

Benefits of 3D Modeling for High-Resolution Defect Measurement

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In the field of remote visual inspection, advancements made in lenses, illumination, and imaging have enabled measurements of defects to be more accurate and precise than before. Despite these advancements, measurement precision still relies on the chosen point of measurement. As current videoscopes can only generate results based on the points chosen by the inspectors, the inspector becomes an essential part of the measurement system. Selecting the correct measurement points is crucial, as the chosen points can change the results dramatically. For example, an incorrect measurement on the edge of a surface could cause the point to fall off the edge, leading to inaccurate results. 3D modeling is a modern videoscope capability that makes it easier for inspectors to choose points with precision. Using 3D modeling, the inspector can visually evaluate the shape and surface being measured through various 3D views. While still a qualitative analysis, 3D modeling helps inspectors better understand their target so they can be more confident in their point selection. An example is in weld inspection, where issues such as undercuts can be quickly evaluated. On a 3D model of a weld, color-coded visuals can show the location of the undercut at a glance. Another advantage of 3D modeling is inspection speed, as inspectors can quickly pinpoint areas of interest to measure. Using 3D modeling as an assistant in point selection, inspectors can produce a more reliable and robust measurement system.