Designed for All Surfaces
The Surfscan 6420 is a versatile surface inspection tool designed to meet the needs of a broad range of applications. Utilizing the latest developments in optical technology, the system easily detects sub-micron particles on rough surfaces such as polysilicon and tungsten, yet provides sensitivity better than 0.10 µm on polished silicon and epitaxial layers. The system’s unique combination of oblique illumination, selectable polarization and side collection optics also makes it ideal for detecting defects on non-uniform films — a critical requirement for CMP applications.

The Surfscan 6420 is based on the established Surfscan 6000 series platform, and offers superior performance, low cost of ownership and high throughput.

Automatic Film Curves
The Surfscan 6420’s unique automatic film curve feature offers significant savings in time and money. Instead of spending hours depositing spheres on test wafers to construct calibration curves for every film type and thickness, users simply select from a library of film curves that can be generated in seconds.

Increased Dynamic Range
The Surfscan 6420 features advanced electronics and software that allow a broad range of particles — for example, from 0.10 µm to greater than 3 µm — to be accurately sized in a single scan. This 25x increase in the system’s dynamic range provides more repeatable results and faster throughput.
Exceptional Sensitivity
The exceptional sensitivity of the Surfscan 6420 is due in part to the system's smaller spot size. Sampling rates are also increased, allowing for more accurate locating and sizing of particles. This is achieved while maintaining the system's high rate of throughput — up to 100 wph on 200 mm wafers.

Technologically Advanced
All the advanced features of the Surfscan 6000 series are incorporated in the Surfscan 6420. Particles are automatically differentiated from stray noise spikes by the system's digital signal processing using a proprietary 2D integration technique. Custom calibration software lets users teach the instrument how to assign sizes to particles on their process wafers for significantly higher repeat-ability and exceptionally low false count rates. This custom calibration means that 6420 systems can be correlated at multiple facilities around the world.

Easy to Operate
The Surfscan 6420’s Microsoft Windows™ interface makes user training and operation easy. Particle data is provided in two- and three-dimensional displays, as well as in numerical summaries.

The Surfscan 6420 also allows data to be output directly to the powerful Microsoft Access database management system, as well as to popular word processing and spreadsheet applications.

With the Enhanced MicroView™ feature, areas of the wafer can be zoomed for high resolution review, data can be viewed using different threshold settings, and defects can be measured and identified by their coordinates. Precise X-Y coordinates for defects can be easily exported to optical or SEM review stations using the established Tencor File Format (TFF). The 6420’s unique Early Warning System continuously tracks major operating systems and signals any maintenance requirements well in advance.

Flexible for Future Needs
The Surfscan 6420 provides options from networking and GEM SECS to robotic sorting and SMIF environments. Statistical process control is provided either through a basic SPC package installed on the Surfscan, or through the more comprehensive Surfscan SWIFT/Station™ defect data analysis system.

Selected Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensitivity</td>
<td>0.10 µm at 95% capture rate (latex spheres on bare silicon)</td>
</tr>
<tr>
<td>Throughput</td>
<td>Up to 100 wph (200 mm)</td>
</tr>
<tr>
<td>Repeatability</td>
<td>Within 1%, 1σ (mean count &gt; 500, 0.204 µm diameter latex spheres)</td>
</tr>
<tr>
<td>Illumination Source</td>
<td>Argon-ion laser, 488 nm</td>
</tr>
<tr>
<td>Sample Sizes</td>
<td>100 mm to 200 mm (smaller sizes upon request); round or square samples</td>
</tr>
<tr>
<td>Dimensions</td>
<td>75 cm (W) x 77 cm (D) x 168 cm (H)</td>
</tr>
</tbody>
</table>

For complete specifications see the Surfscan 6420 specification sheet.

Surfscan and SWIFT/Station are trademarks of KLA-Tencor Corporation. Windows is a trademark of Microsoft Corporation.

Specifications subject to change.

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