PRODUCTION MONITORING SYSTEM

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" I agree that this report is my work except for some summary and information which I already stated "

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ABSTRACT

This project is an upgraded version of the current system in the production line in a company. The production team has to record their non production time (production interruption) on the white board. There are many causes in this non production time such as the machine break down, quality problem, child parts not in stock and etc. Since budget is a big factor most of the companies record their data manually. When it's done manually there are chances to have human made errors. Using this production monitoring system (PMS), we can overcome all the mistakes and have the actual record of data throughout the production process. With the help of this system both production and non production time can be obtained. In this system we could also create the types of non production time, for example in this system there are 4 main types. The first is for maintenance department and the second is for store department, third is for quality control department and last is for others where by it will be used when there is no production or when there is improvement process on the terminal. So using this system, it could indicate if there are any problems on the production line (terminal) and which department is attending to the problem. This system can be used in any kind of industries to improve the production process and also the production output.

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ABSTRAK

Sistem pemantau pengeluaran ini adalah sistem yang telah di naik taraf atau telah melalui proses penambah baikan dengan ciri – ciri yang dikehendaki oleh pihak kilang / syarikat. Pada masa kini system yang dipraktikkan dikilang adalah terhad. Kebanyakan kiland / sysrikat mengambil kos sebagai nilai yang amat penting demi meningkatkan keuntungan jadi kebanyakan pihak kilang / syarikat yang mengambil bacaan data jumlah keluaran iaitu masa pengeluaran and juga masa bukan pengeluaran secara manual. Masalah yang timbul bila kita mengambil bacaan secara manual kesalahan kerap berlaku dan ini akan menimbulkan data yang kurang tepat. Selain daripada itu Penipuan juga tidak dapat dikesan oleh pihak majikan. Tetapi dengan mengunakan sistem pemantau pengeluaran ini pihak syrikat / kilang dapat mengambil data yang tepat and data – data ini boleh digunakan untuk tujuan mengira jumlah pengeluaran, masa bukan pengeluaran dan juga keberkesanaan operator di tempat kerja. Bagi masa bukan pengeluaran terdapat 4 bahagaian iaitu untuk maintenance,setor,kualiti dan juga lain – lain. Lain – lain digunakan pada masa bila terminal itu terdapat proses naik taraf atau tidak pengeluaran. Selain daripada itu sistem ini juga boleh digunakan untuk memberi tahu pihak pengurusan klasifikasi masalah yang dihadapi oleh sesuatu terminal dan juga memberi isyarat untuk memanggil pihak yang harus datang utunk meyelesaikan masalah di terminal tersebut. Sistem ini boleh digunakan dimana – mana tempat pengeluaran untuk menambah baikan pengeluaran kilang / syarikat tersebut.

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LIST OF ABBREVIATION

SHORT FORM	DESCRIPTION
PCB	Printed circuit board
LED	Light emitting diode
IC	Integrated circuit
PMS	Production monitoring system
PLC	Programmable logic control
I / O	Input / output
DC	Direct current
AC	Alternative current
CMOS	Complementary metal-oxide semiconductor
SW	Switch
T	Timer
VR	Variable resistor
TPOT	Total production output time
CPOT	Current production output time
TNPT	Total non production time
TPT	Total production time
UV	Ultra violet
VDC	Volts direct current
RST	Reset
GND	Ground
COM	Common
DIP	Dual inline package

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CHAPTER I

INTRODUCTION

1.1 Background

In this decade there are many new technologies which are being implemented in either small scale or big scale companies to improve their production output. Some of these devices are expensive but consist of reliable system and there are some cheaper devices which is productive too but still, all this devices has their own limitations. Even though technology plays a main role in developing good production monitoring devices but still there are many companies who are concern on the price tag of the device itself (cost).

Looking into all this aspect in the real industrial world I have come up with a good and acceptable solution which is non other then the Production Monitoring System (PMS). This project is actually an upgraded version of the current system in the production line, where by the current device is capable of showing the current number of production output and also the desired (target) output which is set by the management. But still there is lots of paper work which need to be completed. For the production team they has to record their non production time (production interruption) on the white board or any kind of production information board. There are many causes in this non production time such as the machine break down, quality problem, child parts not in stock and etc. Since budget is a main factor, most of the

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companies record their data manually. When this is done manually there are chances to have human made errors. That is not only the problems which is faced by the production team but still at times the information on the production information board is not relevant or complete. This is when some workers forget or not informed about the system being practiced in that particular company. From my personal experience when I was attached with one of the major leading company in the automotive industry we record the data manually. This is done by the operator on the terminal and also the worker who attend the problem on that terminal. There itself we have to fill up 2 forms and at the same time, they have to write down the problem on the production information board. One of the main problems in the production is the operators itself, where by if we don't monitor them they will skip work and the production output won't be consistent or standard. Beyond that there is another problem which the production team faced, it is to inform the people / workers who need to attend the problem in the terminal. The current device is not attached with any calling device or notification gadgets. In some companies if there is any problem with the machine or parts the operators have to inform the line leader or report the problem to the related departments. This in directly a waste of time and some operators will take advantage on this to drag the working time in doing nothing. Even if the operator or line leaders go to the particular department to inform about the problem there might be no one in the department office. So there are many complications in informing the person to attend the problem. At the same time this device will also need to act as an information unit where by the management and also the production team will know what are the classification of the problem which is faced by the particular terminal. During some process such as the line upgrading or improvement process most of the current production monitoring device could not act as an information device. There are not only improvement process but at times there wont be production for a time period so at that time this workers wont be doing anything and this would be raising question to the people from management. so this is a clear situation where by we can see that this devices is not a complete production monitoring unit. For example if there is no proper documentation of the production and non production time there would never be a constant output from the production team. It's not only that but this will be a given chance for the operators to work as flexible as they can because there is no one monitoring them except their line leader or supervisor. Time is always the main factor in production so proper record of

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production and non production time is important for the management to study and also improve their production output.

