

Comparison Between Multicopter UAV and Total Station for Estimating Stockpile Volumes

Cesar Arango and Daniel Paez (Colombia)

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SUMMARY

Currently the UAV (Unmanned Aerial Vehicle) have become an alternative for different engineering applications, especially in surveying, one of these applications is the calculation of volumes of stockpiled material, but there are questions about its accuracy and efficiency, the purpose of this article is to compare traditional surveying methods for estimating total volumes through data obtained by total stations and data obtained by a multicopter UAV. In order to answer these questions we obtain data from the same location and the results were compared.

To compare the results, the total volume was obtained by the two methods and was compared with the actual volume information data, in addition, we compare the two point cloud with a methodology based on the Hausdorff distance, in order to obtain the histogram, mean and standard deviation of the distance between the TST surveyed surface and UAV DSM

After comparing the results it was found that there was a 2,88% difference between the volume calculated with the total station data and the actual volume, and 0,67% difference between the volume calculated with the UAV data and the actual volume, concluding that the estimated volume with UAV data is more accurate.