

## Defining Clean

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Problems with safety, performance, or yield often result from insufficient parts cleaning. Therefore, industrial or medical components typically are subjected to some type of cleaning method. However, until now there has not been an efficient means to determine just how clean the parts are or how effective the cleaning stations are operating.

## The SURFEX™ Advantage

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### **Accuracy, Simplicity and Throughput**

Most cleanliness measuring techniques are either highly inaccurate, difficult to implement, or take too long (low testing throughput). The Surfex parts cleanliness testing station brings a powerful combination of features that solve all of these problems in one unique system, such as:

- High accuracy particle counters with the sensitivity to measure sub-micron particles
- Eliminating variability in test data caused by human error with automated control and user- configured test recipes
- Testing cycle times in 10 minutes or less due to the ability to re-establish an acceptable background particle level in just minutes
- A proven ability to increase testing throughput by 10 to 20 times

### **Any Shape or Size**

Surfex utilizes an ultrasonic cleaning tank to extract particles from the surface of parts of any shape or size. Successful applications have included:

- Automotive parts
- Aerospace parts
- Medical devices
- Electronic components
- Orthopedic implants
- Plated/coated parts (optics, blades, etc)
- Cleanroom consumables

The flexible design of the Surfex parts loading mechanism and ultrasonic extraction tank make it possible for just about any part to be measured for particle cleanliness.

## The Company that Knows Clean

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For over 30 years Particle Measuring Systems has been the recognized world leader in microelectronics, medical, pharmaceutical, automotive, aerospace, and any industry where the contamination of parts and manufacturing environments is critical. Our mission is to be the differentiated leader for microcontamination monitoring by improving our customers' performance through superior technology, quality and service. As the winner of the 2001 Cleaning Technology Award from CleanTech magazine, Surfex is another example of our commitment to innovation and customer satisfaction.



## Parts Cleanliness Testing Station

Surfex is a completely integrated testing station designed to measure particle levels on any type of part. Surfex uniquely combines ultrasonic extraction, particle measurement, high-purity fluidics, and automated software control to reduce testing time and therefore reduce the cost of parts testing. High throughput provides the ability to increase the number of tests performed, and therefore increases the confidence that out-of-spec parts are identified before they adversely affect final product quality or safety.



## Parts Testing is as Easy as...

### 1. Click a button to clean the container

High-purity flow components and system monitoring allow Surfex to quickly and accurately establish acceptable background particle levels prior to testing.

- Takes the guesswork out of test data interpretation
- Eliminates the occurrence of a part incorrectly failing or passing a test

### 2. Load the parts

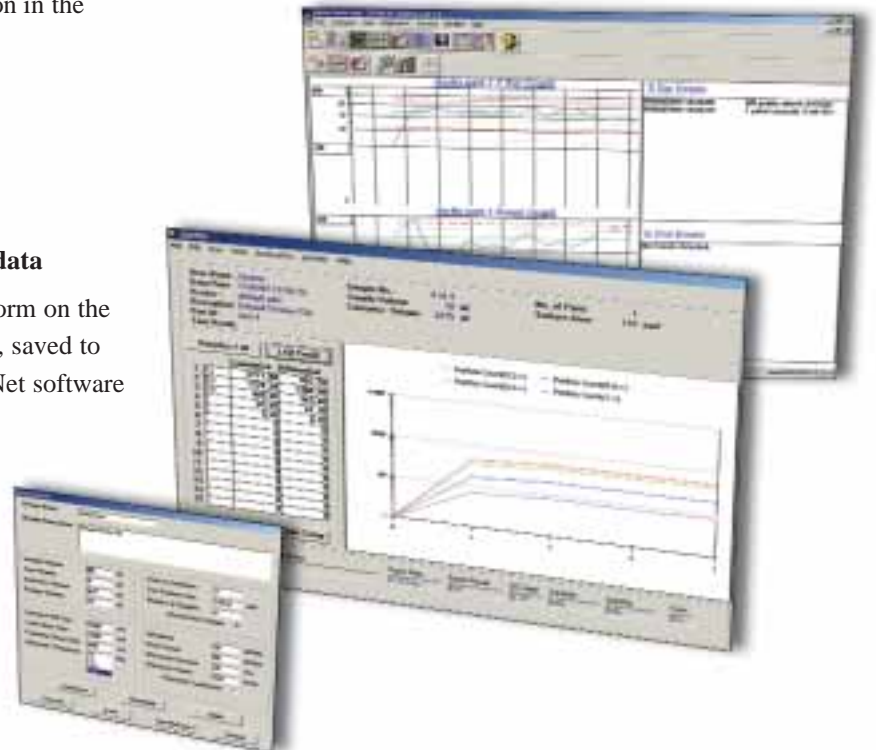
An adjustable fixturing gantry is located above the sample container for easy loading of test parts. A motorized stirring assembly ensures a consistent particle concentration in the water volume.

- Allows reproducible results between operators
- Improves test accuracy and repeatability

### 3. Click a button to run the test and display the data

Test data is displayed in numeric and graphical form on the user interface. It can also be printed to hard copy, saved to disk, sent over Ethernet, or exported to Facility Net software for SPC charting.

