

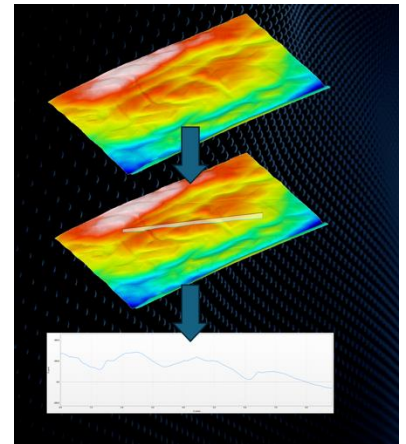
Understanding Surface Roughness: The Power of R and S Parameters

In today's advanced manufacturing world, ensuring product quality and reliability is paramount. Whether in aerospace, automotive, or even emerging sectors like 3D printing, one critical factor that influences product performance is surface roughness. This is where GelSight, a pioneer in tactile intelligence, stands out. GelSight has revolutionized how companies measure surface roughness, offering precision tools that are setting new industry standards.

Surface roughness is more than just how smooth or textured a material feels—its intricacies can directly impact product durability, safety, and efficiency. Yet, for years, measuring these minute differences has been a challenge for many industries. Traditional methods of roughness measurement, while useful, often fail to capture the full complexity of a surface. That's where GelSight's innovative technology comes into play.

Precision at its Core:

GelSight is leading the way in providing highly accurate, tactile-based 3D surface measurements in situ. At the core of GelSight's offering are its Series 2 and Max systems, both designed to measure even the most intricate surface textures with incredible accuracy. These systems capture detailed 3D visualizations, allowing manufacturers to precisely analyze surface roughness on a variety of materials, from metals to plastics to carbon fiber composites. One key aspect that sets GelSight apart from other measurement tools is its ability to calculate both R and S parameters. While Ra measures average roughness along a single line, Sa evaluates average roughness across an entire area, giving a more comprehensive understanding of the surface in question. GelSight's technology delivers both measurements with ease, enabling industries to better assess and control the quality of their surfaces.



Areal vs Profile Analysis

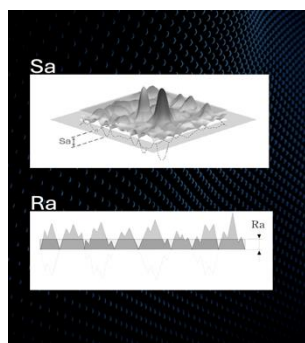
Innovation Meets Practical Application:

GelSight's innovation isn't limited to its software capabilities. The GelSight Max system, for example, is a portable tool that provides instant, high-resolution surface measurements, even for fine surfaces with roughness as low as 0.2 micron Ra. This precision is vital for industries where even the smallest defect can lead to performance issues, such as aerospace components or automotive parts. Additionally, GelSight's ability to "mask" unwanted areas of a surface scan, such as holes, debris, or scratches, ensures that roughness measurements remain highly accurate. This feature is particularly important in sectors where surface cleanliness directly correlates to product safety and performance.

Advancing Quality Control in Emerging Fields:

As manufacturing methods evolve, particularly with the rise of additive manufacturing and 3D printing, GelSight's role becomes even more significant. In these fields, layer thickness, surface texture, and other key parameters must be measured with high precision to ensure product reliability. GelSight's technology can adapt to these new demands, giving manufacturers the control they need to optimize production and enhance product quality.

Moreover, GelSight's systems are not just about measurement; they provide actionable data that can be used to streamline production processes, reduce waste, and ultimately save costs. For industries dealing with complex materials and high-stakes products, this level of insight is invaluable.



Height Parameters

A Vision for the Future of Roughness Measurements:

As a leader in the field, GelSight continues to innovate and refine its technology, constantly expanding the range of parameters its systems can measure and calculate. Their mission is not only to meet the current needs of manufacturing but also to anticipate future trends. By offering customized solutions tailored to specific industries and applications, GelSight remains at the forefront of surface measurement technology. In a world where precision is everything, GelSight's 3D tactile intelligence is setting the gold standard for surface roughness measurement. From traditional industries to emerging technologies, GelSight's solutions are enabling companies to enhance their quality control processes, improve product performance, and confidently meet the challenges of the future. Watch GelSight's Webinar on R and S Parameters [here](#).