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MEASUREMENT OF WORKING TIME IN THE PRODUCTION PROCESS "KERUPUK IKAN"IN GRESIK HOME INDUSTRY

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Abstract

Measurement of time in the production process is necessary to know the length of time on each steps of making fish crackers. The timing is done directly using a stopwatch tool, with the aim of knowing the normal time, standard time, and cycle time as an improvement of production process time. In this study using descriptive method, which is one research method that describes the place of the process of production of fish crackers as appropriate. The result shows the time required in one production process is normal time 3986,12 minutes, standard time 4113,84 minutes, and cycle time get 2657,02 minutes.

Keywords: *Normal time, Standard time, cycle time, Production process.*

1. Introduction

Success in producing products requires effective time planning, in order to meet a predetermined production schedule by measuring work time. In all activities on the process of making "kerupukikan". The results of such measurements are used to provide information about the performance of a work plan in which producers require adjustments to the activities of the production process. The process includes the process of making and mixing the dough, cutting and coloring, leaf blowing, steaming, cooling, cutting, drying, and packaging. Measurement of working time with stopwatch applied to repetitive work. (Rinawati et al, 2012) measurement of work time is an attempt to determine the length of working time required by a workforce to finish a job. This time measurement aims to determine the normal time, standard time and cycle time as an improvement time of "kerupukikan" production process. Every home industry needs inventory, in the absence of inventory manufacturers will affected with the risk of not being able to meet the needs of consumers, so it takes a good time management of the various resources that exist in the home fish cracker industry, because with the time management can provide precise information on the time required for each activity in producing "kerupukikan" products.

2. METODS

Method in this researches is good time to production of "kerupuk ikan" , and the observed duty cycle.To strengthen this data analysis, we will describe the following formulas (Wignjosoebroto, 2006) :

a. Normal time

$$\text{Normal time} = \text{observation time} \times \frac{\text{Rating Faktor \%}}{100\%}$$

(Widiawati, 2009) in determining factor ratings, there are many methods that can be used in determining performance such as shumand, bedux and synthesis, synthetic rating, objective, and westing house methods. In this case the authors use the method of westing house system's rating that is the work measurement procedure made by Charles E. Bedaux involves determining the assessment of skills / skills, business, working conditions, and consistent. So the acquisition of performance appraisal as follows:

a) Exellent skill (B2)
= +0,08
b) Good effort (C1)
= +0,05
c) Good condition (C)
= +0,02

d) Good consistency (C)
= +0,01

Total
= +0,16

b. Default time
Default time = normal time x $\frac{100\%}{100\%-\%\ \text{leeway}}$

leeway factor can be determined (Darsini, 2014):

a) Indulgence of personal needs
= 5% = 0,05
b) Allowance to unwind
= 0% = 0,00
c) late delays
= 2% = 0,002
d) Total
= 7% = 0,07

c. Cycle time

$$Ws = \frac{\sum X_i}{N}$$

$\sum X_i$: Amount of measurement time
N : Number of measurement data

3. Result and discussion

From observations made and data that has been obtained for 10 times observations of the 9 steps of the process of making fish crackers which include:

Tabel 1. Research dataproducing ”KerupukIkan”

No.	Step Proces to produce “KerupukIkan”	Time to Proces (minute)	Time to Move (minute)
1.	Making dough	306.3	21.6
2.	Mixing	2558.75	34.12
3.	Cutting and coloring	2142.75	13.33
4.	Wrapping to the leaves	2322.77	32.52
5.	Steaming	1218.97	53.73
6.	Cooling	2627.63	94.65
7.	Cutting	2050.58	1205.05
8.	Drying	6281.83	905.63
9.	Packing	2837.52	205.5
	Total	22347.1	2566.13

After observation data obtained then analyzed by using the formula described above. As for the acquisition as follows:

Tabel 2. Time calculation in every step to produce “KerupukIkan”

No.	Step Proces to produce “KerupukIkan”	Normal time (minute)	Default time (minute)	cycle time (minute)
1	Making dough	49	52.68	30.68
2	Mixing	409.4	440.19	255.88
3	Cutting and coloring	342.84	368.62	214.28
4	Wrapping to the leaves	371.64	399.59	232.28
5	Steaming	195.03	209.69	121.89
6	Cooling	420.42	452.04	262.76
7	Cutting	328.09	352.76	205.06
8	Drying	1005.09	1080.67	628.18

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9	Packing	454	488.14	283.75

a. Calculation normal time at the step of the dough making process

Normal time = Observation time$\times \frac{\text{Faktor Rating \%}}{100\%}$

= 306,3 $\times \frac{0,16}{100\%}$ = 49 minute

b. Calculation default time at the step of the dough making process

Standard Time = Normal Time$\times \frac{100\%}{100\%-\%\text{ leeway}}$

= 49$\times \frac{100\%}{100\%-7\%}$

= 49×1,0752

= 52,68 minute

c. Calculation waktu siklus at the step of the dough making process

$$W_S = \frac{\sum X_i}{N}$$

$= \frac{306,3}{10}$ = 30,63minute

The time measurement in one production process as follows:

a. Calculation normal time

Normal time = Waktu Pengamatan$\times \frac{\text{Faktor Rating \%}}{100\%}$

= 24913,23$\times \frac{0,16}{100\%}$ = 3986,12 minute

b. Calculation Default time

Default time = normal time$\times \frac{100\%}{100\%-\text{leeway}}$

= 3826,12$\times \frac{100\%}{100\%-7\%}$

= 3826,12 ×1,0752 = 4113,84 minute

c. Calculation time cycle

$$W_s = \frac{\sum X_i}{N}$$

$= \frac{23913,23}{9}$ = 2657,02 minute

4. Conclusion

Based on the results of data processing and discussion that has been done then it can be concluded as follows:

1. To determine the normal time can be done by observing the work situation, how the workings of the operator / labor is then given an assessment. With the assessment will facilitate the acquisition of normal time, where the normal time of cracker production in the home industry Gresik in this study is 3986.12 minutes.
2. From the observation made 10 times on 9 steps of fish cracker production process with 1 times the production process obtained raw time used for the production process in making fish crackers in home industry Gresik takes 4113,84 minutes with a time of leeway 7%.
3. The data obtained from the observations made 10 times on the 9 steps of the process of cracker fish production has been sufficient on the observations that have been done, so that the cycle time of a process of fish cracker production in Gresik home industry obtained 2657.02 minutes.

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