

## ABSTRAK

Tesis ini berjudul “ **Analisis Availability, Performance Efficiency dan Rate of Quality Product Sebagai Bahan Pertimbangan Perencanaan Produksi**” dibawah bimbingan Dr.Hj. Sumartini,M.P. disusun oleh Tri Adi Putra,S.Si (1302973).

Permasalahan *downtime* yang tinggi pada mesin unit ammonia dan urea PT.Pupuk Kujang mengakibatkan target atau volume produksi tidak tercapai sebagaimana Rencana Kerja dan Anggaran Perusahaan (RKAP). Sehingga pada penyusunan RKAP selanjutnya perlunya menganalisis efektivitas mesin keseluruhan sebagai bahan pertimbangan. Tujuan penelitian ini untuk menganalisis atau mengetahui gambaran efektivitas mesin keseluruhan berdasarkan faktor *availability, performance efficiency, rate of quality product* sebagai bahan pertimbangan perencanaan produksi. Jenis penelitian ini adalah deskriptif analitik dengan menggunakan data sekunder hasil produksi dan pemeliharaan pada tahun 2010-2014. Teknik analisis menggunakan parameter yakni nilai efektivitas mesin keseluruhan sebesar 85% sebagai standar perusahaan kelas dunia dengan komposisi: *availability ratio* 90% atau lebih, *performance ratio* 95% atau lebih, dan *quality ratio* 99% atau lebih (Nakajima, 1988, Dal, *et.al*, 2000 dan Hansen, 2002) dan hasil peramalan efektivitas mesin keseluruhan untuk tahun 2015 sebagai bahan pertimbangan perencanaan produksi. Berdasarkan hasil penelitian meyakinkan konsep Hansen, 2002 lebih baik dalam menggambarkan faktor *availability* pada mesin yang bekerja selama 365 hari dibandingkan dengan konsep Nakajima, 1988. Nilai *availability* dalam kurun waktu 5 tahun, unit ammonia 1B 95.51% dan urea 1B 92.45%, yang memenuhi standar perusahaan kelas dunia yakni diatas 90% sedangkan unit ammonia 1A dan urea 1B hanya sebesar 88.78% dan 89.57%. Nilai *performance efficiency* dalam waktu 5 tahun, tidak ada mesin satupun pada unit ammonia dan urea 1A dan 1B yang memenuhi standar kelas dunia (95%) hanya mendekati saja yakni unit ammonia 1B sebesar 94.90% dan Urea 1B sebesar 90.78%. dan sisanya unit ammonia 1A hanya sebesar 88.21% dan unit urea 1A hanya 75.62%, Faktor terpenting nilai minimum *performance efficiency* yang harus di perhatikan pada unit ammonia 1A sebesar 80.02%, Amonia 1B sebesar 90.69%, urea 1A sebesar 65% dan urea 1B sebesar 82%, bila pada hari beroperasi mendekati nilai minimum dapat dipastikan akan adanya *downtime*. Nilai *rate of quality product* diatas 99% untuk unit ammonia dan urea 1A maupun 1B dimana nilai *rate of quality product* mendukung nilai *performance efficiency* untuk menggambarkan performa mesin sehingga jika nilai *performace efficiency* kecil dan nilai *rate of quality product* kecil maka mesin benar-benar berperforma tidak ideal. Jadi mesin yang memiliki waktu operasi akan menghasilkan produk hingga mencapai kapasitasnya, dengan menghasilkan produk bagus. Nilai efektivitas mesin keseluruhan dari unit ammonia dan urea 1A sebesar 75.11% dimana belum termasuk kelas dunia, dimana kegiatan operasi pabrik tersebut dapat diterima dengan catatan perbaikan harus 85% dengan resiko terdapat kerugian ekonomi dan daya saing pabrik rendah. Namun untuk unit ammonia dan urea 1B memiliki nilai OEE sebesar 87.43% dimana termasuk perusahaan kelas dunia dengan kegiatan operasi tersebut hampir sempurna dan daya saing pabrik cukup baik namun harus tetap mempertahankan kinerja mesin melalui pemeliharaan teratur dan terencana. Menurut Honda, 2000, nilai efektivitas mesin keseluruhan yang didapat sebanding dengan kapasitasnya. Maka nilai efektivitas mesin keseluruhan dijadikan bahan pertimbangan untuk perencanaan produksi melalui teknik peramalan. Hasil peramalan yang dilakukan mendapatkan hasil yang memuaskan. Sehingga

