

ABSTRACT

This design project focuses on the development of a functional electric motorcycle intended to support the mobility of site supervisors in large-scale construction areas such as factories, residential complexes, and amusement parks. The primary issue identified in the field is the low efficiency of supervisors' mobility due to the limited accessibility of conventional vehicles within congested construction environments, as well as the need to safely and conveniently transport surveying instruments such as the theodolite.

The design process was conducted through stages of field observation, interviews with site supervisors, user need analysis, and ergonomic evaluation to determine the ideal riding posture for construction site operations. The design was developed iteratively through two major stages, each resulting in improvements in ergonomics, visual balance, and functional efficiency. The final outcome is the OVERSEER electric motorcycle, equipped with a 64V 42Ah battery and a 1.5 kW hub motor, featuring dedicated compartments for a theodolite, project documents, first-aid kit, and multifunctional panniers designed for ergonomic access.

The final design emphasizes the principles of safety–utility–comfort, with a seat height of 790 mm, a wheelbase of 1,482 mm, and an ergonomic configuration that ensures riding comfort during long inspection activities. Through continuous validation and optimization, OVERSEER is expected to serve as an efficient and durable mobility solution for construction supervisors, offering both functional practicality and environmental sustainability in modern construction areas.

Keywords: electric motorcycle, industrial design, ergonomics, construction mobility

ABSTRAK

Proyek perancangan ini berfokus pada pengembangan kendaraan listrik fungsional untuk kebutuhan mobilitas pengawas proyek konstruksi yang memiliki area kerja luas seperti pabrik, kawasan perumahan, dan taman rekreasi. Permasalahan utama yang ditemukan di lapangan adalah rendahnya efisiensi mobilitas mandor dan pengawas lapangan akibat keterbatasan akses kendaraan konvensional terhadap area kerja yang padat alat berat, serta kebutuhan untuk membawa peralatan pengukuran seperti teodolit secara aman dan praktis.

Metode perancangan dilakukan melalui tahapan observasi lapangan, wawancara dengan mandor proyek, analisis kebutuhan pengguna, dan pengujian ergonomi untuk menentukan postur berkendara yang ideal di area konstruksi. Proses desain dikembangkan secara iteratif melalui dua tahap utama, di mana setiap tahap menghasilkan perbaikan pada aspek ergonomi, keseimbangan visual, dan efisiensi fungsional. Hasil akhir berupa sepeda motor listrik OVERSEER dengan kapasitas baterai 64V 42Ah dan motor 1.5 kW, dilengkapi kompartemen penyimpanan teodolit, ruang catatan proyek, kotak P3K, serta pannier multifungsi yang dirancang ergonomis.

Desain akhir menonjolkan prinsip safety–utility–comfort dengan tinggi jok 790 mm, jarak sumbu roda 1.482 mm, serta konfigurasi ergonomi yang memungkinkan posisi berkendara nyaman untuk aktivitas inspeksi jangka panjang. Melalui tahapan validasi dan optimasi, OVERSEER diharapkan dapat menjadi solusi transportasi efisien bagi pengawas proyek yang membutuhkan kendaraan tangguh, fungsional, dan ramah lingkungan di area konstruksi modern.

Kata kunci: kendaraan listrik, desain industri, ergonomi, mobilitas konstruksi