

*PhotoGauge is a smartphone-based scanner that produces high-quality 3D point clouds, compares them to CAD models and produces customized inspection reports. Workflow is based on a series of photos acquired by the smartphone and uploaded to the cloud, where proprietary technology converts the images into an accurate point cloud. This tool is particularly well-suited to forged parts as the surface texture obtained in forging aids in the 3D reconstruction. In this work, we report on an application at a customer site where PhotoGauge was successfully deployed to study die wear and its effect on forged wear pads. PhotoGauge was used to reconstruct the 3D shape of the die before and after 500 wear pads were forged. Similarly, 3D reconstructions were done on 25 wear pads sampled at various stages of the production run. PhotoGauge data clearly indicate that the die wears out asymmetrically leading to pads becoming slightly rectangular over time and also that the die wear saturates over the 500 part run, resulting in decreasing dimensional variability in the forged parts over time. The PhotoGauge reconstructions were also used to reverse-engineer an accurate CAD model for the customer.*