

# ParticleMetric Software

Powerful tool for inspection of particles and powders



## Phenom ParticleMetric

Fully automated measurements

## Reporting tool

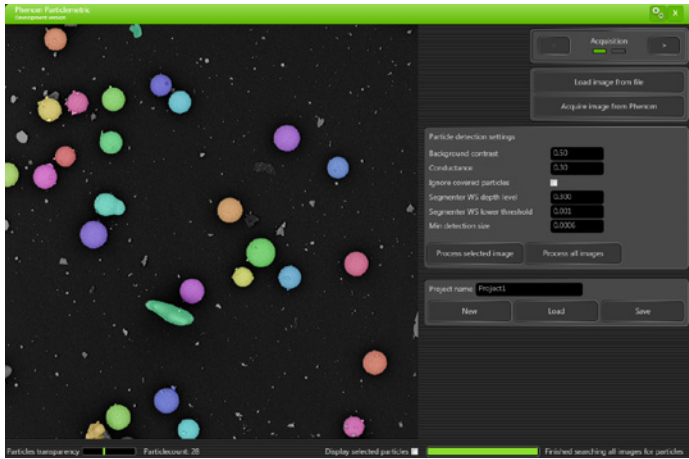
Easy exporting of data for reporting

## ProSuite

Integrated software in ProSuite

## Nebula I

Dry powder particle dispenser



Overview processed images



Screenshot with histogram selection

The visualization and analysis of particles are easier than ever before with the Phenom desktop SEM and the ParticleMetric software. The combination of speed, ease of use and superb imaging quality of the Phenom with the imaging and particle analysis of ParticleMetric creates a powerful tool for inspecting a wide range of particle and powder samples.

### ParticleMetric Software

The Phenom desktop SEM with ParticleMetric software allows easy generation and analysis of SEM images. The integrated ParticleMetric software allows the user to gather morphology and particle size data for many submicron particle applications.

The fully automated measurements of ParticleMetric allow a level of visual exploration beyond optical microscopy that can lead to new discoveries and innovations in powder design, development, and quality control.

The histograms, scatter plots and generated images can be exported in the selected format to be used as a reporting tool. Histograms of any measured particle property can be generated by numerical value and volume.

Scatter plots can be plotted from any combination of particle properties to reveal correlations and trends. The Phenom particle analysis solution allows users to obtain the data they need, when they need it. As a result, ParticleMetric accelerates particle analysis and improves product quality.

## ParticleMetric Specifications

### Particle Analysis

- > Particle size range 100nm – 0,1mm
- > Particle detection speed Up to 1000 particles per minute
- > Measured properties Size, shape, count

### Particle Parameters

Area, circle equivalent diameter, surface area, circumscribed circle diameter, volume by area, circumference, aspect ratio, circularity, elongation, grayscale, major axis, minor axis, convex hull, gravity centre (x,y), pixel count, convexity.

### Graphical Display

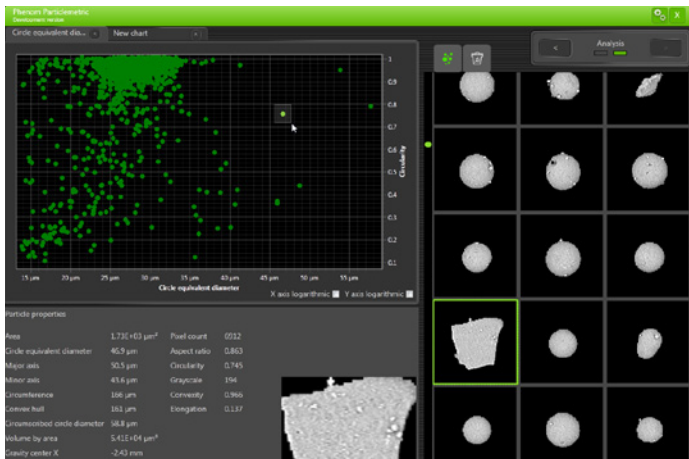
Plot graphs in linear, log or double log scale, by number or by volume  
Scatter plots of any given parameter  
SEM image of individual particle

### Output

Report in docx format  
TIFF image format  
CSV file  
Project file (.PAME) for offline analysis

