

# USULAN PERANCANGAN KABIN MASINIS KRL COMMUTER LINE YANG ERGONOMIS MENGGUNAKAN MODEL VIRTUAL ENVIROMENT

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## Abstrak

Ketidakergonomisan ruang kemudi Kereta Rel Listrik (KRL) dapat menyebabkan seorang masinis terkena *Work-related Musculoskeletal Disorder* (WMSDs) yang berdampak pada berkurangnya kemampuan konsentrasi saat mengoperasikan KRL yang cenderung statis. Penelitian dilakukan dengan tujuan untuk memberikan usulan desain ruangan kemudi terbaik, baik dari ukuran kursi dan kabin serta penempatan instrumen pengontrol dan layar pemantau yang dapat mengakomodasi postur kerja masinis agar terhindar dari WMSDs. Penelitian dilakukan dengan menganalisis resiko postur pengemudi dengan metode *Quick Exposure Check* (QEC), serta nilai *Rapid Upper Limb Assessment* (RULA) melalui pengujian *Virtual Enviroment* terhadap desain aktual dan desain usulan menggunakan konfigurasi *Virtual Human Modeling* dari data antropometri masinis yang telah diperoleh. Hasil yang terbaik merupakan desain yang memberikan nilai RULA terendah.

**Kata Kunci** : Ergonomi, Antropometri, *Quick Exposure Check*, *Rapid Upper Limb Assessment*, *Virtual Enviroment*.

# **ERGONOMIC DESIGN FOR MACHINIST'S DRIVING CABIN IN COMMUTER TRAIN USING VIRTUAL ENVIROMENT MODELING**

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## **Abstract**

Unergonomic working condition for driving cabin in Commuter train (KRL) can cause a machinist to be exposed to work-related Musculoskeletal Disorders (WMSDs) which affects the diminished of concentration capabilities when operating KRL which tends to be static. Research conducted with the aim to give the best design of steeringroom, both from chair and cabin size and the placement of controller and monitor screen insntrumen that can accommodate the machinist work posture to avoid WMSDs. The research was conducted by analyzing the driver's posture using the Quick Exposure Checklist (QEC) method, and the value of Rapid Upper Limb Assessment (RULA) through Virtual Enviroment testing of the actual design and recommend design using the Virtual Human Modeling configuration from the anthropometric data of machinist that been obtained. The best result is the design that gives the lowest RULA value.

**Keyword** : Ergonomic, Anthropometry, Quick Exposure Check, Rapid Upper Limb Assessment, Virtual Enviroment.