KAJIAN HIDROSTATIKA DAN HIDRODINAMIKA PADA SISTEM IRIGASI (STUDI KASUS DI KEM GUMANTAR DUSUN AMOR-AMOR KECAMATAN KAYANGAN KABUPATEN LOMBOK UTARA)

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ABSTRAK

Tujuan dari penelitian ini adalah mengkaji prinsip hidrostatika dan hidrodinamika pada sistem irigasi tampung (studi kasus di Kem Gumantar, Dusun Amor-Amor, Kecamatan Kayangan, Kabupaten Lombok Utara). Penelitian ini dilakukan dengan menggunakan metode survey dan metode deskriptif dalam skala lapangan. Bak tampungan (bangunan sadap bagi) berjarak 300 meter sampai ke lahan atau sawah, dengan volume bak tampungan sebesar 27,295 m^3. Kemiringan pada tampungan umumnya dipengaruhi oleh kemiringan gravitasi serta jalanan yang berbukit. Parameter yang diamati pada pengamatan penelitian ini didapatkan dengan mengukur kecepatan aliran dan volume air yang tertampung menggunakan *current meter*, menghitung debit aliran, bilangan *Reynolds* serta nilai *head losses*. Data yang diperoleh dianalisis menggunakan beberapa pendekatan, yaitu pendekatan matematik yang diselesaikan menggunakan program *Ms. Excel*. Berdasarkan hasil pembahasan diketahui bahwa nilai debit mengalami penurunan karena dipengaruhi oleh diameter pipa yang semakin kecil. Berdasarkan perhitungan Bilangan *Reynolds* pada setiap rangkaian, diperoleh aliran bersifat turbulen (6849,43). Kehilangan *head losses* yang didapat pada aliran pipa adalah 5,4169 m, yang dipengaruhi oleh rembesan serta pemasangan pipa secara ilegal oleh masyarakat dan kondisi wilayah yang berbukit.

Kata kunci: hidrodinamika, hidrostatik, irigasi, kajian, tekanan

STUDY OF HYDROSTATICS AND HYDRODYNAMICS IN IRRIGATION SYSTEM (CASE STUDY IN KEM GUMANTAR AMOR-AMOR VILLAGE KAYANGAN DISTRICT LOMBOK UTARA REGENCY)

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ABSTRACT

The purpose of this study was to examine the principles of hydrostatics and hydrodynamics in a reservoir irrigation system (a case study in Kem Gumantar, Amor-amor village, Kayangan District, North Lombok Regency). This research was conducted using survey methods and descriptive methods on a field scale. A reservoir was used (as tapping and distribution building) for land or paddy fields located 300 meters away, with a reservoir volume of 27.295 m^3. The slope of the reservoir is generally influenced by the gravitational slope and hilly roads. Parameters of this research were investigated by measuring the flow velocity and volume of water collected using current meter, calculating flowrate, Reynolds number, and head losses value. The data obtained were analyzed using several approaches, i.e. mathematical approaches that solved using Ms. Excel program. Based on the results, it was known that the discharge value has decreased, as influenced by the smaller pipe diameter. From the Reynolds number of each circuit, the flow chategorized as turbulent (6849.43). The head losses obtained in the pipes flow was 5.4169 m, that affected by seepage, illegal pipe installation by the community, and hilly terrain conditions.

Keywords: hydrodynamics, hydrostatic, irrigation, study, pressure