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Comparison of working efficiency of terrestrial laser scanner in day and night conditions

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Abstract. Terrestrial Laser Scanning is a popular and widely used technique to scan existing objects, document historical sites and items, and remodel them if and when needed. Their ability to collect thousands of point data per second makes them an invaluable tool in many areas from engineering to historical reconstruction. There are many scanners in the market with different technical specifications. One main technical specification of laser scanners is range and illumination.

In this study, it is tested to be determined the optimal working times of a laser scanner and the scanners consistency with its specifications sheet. In order to conduct this work, series of GNSS measurements in Istanbul Technical University have been carried out, connected to the national reference network, to determine precise positions of target points and the scanner, which makes possible to define a precise distance between the scanner and targets. Those ground surveys has been used for calibration and registration purposes. Two different scan campaigns conducted at 12 am and 11 pm to compare working efficiency of laser scanner in different illumination conditions and targets are measured with a handheld spectro-radiometer in order to determine their reflective characteristics. The obtained results are compared and their accuracies have been analysed.

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