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 into different buckets based on length or area

## Count & Classification

- User defined configurations with filter conditions
- Image enhancement functions for particle detection
- 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 in an image
- User can define configurations with different filter conditions
- Analyze features/particles for length, area, circularity
- Can group features into different buckets based on length and area

## Phase Analysis (Segmentation)

- As per standard ASTM E562
- User can define different configurations for different measuring conditions and analysis
- Can detect Nodules/Specific Area in the image
- Can split phases which has same color range
- Supports manual point count method for phase analysis

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

- Follows ASTM E112, E1382-91, E 1181, and E 930
- Automatically creates grain boundary structure
- Supports Planimetric method (Optional)
- Supports Heyns Linear Intercept method
- Supports Hillard/Abrams circle intercept method
- User can manually draw grains if structure is not properly visible
- User can add or remove grain boundary formed

- User can create Custom Grain analysis programs using different image analysis functions that suites different types of grain image

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

- Using ASTM standard E1268
- Can find Carbide percentage

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

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

### Image functions

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