PROJECT ON TIME STUDY TO INCREASE THE OVERALL PRODUCTIVITY

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Abstract - *This report is a result of observations on small scale industry. It is a small scale industry in which VMC & CNC are used for the manufacturing of the products. We went through various departments, technical and non-technical, and have collected detailed information on their respective functions and their impact on the outcomes of the company. We have made an attempt to describe some of the things we came across during the course of time. As it is a small scale industry so we saw a shortage of labours as well improper working conditions due to which their productivity rate was abating. There were a lot of factors responsible for that which our team comes to know after a detail study of all the processes and time restricted to complete those processes.*

Key Words **– Time Study, Daily Check Sheet, OEE (Over Equipment Efficiency), Overall productivity**

1. INTRODUCTION

1.1 About Organization:

Royal Engineering & Solution was Established in 2009 it is located in Bhosari MIDC it is a small scale industry and it having CNC VMC cutting lathe machine the organization involved for tea workers including to managers big Industries like Jai Hind Industries by providing finished parts one VMC Machine and cutting machine and 5 CNC machine.

Before Machining After machining

1.2 Project Background

We done a project on Time Study for a particular job.

It is the most versatile and the most widely used technique of work measurement. Definition: Time study is a technique to estimate the time to be allowed to a qualified and well-trained worker working at a normal pace to complete a specified task by using specified method.

1.3 Project title:

- Time study.

1.4 Project Outline:

- Analysis of the time for productivity of a single component
- Measurement of those components
- Time analysis for those components
- Reduce that time cycle to increase the productivity
- Reduce the time waste or breakdown of the machine and increasing the production

1.5 Project Definitions:

To increase the productivity that time lost should be minimized so that the machining process minimum time major time loss can be easily find out but the minor loss is to be find out by the time study method should be maximized

2. Purpose:

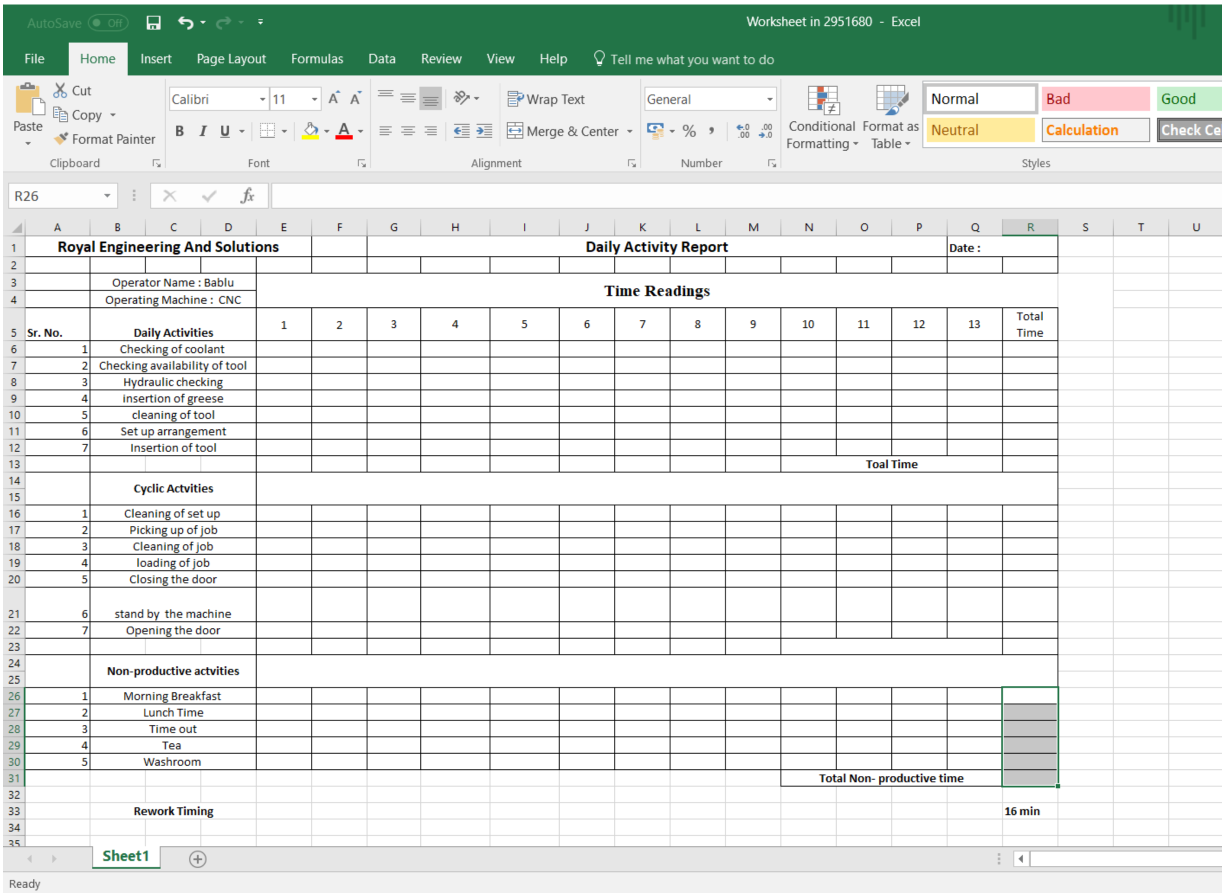
To decrease the cycle time of the machining of the product and which will result into the overall increase the productivity.