As a solution using this production monitoring system (PMS), we can overcome all the mistakes and have the actual record of data throughout the production process. With the help of this system both production and non production time can be obtained. In this system we could also create the types of non production time, for example in this system there are 3 main types. The first is for maintenance department and the second is for store department and the third is for quality control department. So using this system, it could indicate if there are any problems on the production line (terminal) and which department needs to attend and also attending to the problem. This system can be used in any kind of industries to improve the production process and also the production output.

Figure 1.0: Workers / operators are not on work due to the whole line is not on production.

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Figure 1.1: Worker / operator was not at his working terminal.

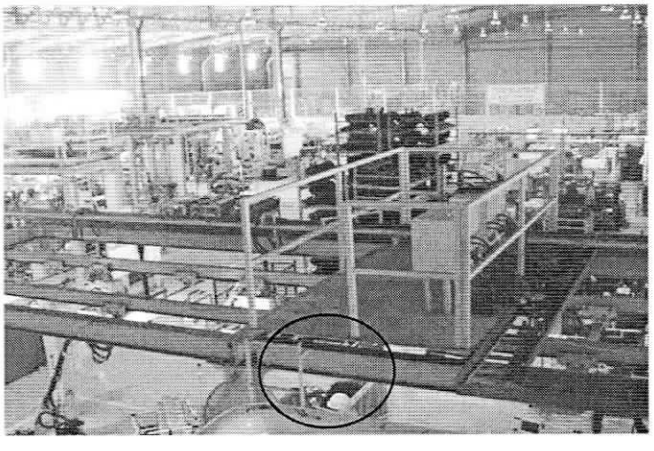

Figure 1.2: Maintenance workers are on work but nothing is indicating to the Management and the production team what is wrong.

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CHAPTER II

OBJECTIVE OF THE PROJECT

2.1 OBJECTIVE

Over the last decade, the implementation of this concept has been attempted by using various electronics circuits. Considering all the facts this system is design to full fill certain objectives. The main objective of this project is **to have a systematic data system for each work cell** and at the same time this system **could also provide accurate information on the production line**. This system could also **act as a display unit for the current production** and also **display the target to be meet by the operator on the production line**. This system is not only limited for the above task but it could also be used **to call the person in charge for the problems faced by the operator by referring to the tower light color** and this also **could inform the management and the other production team what is wrong in that particular terminal**.

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2.2 SCOPE OF WORK

This system has electronic pace timers to display the current status of a work cell or machine in relation to pre-set goal. This goal can be running totals that increment at a timed interval or a total shift goal. This timed increment could be seen in the target section on the display board. This target is set after the time study is done for each particular terminal. The sensors will be fixed on the manual jig or if it's a machine the pulse can be generated into the input of this system and this can be seen in the current section on the display board. From here the person who is in charge can monitor the number of products output which is being completed and also the target to be meet.

Basically there are 3 main departments in a company which is the maintenance department, store department and the quality control department. So this system consists of individual non production timer for all the departments. Where there are 3 departments in this system which is the maintenance department, store department and the quality control department. The function of this individual timer is to indicate the duration of any departments who attended the problem. For example if there is a problem with the machine the terminal operator will press the button for the maintenance department and at this point the target will be paused and the target will remain at the same point of stopping. Then the timer for the maintenance department will be ON and the indication light also will start to flash indicating the department to attend the problem on that particular terminal. After completing the problems or repairing the machine the maintenance person will release the maintenance button and the timer for the maintenance department will be paused and the tower light will be OFF. At this time the target will be ON and it will continue to increment from the point of stopping. Using this method incase there are problems in the work cell or machine the person who is in charge or the person from the management could monitor on the display board and the tower light to know the type of problem and which department is attending to the problem. There is an extra individual timer which will total this to 4 individual timers where by the first 3 is for the different departments involve in a company and the last individual timer is being

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used to indicate other problems such as the Time off (break, meal time and also delay).

With this system at every end of the shift the line leader or the people in charge just have to come to each terminal to check and also take readings from each individual timers and the compare with the production output. After the data is been taken from the control and non production panel the line leader or supervisor have to use the key selector switch to reset the whole system include the display board also. When we refer to the data collected from each terminal the management could get the estimated target to be meet by the operator and the actual output which is produced by the operator. The management could calculate the non production time and also the production time and the check whether the operator has complete his output as required by the company. With all this system this Production Monitoring System could act as a complete device to monitor the production line.

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CHAPTER III

LITERATURE REVIEW

3.1 LITERATURE STUDY

Production monitoring system has been introduced in the industrial ages ago and most of the companies are using it to improve their production output and at the same time to monitor their production outcome. But these devices are not labeled as production monitoring system but they are called in other words such as production counter, indication light and etc. From my research and study on this production monitoring system I have over come a number of existing methods which is still in use. After doing my literature study on these devices which is related to my project I then decided to pick two examples as my project background. The first example is from my personal experience itself where by I did this project during my industrial training.

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