

ABSTRAK

RANCANG BANGUN SISTEM KONTROL PERPINDAHAN KERJA

POMPA AIR OTOMATIS BERBASIS *PRESSURE SWITCH*

(2026: xvi + 53 Halaman + 37 Daftar Gambar + 5 Daftar Tabel + 8 Lampiran)

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Sistem penyediaan air yang beroperasi secara kontinu memerlukan sistem kontrol yang mampu menjaga kontinuitas suplai air ketika terjadi gangguan pada pompa utama. Oleh karena itu, dilakukan rancang bangun sistem kontrol perpindahan kerja pompa air otomatis berbasis *pressure switch*. Tujuan dari rancang bangun ini adalah merancang, membuat, dan menguji sistem yang mampu melakukan perpindahan operasi pompa secara otomatis berdasarkan kondisi tekanan air pada sistem perpipaan. Metode yang digunakan meliputi tahap perancangan, perakitan, pengujian, dan analisis kinerja sistem. Sistem menggunakan *pressure switch* sebagai pendeteksi tekanan air dan *timer on delay* sebagai penunda perpindahan selama 5 detik untuk menghindari perpindahan akibat penurunan tekanan sesaat. Hasil pengujian menunjukkan bahwa sistem dapat menghentikan operasi pompa utama dan mengaktifkan pompa cadangan secara otomatis ketika tekanan berada di bawah nilai *set point*. Pengukuran juga menunjukkan bahwa daya saat *starting* pompa lebih besar dibandingkan saat operasi normal. Berdasarkan hasil pengujian, sistem yang dirancang telah bekerja sesuai dengan fungsi dan tujuan yang diharapkan.

Kata Kunci: Pompa air, kontrol, otomatis, perpindahan, tekanan

ABSTRACT

DESIGN AND DEVELOPMENT OF AN AUTOMATIC WATER PUMP OPERATION TRANSFER SYSTEM BASED ON A PRESSURE SWITCH

(2026: xvi + 53 Pages + 37 List of Pictures + 5 List of Tabels + 8 Attachments)

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A continuous water supply system requires a control system capable of maintaining water distribution when the main pump experiences a failure or a pressure drop. Therefore, the design and construction of an automatic water pump operation transfer control system based on a pressure switch was carried out. The purpose of this project was to design, assemble, and test a system capable of automatically transferring pump operation according to the water pressure condition in the piping system. The method employed consisted of design, assembly, testing, and performance analysis stages. The system utilizes a pressure switch to detect water pressure and a timer on delay with a 5-second delay to prevent pump transfer due to temporary pressure fluctuations. The test results showed that the system was able to stop the operation of the main pump and automatically activate the standby pump when the pressure dropped below the predetermined set point value. The measurements also indicated that the power consumption during pump starting was higher than during normal operation. Based on the testing results, the designed system operated properly and fulfilled its intended functions and objectives.

Keyword: *Water pump, control, automatic, switching, pressure*