### Part of ProSuite

Network storage enabled  
Phenom integrated system



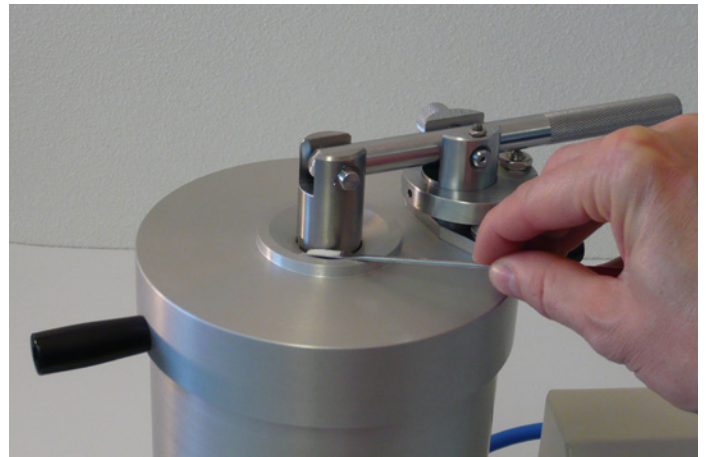
Screenshot with scatter plot selection

### Main advantages of ParticleMetric software

- > Integrated software in ProSuite.
- > Acquire images directly from the Phenom.
- > Identify and confirm phenomena such as broken particles, agglomerates and foreign particles.
- > Correlate particle features such as diameter, circularity, aspect ratio and convexity.
- > Fast and convenient operation improves workflow and makes scheduling simple and predictable.
- > Image collection is limitless as digital files are easily stored on a network or USB disk for data sharing, communication, or later reference.
- > The Phenom's ease of use and ability to operate in any environment means anyone can use it to visually interpret a wide range of samples.
- > Statistical data with high-quality images.

### Target markets for ParticleMetric

- > Cosmetics and personal care
- > Food
- > Agrochemicals
- > Pharmaceuticals
- > Ceramics
- > Powder and surface coatings
- > Particle based fillers
- > Environmental particulates
- > Filter/sieve companies



Introducing the powder in the Nebula I for a proper dry dispersion

### Nebula I

With the Nebula I™, a standard method for uniform dry powder dispersion on SEM stubs becomes available. The Nebula I ensures best sample preparation by obtaining a mono layer of particles avoiding particle clusters while maintaining the structure of fragile particles. This dry powder disperser is easy to use and allows the user to extract the best results in combination with the ParticleMetric software.

The unique combination of ParticleMetric and the Nebula I allows the user to gather and analyze particle size and morphology data.

### Nebula I Specifications

<b>Powder Size Range</b>	0.1 – 1500 µm
<b>Dispersion</b>	
<b>Vacuum Range</b>	0 – 0,8 Bar
<b>Press ure Setting</b>	
<b>Precision</b>	0,05 Bar
<b>Dimensions &amp; Weight</b>	
> Dimensions	390(w) x 210(d) x 350(h) mm, 8.5 kg
> Diaphragm vacuum pump	145(w) x 220(d) x 213(h) mm, 4.5 kg



### Porometric Software

The Phenom desktop SEM with Porometric software allows easy generation and analysis of SEM images. The integrated Porometric software allows the user to gather data on distribution of pores, and pore parameters like pore size and aspect ratio.

Porometric allows the user to get a better understanding of the characteristics of the materials, as it extracts detailed information of the complete set of pores. Porometric is the in its class when it comes to measurements of pores.



### FiberMetric Software

In combination with the Phenom desktop scanning electron microscope (SEM), the FiberMetric application allows you to produce accurate size information from micro and nano fiber samples.

The automated image characterization generates hundreds of measurements in seconds. In addition to more accurate data acquisition, the automated measurements of the FiberMetric application guarantee a fast return on investment (time savings compared to previous manual measurements; operator independent; more consistent data).

With the FiberMetric it has become possible to measure and analyze samples with large fiber diameter differences.

### Porometric Specifications

#### Pore analysis

- > Pore size range            100nm – 0,1mm
- > Pore detection speed    Up to 1000 pores per minute
- > Measured properties    Size, shape, count

#### Pore parameters

Area, circle equivalent diameter, aspect ratio, major axis, minor axis and manual measurement

#### Graphical display

Plot graphs of the circle equivalent diameter, SEM images and detected pores

#### Output

Report in docx format  
TIFF image format  
CSV file  
Project file (.POME) for offline analysis

#### Part of ProSuite

Network storage enabled  
Phenom integrated system

### FiberMetric Specifications

#### Fiber Detection

40 µm to 100 nm  
1 to 1000 measurements per image

#### Output

XML-data file (incl. diameter measurements and pore surface areas)  
JPG, TIFF  
Max. 1024 x 1024 pixel image  
Customized fiber and pore distribution histogram  
Minimum, maximum and average fiber size  
Standard deviation  
Fiber orientation

#### Part of the ProSuite

Network storage enabled  
Phenom integrated system

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