

ABSTRAK

Rizal Awanda. 2025. *Rancang Bangun Aplikasi Analisis Kuat Tekan dan Konsultasi Beton Berbasis Web Menggunakan Firebase dan Metode Rapid Application Development (Studi Kasus: PT. Kali Suruh Karsa Mandiri, Sragen, Jawa Tengah)*. Skripsi. Program Studi Teknik Informatika, Fakultas Teknik, Universitas PGRI Madiun. Pembimbing (I) Pratiwi Susanti, S.Kom., M.MT. (II) Yessi Yunitasari, S.Kom., M.Cs.

Aplikasi ini dirancang sebagai solusi digital untuk mendukung proses analisis kuat tekan beton dan layanan konsultasi teknis secara otomatis pada sektor konstruksi. Sistem dibangun menggunakan teknologi HTML, CSS, JavaScript, serta Firebase sebagai backend utama, dengan dukungan fitur-fitur penting seperti kalkulasi kuat tekan berdasarkan gaya tekan dan usia beton, ekspor hasil ke format PDF dan Excel, serta chatbot berbasis fuzzy matching yang dilengkapi dengan algoritma Jaccard dan Levenshtein Distance. Aplikasi juga mendukung mode offline melalui penerapan teknologi Progressive Web App (PWA), yang memungkinkan aksesibilitas dan fungsionalitas tetap terjaga tanpa koneksi internet. Pengembangan sistem menggunakan pendekatan Rapid Application Development (RAD), dengan tahapan iteratif yang menekankan pada kecepatan dan fleksibilitas melalui prototipe dan umpan balik pengguna. Hasil pengujian menunjukkan bahwa seluruh fitur berjalan secara optimal, memberikan kemudahan, efisiensi, dan keakuratan dalam analisis teknis proyek konstruksi.

Kata Kunci: Kuat Tekan Beton, Chatbot, Firebase, PWA, RAD

ABSTRACT

Rizal Awanda. 2025. *Development of a Web-Based Concrete Compressive Strength Analysis and Consultation Application Using Firebase and the Rapid Application Development Method (Case Study: PT. Kali Suruh Karsa Mandiri, Sragen, Central Java)*. Undergraduate Thesis. Informatics Engineering Study Program, Faculty of Engineering, Universitas PGRI Madiun. Advisors: (I) Pratiwi Susanti, S.Kom., M.MT., (II) Yessi Yunitasari, S.Kom., M.Cs..

This application is designed as a digital solution to support the analysis process of concrete compressive strength and provide automated technical consultation services in the construction sector. The system is developed using HTML, CSS, JavaScript, and Firebase as the main backend, with core features such as compressive strength calculation based on applied force and concrete age, export functionality to PDF and Excel formats, and a chatbot powered by fuzzy matching algorithms including Jaccard and Levenshtein Distance. The application also supports offline access through the implementation of Progressive Web App (PWA) technology, ensuring continuous functionality without an internet connection. The system is developed using the Rapid Application Development (RAD) methodology, emphasizing speed and flexibility through iterative prototyping and user feedback. Testing results indicate that all features operate optimally, enhancing convenience, efficiency, and accuracy in technical analysis within construction projects.

Keywords: Compressive Strength, Chatbot, Firebase, PWA, RAD