

PERANCANGAN ALAT BANTU KERJA DAN PERBAIKAN TATA LETAK PABRIK DENGAN METODE SIMULASI PADA PABRIK LIMUN ANEKA RASA, BOJONEGORO

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Abstract

PL Aneka Rasa is a beverage factory in Bojonegoro. Its primary raw materials are sugar, citric acid, sodium and water. This factory has a production rate 4800 bottle per day and the management hasn't planned to increase or reduce the production rate.

According to preliminary study, it was identified some problems that correlated with production process, especially on the department 1 (bottle washing and moving). On this department, working process was done manually, so it caused operator felt uncomfortable, painful and complaints on some their body segments, such as neck, shoulder, elbows, lower arms, foot and wrists as the consequences of the working repetition. The operator hand also suffered chafed because of the direct reaction with the detergent when the bottle washing process was done. On the bottle moving activity, operator must carry two bottle boxes in a trip without any jig or fixture and this activity caused some complaint, injured and pain on the back, neck and waist. The next problem that was happened on the production floor are correlated with material handling process because of a poor initial layout.

To overcome these problems, then it was designed new working facilities for the bottle washing and moving activity. Through implementing both of these new facilities and by suggesting some layout improvement, then the operator complaints and painful could be reduced, the working comfortable can be increased, the material handling process can be reduced 66% from the initial working condition and the bottle washing time can be accelerated 1 second/bottle.

Then, layout improvement was done in order to solve material handling problem. By redesigning the initial layout to the new ones, the 21.1% reduction of total contribution from the initial one can be achieved. Finally the simulation process with ProModel software was built to analyze the process production. From the simulation output, then it is known that the labor's utilization for the bottle washing and moving process could be reduced 16.78% and 8.1% consecutively.

Keywords: complaint, painful, facilities, layout, simulation

1 LATAR BELAKANG MASALAH

PL. Aneka Rasa adalah perusahaan limun yang menghasilkan berbagai macam rasa dan berlokasi di daerah Bojonegoro. Perusahaan ini tergolong konvensional karena menggunakan mesin-mesin konvensional dan beberapa operator pada beberapa proses produksinya. Target produksi perusahaan yaitu 4800 unit botol/hari dan karena banyaknya industri serupa di daerah Bojonegoro dan sekitarnya, maka perusahaan tidak berencana untuk menambah kapasitas produksinya karena pihak manajemen merasa bahwa daya serap pasar saat ini yang sudah maksimal.

Secara umum urutan proses pembuatan limun dilakukan melalui 4 tahapan, yaitu: proses pencucian botol, proses pengisian limun mentah ke dalam botol, proses pemasakan dan proses penutupan botol (knopping). Berdasarkan pengamatan awal secara menyeluruh pada lantai produksinya, diidentifikasi adanya permasalahan pada proses produksi, khususnya pada departemen 1 (pencucian botol dan pemindahan krat). Pada departemen ini, proses kerja dilakukan secara manual dengan bantuan sikat/korok botol, ember dan air detergen. Kondisi kerja ini menyebabkan operator mengalami beberapa keluhan dan kelelahan serta rasa sakit akibat kerja. Secara ringkas, operator mengalami sakit terutama pada bagian