2.1 Significance of study:

Machining process is completely human and machine process it requires a time but they faces breakdowns during the fixture loading auto loading hands to increase overall productivity the basic time for operating the machine should be decreased in order to increase the production or machining process

3. Implementation Details:

We have done a Time study on a CNC machine on which some machining process done and workers time. We initially visited the industry, and observed a loss over there. According to that, we have prepared a losses sheet and an activity sheet. In which we have noted down the time required to complete the machining of the job and the losses. The format of the sheet is as shown below.



4. Improvements Details:

Initially the cycle time was 3.5 min as mentioned in the above chart. In order to reduce the cycle time, we have done some improvements as mentioned below:

1) initially the tool was on the table and the worker has to pick up that tool and go to the machine and then to setup that tool into the machine so we have no arranged a Toolbox itself on the machine show that the time for picking up can be reduced
2) worker takes the compressor air 3 times for cleaning the setup and then cleaning of the job we have change the sequence of action of the operator by take the air pipe first
Closer to the machine

Sr.No	Activity	Before Time	After Time	Time saving
1	Job cheking time	17.35 min	8.5 min	9 min
2	Job Picking time	5 sec	3 sec	2 sec
3	Cleaning of job and set up	6 sec	3 sec	3 sec
4	Loading time for job	9 sec	7 sec	2 sec

Cycle time improved chart

Worksheets

Royal Engineering And Solutions					Daily Activity Report								Date :	
	Operator Name : Bablu	Time Readings												
	Operating Machine : CNC													
Sr. No.	Daily Activities	1	2	3	4	5	6	7	8	9	10	11	12	13	Total Time
1	Checking of coolant														35 sec
2	Checking availability of too														2 min
3	Hydraulic checking														
4	insertion of greese														3 min
5	cleaning of tool														
6	Set up arrangement														
7	Insertion of tool														3 min
											Toal Time				8.35 Min
	Cyclic Actvities														
1	Cleaning of set up	5 sec	6 sec	6 sec	7 sec	5 sec	7 sec	5sec	7 sec	5 sec	10 sec	5 sec	5 sec	5 sec	5 sec
2	Picking up of job														
3	Cleaning of job	5 sec	6 sec	5 sec	7 sec	6 sec	5 sec	4 sec	5 sec	6 sec	6 sec	5 sec	5 sec	5 sec	6 sec
4	loading of job	10 sec	8 sec	9 sec	9 sec	10 sec	9 sec	9 sec	10 sec	9 sec	9 sec	10 sec	9 sec	9sec	9 sec
5	Closing the door	2 sec	3 sec	2 sec	3 sec	2 sec	3 sec	2 sec	2 sec	2 sec	3 sec	2 sec	2 sec	2 sec	3 sec
6	stand by the machine	180 sec	181 0sec	180 sec	180 sec	170 sec	170 sec	170 sec	180 sec	170 sec	170 sec	170 sec	180 sec	170 sec	170 sec
7	Opening the door	2 sec	2 sec	2 sec	3 sec	3 sec	2 sec	3 sec	3 sec	3 sec	3 sec	2 sec	2 sec		3 sec
											Average Cycle timing				3.26 min
	Non-productive actvities														
1	Morning Breakfast														10 min
2	Lunch Time														30 min
3	Time out														20 min
4	Tea														10 min
5	Washroom														10 min
											Total Non- productive time				80 min
	Rework Timing														16 min

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5. Calculations and Result:

Sr. No	Activity	Before	After
1	Operator duty hours	12	12
2	Daily Target	200 jobs	200 jobs
3	Daily rework time	16 min	16 min
4	Daily Inspection time	13.5 min	7.5 min
5	Weekly Inspection Time	0	7.5 min
6	Non- productive time	65 min	65 min
7	Cycle time for 1 job	210 sec	204 sec
8	Total productive time	625.5 min	631.5 min
9	No. of jobs completed daily	178 jobs	192 jobs
10	Efficiency of operator	89 %	96%

Table No. 2 Result Table

5.1 Calculations:

Increase in job machined per shift = 175-170 = 5

Increase in productivity percentage for one shift for one CNC m/c = (175-170)/170 = 2.9 %

Labor cost = 62 Rs / Hr

Total cost saving for 1 shift = [5/ (3.4*60)] * 62 = Rs. 15.19

Total saving per day for 1 m/c = 2*15.19 = Rs. 31.58

Total saving in plant for 1 day = 5 * 31.58 = Rs. 157.9

Total saving per month in plant = 26 * 157.9 = Rs. 4105.4

Total saving per year in plant = 12 * 4105.4= Rs. 49264.8

6. Improvement Suggested:

1) Unused Time should be utilized

7. Conclusions:

It is found that time study is very effective in repetitive job analysis. A small improvement in the cycle processing can save a small time for one small process, as it is a repetitive process the overall impact of the small time improvement is very high and it increases the overall productivity up to large extent. Time study has its several advantages regarding the development of the culture of an organisation. The culture of the continuous improvement gets developed in the organization

The time study gives the information about the time loss during various operation and the particular area which plays major roles in the losses can be targeted for the improvement. Thus this is how the total productivity of the organization can be improved by conducting the time study at various stages

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