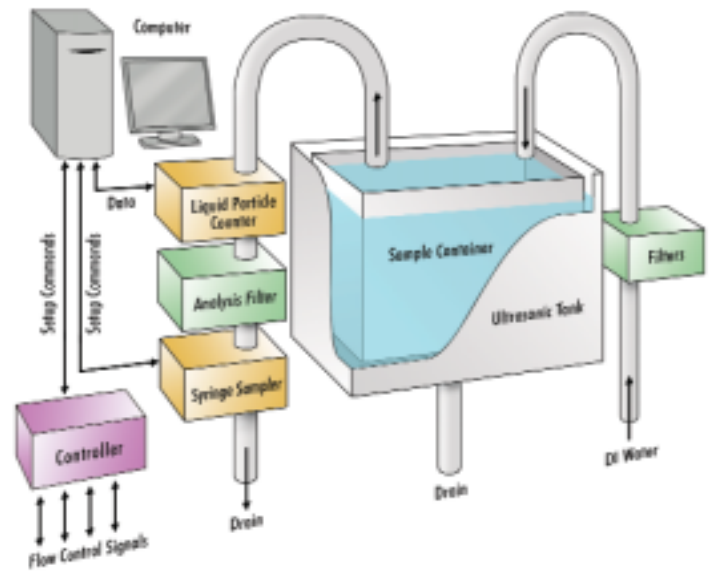
- Maximizes the usability of test data
- Allows data tracking and archiving



## System Flow and Control

Surfex is the only complete, integrated system for testing irregular parts. An ultrasonic tank extracts particles from the part's surface and the contaminated water is then drawn through a liquid particle counter by a precision syringe sampler. The central computer receives data from the particle counter and sends commands to the sampler and a system controller. The controller manages a series of valves and other devices that control the water flow. A series of filters maintains the purity of the water. An optional filter after the particle counter allows post-test particle analysis.

All system settings and sequence of operations are controlled by a test recipe that are administrator configurable. The recipes guarantee that tests will be run consistently, eliminating human error. Recipes can be quickly recalled, thus simplifying test changeovers.



## Integrate Parts Cleanliness Testing with your Production Process

In order to truly control your production, it is critical that measurements are performed in-process on the production floor. Surfex is compact and self-contained, allowing it to be located in or near the production line or cell. Adding in-process parts cleanliness testing to your production will help you:

- Reduce scrap parts by raising cleanliness problems
- Increase yield with process improvements (made possible by regular testing)
- Avoid out-of-spec parts being shipped to your customers
- Eliminate the laborious and time-consuming task of running parts to the QA lab for testing

## Maximizing your Investment

We ensure trouble-free integration and successful operations now and in the future by providing world-class customer support and services including:

- Installation and commissioning services
- On-site training for operators and engineers
- Preventative maintenance and calibration services

## Let the Experts Handle it for You

### Leasing and Contracting Services from Particle Measuring Systems

If you don't have the personnel or capital equipment budget to invest in Surfex ownership at this time, we can still help you receive all the great benefits of in-process cleanliness testing by leasing our equipment and contracting our experts to work at your facility and meet your needs.

- Guaranteed results from expert technicians
- Free maintenance and upgrades of the system
- No capital spending or extra hiring required
- Identify trends and problems in production with regular reports and documentation

## Parts Testing Services

Do you have the equipment, manpower, and expertise to test the cleanliness of irregular shaped parts? If you need professional support in any of these areas, our parts testing services can help you to...

- Compare the effectiveness of different cleaning stations or methods
- Prepare to bring a new part into full-scale production with prototype cleanliness tests
- Get the cleanliness data you need to aid your research and development efforts
- Determine at what frequency, power, and extraction period an ultrasonic cleaning tank will begin to cause surface damage to a part (or "etch" the part)
- Conduct any other parts cleanliness test that helps to improve your quality or productivity

### Laboratory Parts Testing Services

Send your parts to our test laboratory. The experts in our applications engineering group will consult with you to determine your requirements and design the test method to meet your needs.

Benefits:

- Consistent and reliable data
- No capital investment required
- Lower testing cost
- Fast turnaround time

### Valuable Test Reports

At the conclusion of any parts testing service, whether in-house or on-site, you will receive a professional test report that provides valuable information on the logistics and results of the test, including:

- Description of work
- Test method
- Test data
- Discussion of results

### On-site Parts Testing Services

Have an applications engineer and Surfex system at your facility to conduct parts testing services on-site. Our on-site engineer will work with you to successfully conduct and complete all of your testing requirements.

Benefits:

- Consistent and reliable data
- No capital investment required
- Work in-line with your production
- No parts packaging required



# Specifications

Ultrasonic tanks:	Freq: 40, 68, 72, 104, 132, 170, 192 kHz; Power: 500, 950 W
Internal flow design:	Single-pass (effluent to house drain)
Cart construction:	304 stainless steel, #4 finish
Dimensions (l, w, h):	48" x 27" x 36" (122 x 69 x 91 cm)
Weight:	500 lb. nominal (227 kg)
Wetted materials:	316 electro polished stainless steel, Teflon®, Kel-F®, Kalrez®, Sapphire
Particle size channels:	2 - 120 µm; 0.5 - 20 µm; 0.3 - 3 µm; 0.2 - 2 µm
Control and display:	Rackmount PC with Surfex software and 15" flat panel display (LCD)

## System requirements

Power:	85 - 264 V, 50 - 60 Hz
House air:	80 - 150 psi (clean, dry, oil free)
Water:	4 liters/min of ultra pure DI water
Drain:	House drain
Environmental requirements:	ISO Class 5 or better. Temperature: 10 - 30 °C. Humidity: Non-condensing

## Options and accessories

- Multi-frequency or custom ultrasonic tank
- Re-circulated internal flow design
- HEPA filtration
- Protective tank cover
- Retractable AC power cord
- Surfactant metering system
- Quick disconnects for water and air
- Status indicator: 2-color light bar
- Casters
- Particle analysis filter



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