

Porosity Analysis Image Analysis Report 331

Sample Description

Sample of nodular cast iron.

Purpose of Analysis

Demonstrate the ability of the Clemex image analyzer to discriminate and measure the area percent of porosity in the field of view.

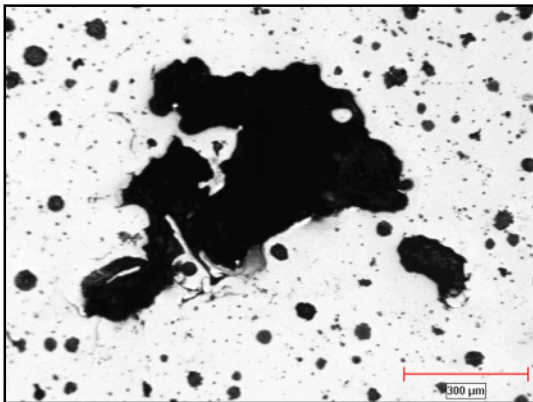


Figure 1: Original image at 100x.

Procedure

All objects are binarized using the *Gray Threshold* instruction. Pores are isolated from the nodules using *Object Transfer by Limits*. The main distinctive criteria used for this purpose were intensity, sphericity and compactness. Porosity and nodules can be measured at the same time allowing a category transfer from the mapping view after the run.

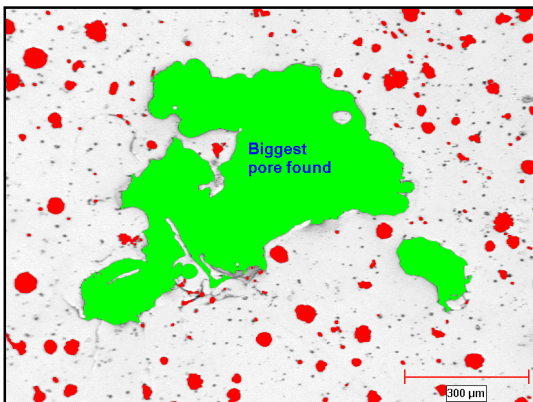


Figure 2: Final detection overlaid against the original image. Pores are in green and nodules are in red.

Procedure (continued)

When the run is completed, you can ask the system to show you a specific object by clicking on it (*Mapping View*). The stage will move to the correct field and highlight the corresponding object

Results Summary

| | FldNo | ObjId | Cat | Area | Length |
|----|-------|-------|----------|----------|--------|
| 6 | 6 | 6 | Dark Nod | 2744.5 | 86.3 |
| 7 | 8 | 7 | Dark Nod | 269.1 | 29.4 |
| 8 | 8 | 8 | Dark Nod | 832.6 | 46.0 |
| 9 | 10 | 9 | Dark Nod | 1536.3 | 67.9 |
| 10 | 10 | 10 | Dark Nod | 1984.8 | 75.9 |
| 11 | 11 | 11 | Dark Nod | 2528.7 | 83.1 |
| 12 | 11 | 12 | Dark Nod | 2007.2 | 73.8 |
| 13 | 12 | 13 | Dark Nod | 2164.2 | 80.9 |
| 14 | 12 | 14 | Dark Nod | 3504.3 | 106.2 |
| 15 | 13 | 15 | Dark Nod | 594.3 | 50.1 |
| 16 | 13 | 16 | Dark Nod | 1213.9 | 60.1 |
| 17 | 14 | 17 | Dark Nod | 4224.7 | 89.3 |
| 18 | 17 | 18 | Porosity | 241222.1 | 845.3 |
| 19 | 17 | 19 | Porosity | 15340.3 | 204.3 |
| 20 | 18 | 20 | Dark Nod | 759.7 | 56.6 |
| 21 | 19 | 21 | Dark Nod | 779.3 | 60.5 |
| 22 | 21 | 22 | Dark Nod | 1875.5 | 71.6 |
| 23 | 22 | 23 | Porosity | 3818.2 | 107.6 |
| 24 | 22 | 24 | Porosity | 11353.8 | 214.1 |

Figure 3 : Raw data in the Data Browser window. Each value is linked to the corresponding object and position.

Equipment

Image Analysis

| | |
|--------------------------|-------------------------|
| System: | Clemex Vision SE |
| Camera : | Sony 77 CE 768x574 B&W |
| Microscope: | Nikon Epiphot-200, 100x |
| Stage: | Motorized Marzhauser |
| Stage Controller: | Clemex ST-2000 |
| Calibration: | 1.63 microns / pixel |