

# Pengembangan dan analisa kinerja sistem pemeliharaan dan smart monitoring mesin X-Ray di bandara = Development and analysis of performace maintenance and smart monitoring system of X-Ray machine at the airport

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## Abstrak

Didalam menjalankan tugasnya, teknisi penerbangan sering kekurangan data mengenai kondisi mesinnya. Melihat kondisi ini, kami mengembangkan, merancang dan menganalisa kinerja sistem pemeliharaan dan smart monitoring peralatan bandara. Obyeknya adalah Modul Power Supply dan DC-DC converter di Mesin X-ray. arsitekturnya berdasarkan client-server menggunakan protokol TCP / IP dan HTTP. Raspberry Pi berfungsi sebagai mini web server, database dan access point.

Arduino Mega2560 sebagai client difungsikan menerima data suhu, tegangan Alernate Current (AC) dan Direct Current (DC). Arduino Ethernet Shield berfungsi sebagai jembatan pengiriman data ke database Mysql di Raspberry Pi menggunakan kabel UTP. Koneksi antara Raspberry Pi dengan perangkat Android secara Wireless Local Area Network. Pengembangan perangkat lunaknya sesuai tahapan System Development Life Cycle (SDLC) menggggunakan metode prototype. Data sensor ditampilkan di aplikasi Android mobile.

Dari hasil pengujian, intergrasi TCP/IP dan HTTP antar perangkat bisa berjalan baik, Hasil data sensor yang ditampilkan di aplikasi android rata rata dibawah 1 % setelah dikalibrasi, Pengujian aplikasinya menggunakan metode black box dan masih diketemukan kekurangan yang perlu disempurnakan. Untuk penilaian Quality Of Experience (QoE) respondennya berjumlah 20 orang teknisi penerbangan. Mean Opinion Score (MOS) aplikasinya untuk performa 72%, kepuasan tampilan User Interface 42 % dan 81% responden menyetujui sistem ini mempermudah dan bermanfaat sebagai solusi permasalahan teknis penerbangan dilapangan.

.....In performing their duties, the aviation engineer is often a lack of data regarding the condition of the engine. Seeing this condition, we develop, design and analyze the performance of system maintenance and smart monitoring equipment airport. The object is a module Power Supply and DC-DC converter in the X-ray machine. based on client-server architecture using TCP / IP and HTTP. Raspberry Pi serves as a mini web server, database and access point.

Arduino Mega2560 functioned as a client receives the data of temperature, voltage Alernate Current (AC) and Direct Current (DC). Arduino Ethernet Shield serves as a bridge sending data to Mysql database in the Raspberry Pi using UTP cable. Connection between the Raspberry Pi with Android devices in Wireless Local Area Network. Phases of the software development using System Development System Life Cycle (SDLC) with the prototype method. Sensor data is displayed in the Android mobile apps.

From the test results, integration of TCP / IP and HTTP can work well across devices, sensor data results are displayed in android application average below 1% after calibration, testing applications using black box and still found deficiencies that need to be refined. For the assessment of Quality Of Experience (QoE) respondents totaled 20 aviation engineer. Mean Opinion Score (MOS) for application performance 72%, satisfaction display User Interface 42% and 81% of respondents agreed and bermanfaat system facilitates

the solution of technical problems flying field.