ABSTRAK

PT. Barata Indonesia (Persero) merupakan salah satu perusahaan *heavy industry* di Indonesia yang bergerak dibidang *engineering, procurement & construction, manufacturing dan foundry* dengan produk andalan yaitu *Bogie*. Pada proses produksi, diketahui bahwa mesin *Hanger Shot Blast* memiliki angka *downtime* terbesar selama periode tahun 2017, sehingga proporsi kondisi mesin serta keandalan mesin turut menjadi masalah. Berdasarkan permasalahan ini, maka diperlukan untuk mencari proporsi kondisi mesin mulai dari kondisi baik hingga kondisi rusak berat mesin, keandalan mesin serta faktor-faktor utama penyebab *downtime* yang terjadi.

Untuk mendapatkan proporsi kondisi dan keandalan mesin tersebut, metode markov diketahui mampu memunculkan probabilitas kondisi dan keandalan mesin. Hasil perhitungan proporsi kondisi mesin dengan metode markov didapatkan kondisi baik sebesar 0,7315 (73%), kondisi rusak ringan sebesar 0,0266 (3%), kondisi rusak sedang sebesar 0,1542 (15%) dan kondisi rusak berat sebesar 0,0875 (9%), dengan nilai jangka panjang keandalan mesin selama 7 hari, untuk hari ke-1 mesin dapat beroperasi dengan baik adalah sebesar 77,35%, hari ke-2 sebesar 59,35% dan seterusnya hingga hari ke-7 dengan nilai sebesar 15,79%. Kemudian dengan menggunakan FMEA, didapatkan 5 faktor kerusakan paling berpotensi yaitu, *liner & impeller trouble*, rantai dan *screw* terlepas, *motor rotary* macet, *gear separator* jalan tidak normal dan rantai *bucket* menyimpang.

Proporsi mesin dalam kondisi baik adalah sebesar 73%, dengan probabilitas keandalan hari ke-1 dapat beroperasi dengan baik sebesar 77,35%. Faktor paling berpotensi dengan nilai RPN sebesar 294 adalah *liner & impeller trouble*.

Kata Kunci : *Hanger Shot Blast, Markov, FMEA, Proporsi Kondisi Mesin, Keandalan*

ABSTRACT

PT. Barata Indonesia (Persero) is one of the heavy industry company that engaged in the engineering, procurement & construction, manufacturing and foundry field, with bogie as their flagship product. In their production process, it is discovered that Hanger Shot Blast machine has the biggest number of downtime in 2017, so that the proportion of machine condition and its reliability is a problem. Based on this issues, then it's necessary to find the proportion of machine condition, starting from the good condition until the heavily damaged condition, its reliability and the main factors of downtime that happened.

To obtain those proportions and reliability, the markov method is known to generate probability of machine condition and its reliability. The calculation result of machine condition probability and its reliability with markov method, it is 0,7315 (73%) for the good condition, 0,0266 (3%) for the slightly damaged, 0,1542 (15%) for the moderately damaged, and 0,0875 (9%) for the heavily damaged machine condition, with the long-term machine reliability percentage for 7 days, percentage of day 1 where machine could well-operate is 77,35%, percentage of day 2 is 59,35% until the day 7 with 15,79% of probability. Then, using the FMEA, the 5 most potential damage factor that is liner & impeller trouble, chain & screw apart, motor rotary stuck, gear separator run unnaturally and bucket chain deviated.

Machine proportion in the good condition is 73%, with its reliability at day 1 where machine could well-operate is 77,35%. The most potential factor with 294 number of RPN is liner & impeller trouble.

Keywords : Hanger Shot Blast, Markov, FMEA, Proportion of Machine Condition, Reliability