

# Optimize Process Uptime and Revenue with On-line Dynamic Image Analysis



Increase On-spec Yields | Boost Equipment Efficiency | Improve Workplace Safety



AGGREGATES



GLASS BEADS



3D PRINTING



PLASTICS



ABRASIVES



FOOD/AGRICULTURE



FERTILIZER



PHARMACEUTICALS



CHEMICALS



METAL POWDERS



COATINGS



INDUSTRIAL MINERALS

# Target Processes for the

**INCOMING MATERIAL INSPECTION**

**GRANULATION**

**CRUSHING**

**MILLING**



# Microtrac PartAn<sup>3D</sup> PRO

**SCREENING/SIEVING**

**EXTRUSION**

**SINTERING**

**COATING**



# Real-Time Analysis

## Delivers significant increase in revenue

### Automatic sampling is faster, safer and more accurate

In many plants, the laboratory is utilized for process control of the material. This requires an external operator to walk into dangerous areas of the plant, grab a sample from the line and walk it back to the laboratory for sample preparation, measurement, evaluation, and reporting.



This process is slow and can take anywhere from 2 to 12 hours or more to get results. For quality control, operators perform a visual check of the material, making this step inaccurate and inconsistent due to human subjectivity. Material properties can change during the length of time between sampling and worse yet, the process may be running out of control for hours at a time before anyone realizes it.

**Real-time analysis** within your process delivers immediate information critical to process and quality control. By making process adjustments in real-time, your process will operate at maximum production levels while virtually eliminating unplanned downtime.

**Automatic sampling** to an on-line PartAn<sup>3D</sup> PRO eliminates the need for an operator to walk into the plant, grab a sample and walk it to the lab. This is a safety benefit and eliminates the need for an operator to perform this function in a potentially dangerous work environment.

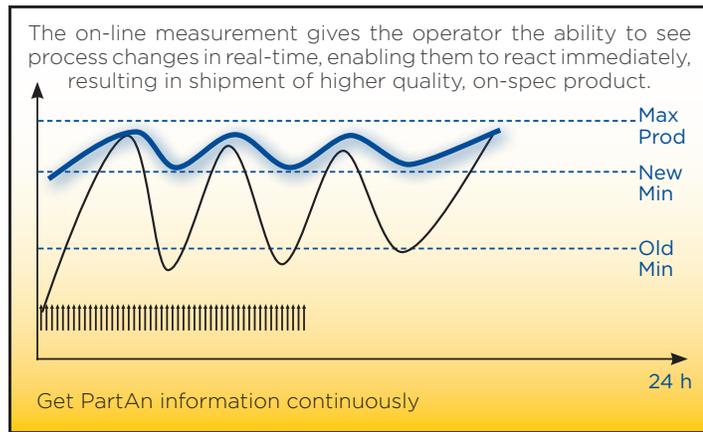
**“Every time a person needs to go into the plant is a safety risk. Any opportunity to eliminate people interfacing with our process improves safety.”**



## Deliver Higher Quality Products with the PartAn PRO Series

- Reduce poor quality product returns
- Ensure top dollar for product you produce
- ROI is very quick - increased revenue in millions is possible
- Contact us for estimates compared to sieves or other techniques

Microtrac's **patented 3D size and shape** parameters enable you to measure characteristics of your product including **sphericity, surface roughness, flakiness and aspect ratios** utilizing thickness. These types of measurements result in effective, lower cost coating or post processing, packaging, storage and shipment of your product. These measurements also enable you to run your production equipment at optimal cost and efficiency, returning money to your bottom line.



Depiction of process swing control

## REVENUE BENEFIT EXAMPLE

Product cost: \$350/ton

0.5 ton/hr increased production

$0.5 \times 24 \times 365 = 4,380$  ton/yr

$4,380 \times \$350 / 365 = \$4,200$ /day



**Integration** with your Data Control System (DCS) takes full advantage of existing inside operators who are monitoring every other aspect of your process. By utilizing an alarm feature or color-coded graphs on the DCS, out of control situations are known immediately and give your operators the ability to make real-time adjustments to keep the process running and in control.



# The Microtrac PartAn Advantages

## Dynamic Image Analysis (DIA)

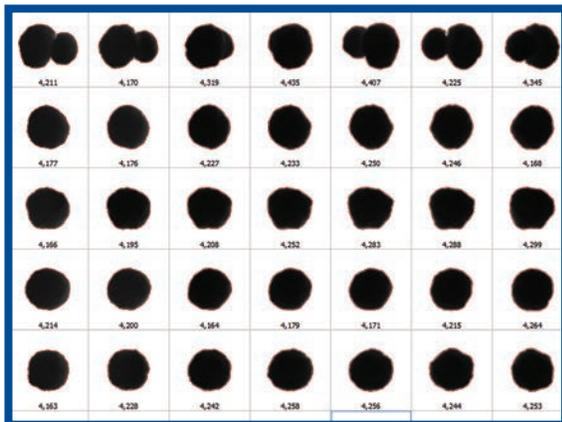
DIA characterizes particles in motion by digitizing photographs of each particle and storing them in an image file. The images are then used to calculate morphological parameters based on the known size and location of the pixels in each image. DIA can measure either dry material or suspensions and emulsions.

