

KALIBRASI BANGUNAN UKUR DEBIT DAN *AUTOMATIC WATER LEVEL RECORDER* (AWLR) DI SUB DAERAH IRIGASI BEDEGOLAN, KEBUMEN, JAWA TENGAH

INTISARI

Oleh:

Indrawan Adi Hardjono
16/395440/TP/11489

Produktivitas hasil pertanian sangat ditentukan dari pemenuhan kebutuhan air ke lahan oleh sistem irigasi. Petugas operasi irigasi bertanggungjawab dalam pengoperasian bangunan ukur debit, sehingga kondisi bangunan ukur pada saluran irigasi perlu dipelihara. Kinerja bangunan ukur dapat diketahui dari kalibrasi bangunan ukur yaitu membandingkan hasil pengukuran di bangunan ukur dengan metode lain. Penelitian ini dilakukan untuk mengetahui kelayakan bangunan ukur debit pada DI Bedegolan dan dilakukan pada 7 bangunan ukur (5 *parshall flume* dan 2 *romijn*) serta *Automatic Water Level Recorder* (AWLR) dengan *current meter*. Hasil pengukuran tersebut kemudian dibandingkan dengan data sekunder debit teoritis sehingga mendapatkan suatu persamaan baru. Uji-T dilakukan untuk mendapatkan nilai kelayakan dari bangunan ukur. Berdasarkan hasil pengukuran, didapatkan grafik regresi (persamaan power) yang baru pada saluran: induk Bedegolan, sekunder Kedung Tawon, sekunder Prembun, petak 40, sekunder Krogosingan, sekunder Pucang, tersier petak 210, secara berurutan menghasilkan perubahan pada rumus debit menjadi $Q = 4893,4h^{1,5215}$; $Q = 3611,1h^{1,6836}$; $Q = 7125,3h^{1,6266}$; $Q = 512,5758h^{1,5}$; $Q = 2739,4h^{1,0002}$; $Q = 5462,2h^{1,3294}$; $Q = 583,8887h^{1,5}$. Konsistensi pembacaan ketinggian muka air didapatkan dari pengukuran ketinggian air AWLR yang kemudian dikonversi menjadi debit melalui persamaan debit current meter.

Kata Kunci: Kalibrasi, Irigasi, Bangunan Ukur Debit, *Parshall Flume*, *Romijn*, AWLR, Regresi Linier, Uji-T.

Pembimbing : Dr. Murtiningrum, STP., M.Eng., Andri Prima Nugroho, S.T.P., M.Sc. Ph.D., Prof. Dr. Ir. Sigit Supadmo Arif, M.Eng.

**CALIBRATION OF MEASURING STRUCTURES AND *AUTOMATIC*
WATER LEVEL RECORDER (AWLR) IN BEDEGOLAN IRRIGATION SUB
SYSTEM, KEBUMEN, CENTRAL JAVA**

ABSTRACT

By:

Indrawan Adi Hardjono
16/395440/TP/11489

The productivity of agricultural products is mostly determined by sufficiency of crop water requirement by irrigation system. The irrigation officers are responsible for the operation of the measuring structures, so that maintenance is important to sustain their condition. From the performance of irrigation measuring structures is affected by their calibration. Calibration of a measuring structure compares the discharge measurement to the result of other methods. This research was conducted to determine the performances of discharge measurement structures at Bedegolan Irrigation System and was carried out on 7 measuring structures (5 parshall flumes and 2 romijn) as well as Automatic Water Level Recorder (AWLR) using current meter. The measurement results were then compared with the theoretical discharge secondary data in order to obtain a new equation. The T-test is carried out to determine the performance of the measuring structures. Based on the measurement result, obtained a new regression graph (power equation) of the Bedegolan main canal, Kedung Tawon, Prembun, Krogosingan, Pucang secondary canals, as well as plot 40 and plot 210 tertiaries resulted in the calibrated discharge formula of $Q = 4893.4h^{1.5215}$; $Q = 3611.1h^{1.6836}$; $Q = 7125.3h^{1.6266}$; $Q = 2739.4h^{1.0002}$; $Q = 5462.2h^{1.3294}$; $Q = 512.5758h^{1.5}$ and $Q = 583.8887h^{1.5}$, respectively. The consistency of the AWLR water level reading was then converted into discharge through the current meter discharge equation.

Keywords: Calibration, Irrigation, Discharge Measurement Building, Parshall Flume, Romijn, AWLR, Linear Regression, T-test.

Supervisor : Dr. Murtiningrum, STP., M.Eng., Andri Prima Nugroho, S.T.P., M.Sc. Ph.D., Prof. Dr. Ir. Sigit Supadmo Arif, M.Eng.