

Effectiveness of Minor Overhaul Elimination on Decreasing Cost of Production in Hydroelectric Power Plant

Pengaruh Eliminasi Minor Overhaul Terhadap Penurunan Biaya Pokok Penyediaan Pada PLTA Dengan Metode Markov Chain Melalui Laravel

*Rahmania Prasyayudha
Sabar Setyawidayat
Fachruddin Hunaini*

Widyagama University Malang
Widyagama University Malang
Widyagama University Malang

The projection of the renewable energy target in 2025 is 23%. The high production cost makes it difficult to compete with fossil plants. The strategy chosen to reduce the risk is to eliminate minor overhauls in power plants to increase production. To prove its effectiveness, hydropower was chosen by using markov chain method. It took samples for 26 months and divided plant into 3 states based on the operating performance. The test was between implementation of overhauls on schedule and eliminating minor overhauls when the status was good. The results of data processing obtained that the best decision is not to do minor overhaul elimination because of the potential to reduce 29.77% good conditions, 30.69% improvement in moderate conditions. Comparison between the 2017-2019 data show there's no production cost reduction even though potential production increase. Calculation can be implemented into a web form using the PHP on the Laravel Framework

References

1. Anonymous, "Outlook Energi Indonesia 2017," Sekr Jendral Dewan Energi Nas., 2017.
2. Anonymous, "Peraturan Menteri Keuangan Nomor : 117/PMK.02/2005 Tentang Tata Cara Penghitungan dan Pembayaran Subsidi Listrik Tahun Anggaran 2005." Menteri Keuangan Republik Indonesia, 2005.
3. W. G. Sullivan, E. M. Wicks, and C. P. Koelling, *Engineering Economy*. Pearson Education, 2014.
4. A. Swasono, F. Hunaini, and D. U. Effendy, "Perancangan Aplikasi Perbandingan Biaya Energi Pada Industri Berbasis Netbeans," *J. Widya Tek.*, vol. 26, Oktober 2018.
5. D. Perdana Putra, "Perhitungan Harga Pokok Produksi Listrik pada PT PLN Batam." Politeknik Negeri Batam, 2011.
6. J. Astarani and A. Uliana, "Analisis Penentuan Biaya Produksi Listrik Dengan Metode Full Costing Pada PT. PLN (Persero) Wilayah Kalimantan Barat Area Pontianak," *J. AAKFE*, vol. 2, no. 1, pp. 1-30, Agustus 2013.
7. R. Tri Hartanto, "Perencanaan Pemeliharaan Mesin Pompa Gilingan Saus dengan Metode Markov Chain untuk Minimasi Biaya Pemeliharaan." Universitas Muhammadiyah Surakarta, 2014.
8. M. Hartono and I. Mas'udin, "Perencanaan Perawatan Mesin Dengan Metode Markov Chain Guna Menurunkan Biaya Perawatan," *J. Oprimumm*, vol. 3, no. 2, pp. 173-184, 2002.
9. Erawan, *Dasar - Dasar PHP*. Universitas Dian Nuswantoro Semarang, 2014.
10. A. Y. Suparman, *Overhaul berbasis 5S*. PT PJB, 2014.
11. C. Anwar, L. Fasi Ashari, and Indrayenti, "Harga Pokok Produksi dalam Kaitannya dengan Penentuan Harga Jual untuk Pencapaian Target Laba Analisis (Studi kasus pada PT. Indra Brother's di Bandar Lampung)," *J. Akunt. Keuang.*, vol. 1, no. 1, pp. 79-94, Sep. 2010.
12. Oktaviyani, "Optimasi Penjadwalan Produksi dan Perencanaan Persediaan Bahan Baku Menggunakan Rantai Markov (Studi Kasus Kinken Cake & Bakery Kutoarjo)." 2017.

13. Syafruddin, Irma, and Sukarna, "Aplikasi Analisis Rantai Markov untuk Memprediksi Status Pasien Rumah Sakit Umum Daerah Kabupaten Barru," *Online J. Nat. Sci.*, vol. 3, no. 3, Desember 2014.
14. N. Erni and B. Wijaya, "Usulan Penerapan Teori Markov Dalam Pengambilan Keputusan Perawatan Tahunan Pada PT.Pupuk Kujang," *J. Inovisi*, vol. 7, no. 1, pp. 56-63, Oktober 2011.
15. Anonymous, *Maintenance Planning, Scheduling & Controlling*. PT PJB Academy, 2015.