## Microtrac's patented on-line 3D analysis with the PartAn<sup>3D</sup> PRO and PartAn<sup>3D</sup> Maxi PRO

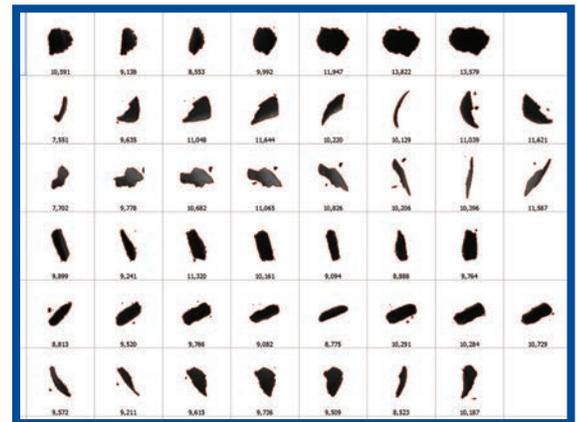
Microtrac's DIA, PartAn, utilizes the most sophisticated and powerful software available. Our patented 3D technology utilizes an innovative scheme of tracking particles, taking multiple images of each particle and measuring length, width, thickness, perimeter and area. This enables the calculation of more than 35 3D size and shape parameters that are extremely valuable and accurate for on-line analysis.



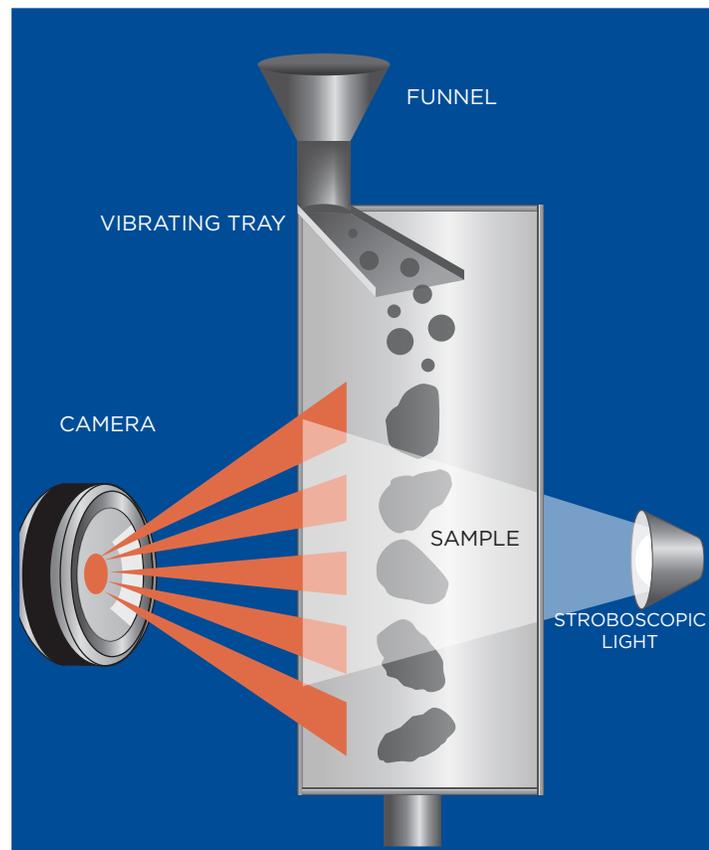
## Measure Sphericity



## Measure Flakiness



The PartAn system utilizes a funnel, vibrating tray, stroboscopic light, powerful high resolution, high speed camera and sophisticated software to perform the measurements. Particles are introduced to the vibrating tray via the funnel. The particles travel down the vibrating tray and fall, creating a tumbling motion. The PartAn software tracks each particle as it falls through the sensing zone, taking up to 300 pictures per second. The software automatically aligns the particles for viewing (with 6-30 images of each particle). Particle size distributions utilizing one or multiple size parameters can be reported, and powerful filter functionality can enable the user to isolate groups of particles of particular interest to them and perform more targeted analysis.



The PartAn's standard operating procedure (SOP) capability enables users to define their specific analysis and then continuously run the SOP with no operator involvement. As a result, on-line analyses are performed continuously and unattended. With the powerful reporting capabilities, plant operators can see the important 3D control parameters for process control in real-time and can run trend reports, enabling plants to anticipate problems before they occur.

#### **Microtrac PartAn PRO Series unique advantages for on-line analysis:**

- Specifically designed for on-line analysis in harsh, industrial environments
- Patented 3D size and shape
- Integration with plant Data Control System (DCS)
- 100% correlation with sieves
- Self-cleaning, low maintenance
- SOP feature for unattended operation
- Explosion proof (optional)
- Custom, integrated sampling systems returning sample to the process



# The Power of On-line Measurement

## Microtrac PartAn PRO Series for Process Control

Microtrac's lineup of on-line dynamic image analyzers includes the following wet and dry solutions:

	PartAn Si/PRO	PartAn <sup>3D</sup> /PRO	PartAn <sup>3D</sup> Maxi/PRO
			
<b>Sample Medium</b>	Wet	Dry	Dry
<b>Size Measurement Range</b>	2µm - 2,000µm	22µm - 35,000µm	160µm - 135,000µm
<b>Number of morphological parameters of your material including 3D</b>	>30 (2D Parameters)	40 (2D & 3D Parameters)	40 (2D & 3D Parameters)
<b>Images analyzed per second</b>	Up to 62	Up to 300	Up to 300
<b>Self Cleaning</b>	✓	✓	✓
<b>Explosion Proof (Optional)</b>		✓	
<b>Integration with 3rd party sample delivery devices</b>	✓	✓	✓



**MICROTRAC**  
**MEB**  
 PARTICLE CHARACTERIZATION

part of **VERDER**  
 scientific

SL-PC-06 rev C