

Abstract

This master's thesis's review section focuses on presenting velocity-area method of discharge measurement, particularly the FlowTracker device. Based on available literature, especially various versions of the ISO 748 standard, different methodological approaches for measuring and calculating flow velocity and discharge are introduced. In the practical part of the thesis, discharges were measured using FlowTracker at several smaller streams on selected profiles. Measurements were taken multiple times on the same profile with varying numbers of verticals depending on the version of ISO 748 used. The discharge values obtained for each profile using different standards were then compared with each other. Additionally, the discharges were compared with reference discharges established for each profile. Two discharge calculations (mid-section and mean-section methods) were compared, as well as various methods of average velocity on vertical calculation (3-point, 2-point and 1-point method). The deviations in average velocities (i.e., mid-section method discharges) when comparing different point methods on the vertical proved to be insignificant. The mid-section method yielded higher discharge values compared to the mean-section method. The most stringent version of the standard, which has the highest recommended number of verticals, exhibited the lowest measurement uncertainties and deviations across all profiles compared with the other versions, indicating that its tightening in 2022 appears to be appropriate.

Key words: FlowTracker, discharge measurement, ISO 748 standard, mid-section method, mean-section method