ABSTRAK

OPTIMALISASI POLA PERENCANAAN DAN PENGENDALIAN PRODUKSI INSTALASI PENGOLAHAN AIR PARALEL

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Instalasi Pengolahan Air Cidanau (IPA) mulai beroperasi paralel dengan IPA Krenceng pada tahun 2019 memberikan tantangan tersendiri bagi perusahaan dikarenakan adanya kenaikan Harga Pokok Penjualan (HPP) sebesar 7% dalam produksi air bersih. Melalui wawancara semi struktur terhadap pemilik proses dan observasi dibuat pemetaan proses kedua Instalasi Pengolahan Air diperoleh gambaran proses secara detail dan identifikasi permasalahan. Masalah proses produksi yaitu; belum optimalnya penggunaan sumber daya, proses koagulasi belum optimal, dan penempatan sensor instrumen yang belum sesuai.

Analisis *Statistical Process Control* pada kualitas produk air bersih pada parameter proses utama, meliputi: pH, kekeruhan dan warna yang telah dilakukan *jar test* pada berbagai sumber air baku diperoleh gambaran bahwa IPA Cidanau memiliki kualitas produk air bersih yang lebih konsisten berada dalam batas kendali atas dan batas kendali bawah dibandingkan dengan IPA Krenceng dikarenakan IPA Krenceng memiliki 3 sumber air baku, yaitu: Sungai Cidanau, Waduk Nadra Krenceng dan Campur (Waduk + Cidanau), dan Waduk Nadra Krenceng sedangkan IPA Cidanau memiliki 1 sumber air bakunya berasal dari Sungai Cipasauran.

Melalui perhitungan pemrograman linier metode simpleks diperoleh laba operasi optimal sebesar Rp.213.439.934.188, - dibandingkan dengan Rencana Anggaran Kinerja Perusahaan (RKAP) 204.473.704.000, -. Perbandingan Volume Penjualan pada perhitungan Pemrograman linier sebesar 50.723.173 m^3 sedangkan RKAP tahun 2020 sebesar 50.714.461 m^3 dan diperoleh penghematan material listrik dan bahan kimia untuk proses produksi air bersih. Pemetaan proses produksi yang tepat ditindaklanjuti dengan prosedur dan instruksi kerja yang sesuai, *Statistical Process Control* dapat digunakan untuk menjaga kualitas produk air bersih dan Pemrograman Linier Metode Simpleks dapat digunakan untuk optimasi proses produksi air bersih dalam rangka memperoleh biaya yang efektif dan efisien serta memaksimalkan laba operasi.

Kata Kunci: Harga Pokok Penjualan, Pemetaan Proses, *Statistical Process Control,* Pemrograman Linier Metode Simplex, Laba Operasi.

ABSTRACT

OPTIMIZATION OF PRODUCTION PLANNING PATTERN AND CONTROL IN PARALLEL WATER TREATMENT PLANT

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Cidanau Water Treatment Plant (WTP) began operating parallel with Water Treatment Plant Krenceng in 2019, has posed a challenge for the company due to the increase of Cost of Goods Sold (COGS) in clear water production. Semi-structured interview with the process owner and observation, a process mapping of two water treatment plants were made to obtain detail description of flow process and identification the problem. Several problems found in the production process were inadequate use of resources, coagulation process was not optimal, and placement of instrument sensors is not suitable.

Statistical Analysis Process Control on the quality of clean water product in the main parameter such as; pH, turbidity, color that have been carried out by jar test method on various raw water resources showed that Cidanau Water Treatment Plant had a clean water product quality more consistently within the upper limit control and lower control limit compare to The Krenceng Water Treatment Plant. It was because Krenceng WTP had three sources of raw water, namely: Cidanau River, Krenceng Reservoir and Mixed between Krenceng Reservoir and Cidanau River.

By performing a Simplex method linear programming analysis based on The Excel-Solver calculation; the optimum operation profit result was obtained by 213.439.934.188 IDR compare to company's performance budget plan (RKAP) year 2020 of 204.473.704.000 IDR. The comparison of sales volume in linear programming was 50.723.173 m^3 while in the RKAP was 50.714.461 m^3. It was also obtained in electricity and chemical materials saving for the clean water production process. Appropriate process mapping in production process followed up with suitable work procedures and instructions, Statistical Process Control analysis could be used to maintain the quality of clean water and also Simplex Method Linear Programming that could be used to optimize the clean water production process in order to obtain cost effective and efficient and maximize operating profit.

Keywords: Cost of Good Sold, Process Mapping, Statistical Process Control, Simplex Method Linear Programming, Operating Profit