

## **ANALYSIS OF ISUZU C240 ENGINE DAMAGE ON THE FD30C3Z DIESEL FORKLIFT UNIT WITH THE FMEA METHOD**

### **ABSTRACT**

*One supporting factor in industrial activities is the availability of heavy equipment such as forklifts. Forklift is the car is running or a vehicle that has two forks that can be used to lift pallet. There is some source of energy that can make the forklift operates. In whom, the material burn diesel fuel, materials burn gasoline, gas, and battery. Forklifts are used in factories, garments, or warehouses. There are many types of forklifts on the market, one of which is the FD30C3Z diesel forklift. This FD30C3Z diesel forklift uses the Isuzu C240 engine which is known to be stubborn, strong and durable. However, there are times the engine is damaged, even before the life time of the engine itself. Damage to the engine can occur suddenly or can be predicted in advance so that it can be prevented. Therefore, the author would like to use the method of FMEA (Failure Mode and Effect Analysis) which is a risk analysis techniques in the care and maintenance of the engine diesel forklift owned by PT Kasana Teknindo FD30C3Z Gemilang. Of the five potential failures found, severity, occurrence, detection and RPN can be analyzed. Based on the results of the study, Fuel Injection Pump get the highest RPN value compared to the other components that is 48. Even though each damage has a different priority does not mean that the damage that has the lowest priority can be ruled out. All damage must be prevented and repaired immediately so that the engine can work with maximum performance so as not to reduce the productivity of the forklift.*

**Keywords:** *Isuzu C240 engine, FMEA, severity, occurrence, detection, RPN*

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## ABSTRAK

Salah satu faktor pendukung dalam kegiatan perindustrian adalah ketersediaan alat berat seperti forklift. Forklift adalah mobil berjalan atau kendaraan yang memiliki 2 garpu yang bisa digunakan untuk mengangkat pallet. Ada beberapa sumber energi yang bisa membuat forklift beroperasi, di antaranya bahan bakar solar, bahan bakar gasoline, gas, dan battery. Biasanya forklift digunakan di pabrik, garment, ataupun pergudangan. Ada banyak jenis forklift yang beredar di pasaran, salah satunya yaitu forklift diesel FD30C3Z. Forklift diesel FD30C3Z ini menggunakan engine isuzu c240 yang dikenal bandel, kuat dan tahan lama. Namun, ada kalanya *engine* mengalami kerusakan, bahkan sebelum *life time* dari *engine* itu sendiri. Kerusakan pada *engine* dapat terjadi secara tiba-tiba atau dapat diperkirakan sebelumnya sehingga dapat dicegah. Maka dari itu, penulis ingin menggunakan metode FMEA (*Failure Mode and Effect Analysis*) yang merupakan teknik analisa resiko dalam perawatan dan pemeliharaan pada *engine* forklift diesel FD30C3Z milik PT Kasana Teknindo Gemilang. Dari lima potensi kegagalan yang ditemukan maka dapat analisa nilai *severity*, *occurance*, *detection* dan RPN. Berdasarkan hasil penelitian, *Fuel Injection Pump* mendapat nilai RPN tertinggi dibanding komponen yang lainnya yaitu 48. Meskipun masing-masing kerusakan memiliki prioritas yang berbeda bukan berarti kerusakan yang memiliki prioritas paling rendah bisa dikesampingkan. Semua kerusakan harus dicegah dan segera diperbaiki agar *engine* dapat bekerja dengan performa yang maksimal sehingga tidak mengurangi produktifitas dari forklift tersebut.

**Kata kunci:** *engine* isuzu c240, FMEA, *severity*, *occurance*, *detection*, RPN.



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