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perencanaan produksi berdasarkan peramalan efektivitas mesin keseluruhan dapat dijadikan acuan atau bahan pertimbangan.

Kata kunci: *Availability, Performance Efficiency, Rate of Quality Product* dan  
Perencanaan Produksi

### **ABSTRACT**

This thesis entitled "Analyze of Availability, Performance Efficiency and Rate of Quality Product as Material Production Planning Considerations" under the guidance of Dr.Hj. Sumartini, M.P. by Tri Adi Putra, S.Si (1302973)

The problems of high downtime on the machine unit PT.Pupuk Kujang ammonia and urea resulting in a target or volume of production was not achieved as the Work Plan and Budget (CBP). So that in the preparation of the need to analyze the overall equipment effectiveness of subsequent CBP for consideration. The purpose of this study was to analyze or determine the overall equipment effectiveness picture based on the factors of availability, performance efficiency, product quality rate of production planning consideration. This type of research is descriptive analytic using secondary data production and maintenance in 2010-2014. Analysis techniques using parameters such as the value of the overall equipment effectiveness by 85% as the standard world-class company with the composition: availability ratio of 90% or more, performance ratio of 95% or more, and quality ratio 99% or more (Nakajima, 1988, Dal, et. al, 2000 and Hansen, 2002) and the results of forecasting the overall equipment effectiveness for 2015 as production planning consideration. Based on the results convincing concept Hansen, 2002 is better in describing the availability factor of the machine that works for 365 days compared with the concept Nakajima, 1988. Availability value over a period of 5 years, ammonia unit 1B 95.51% and urea 92.45%, which meet the standards of a world class company that is above 90% while ammonia units 1A and 1B urea only amounted to 88.78% and 89.57%. Value performance efficiency within 5 years, no single machine in ammonia and urea units 1A and 1B that meet world-class standards (95%) is only just approaching the ammonia unit 1B by 94.90% and amounted to 90.78% Urea 1B. and the remaining ammonia unit 1A only amounted to 88.21% and the urea unit 1A is only 75.62%, the most important factor is the minimum value of the performance efficiency to note the ammonia unit amounted to 80.02% 1A, 1B Ammonia amounted to 90.69%, amounting to 65% urea 1A and 1B of urea 82%, on the day when operating close to the minimum value can be ascertained that there is downtime. Values above quality product rate of 99% for ammonia and urea units 1A and 1B where the value rate of quality product to support the value of the performance efficiency to describe the performance of the machine so that if the value of small performance efficiency and value of quality product rate smaller then the engine really performs no ideal. So a machine that has an operating time will produce up to capacity, with good products. The overall equipment effectiveness value of ammonia and urea units 1A of 75.11% which does not include a world-class, where the operations of the plant can be received with a record of repairs should be 85% with the risk of economic loss and there is the plant's competitiveness is low. But for ammonia and urea unit 1B has a value OEE of 87.43% which includes world-class company with the almost perfect operation and competitiveness of the plant is quite good but it should still maintain engine performance through regular and planned maintenance. According to Honda, 2000, the value of the overall equipment effectiveness obtained proportional to its capacity. Then the value of the overall equipment

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effectiveness to be considered for production planning through forecasting techniques. Forecasting results that do get satisfactory results. So that production planning based on forecasting the overall equipment effectiveness can be used as a reference or consideration.

Keywords: Availability, Performance Efficiency, Rate of Quality Product and Production Planning

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