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Introducing Standard Operating Procedure on a Manufacturing Plant

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***Abstract*— Standard operating procedure (SOP) is one of the main factors by which a company can maintain its quality. All the instruction gives guidance to ensure that the process is conducted in a consistent way. A SOP should have all the detail about the process and all the SOP's should be updated if there is any update in the process. All the SOP's should have a similar format and a monitor to check weather all the SOP's are followed or not. These papers have all the important areas of considerations and steps which are required when a SOP is made.**

***Index Terms*—SOP, Documentation, Microsoft excel, SOP general format, developing SOP, Standardization**

I. INTRODUCTION

Standard operating procedure is the set of documents of instruction made by a company to help workers to achieve better quality, effective production and uniformity in the performance. It has many names in a much different country or the company but the most common name is SOP. Standard operating procedures are used in many sectors like clinical research, health safety and production. In production, it helps in quality, quantity, and safety. The set of procedure gives all the kind of information to the worker.

A SOP describes all the fundamental and technical operational process of an organization. The document SOP is used to provide all the general information or guideline about a process to maintain its quality.

All the station in a manufacturing plant should have an set procedure so that they can maintain the same standard in all the product i.e. all the product have same efficiency and quality. All organization may have different requirements but all have a common goal of no error and fine product.

II. OBJECTIVE

In today's world's if you are investing time and energy in some documents then it has to be effective and it should be followed by the person it is made for. Some of the reason to invest your time and energy in SOP are as follows.

1.It increases the quality with quantity of the product.

2.All the workers will have the set procedure, by which it decreases the number of false.

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3.All the tools and the machine will be given accordingly.

4.All the safety instruction will be given.

5.SOP's will reduce system variation and everything goes according to schedule.[1]

6.Employees can help and train each other.

7.If a station is not running because of the absence of an employ, then the SOP can be used by another person.

8.Prevent failures in manufacturing.

III. GENERAL FORMAT OF AN SOP

There is not correct format for a SOP, companies develop their own format. SOP format depends on the requirement of a planted-In an automobile plant all the SOP'S should have a control number which will be different for all the SOP's (helps in tracking).The SOP should not made for any particular person, the processes should be explained in plain English.

All the SOP's have some general requirements like Language[3].Though, pharmaceutical documents are primarily written in English language owing to WHO GMP preferred language [2].But in same condition you can write SOP's in local language also. It depend on the worker, if the worker is more comfortable in his own language then the language can be change accordingly. Most of the time the type of font use is 'Times new roman'. As there is no general format for an SOP, all the organizations have their different format. All type of SOP's have a general format which has three sections.

1.Title or header
2.Main content
3.Pictures
4.Footer

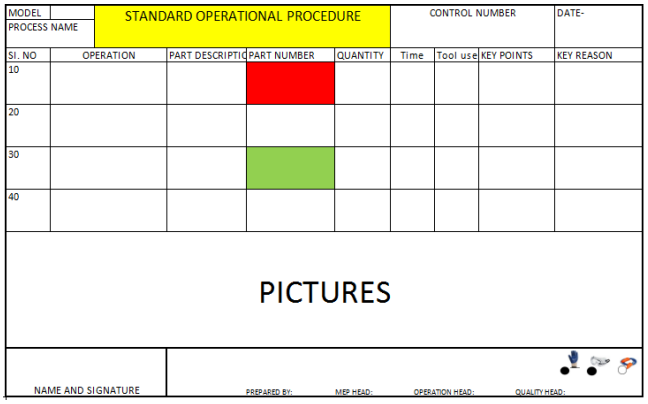
In title we have model name, process name, SOP title, control number and last update date. Some of them remain common for all pages.

After that, main content comes which is the most difficult and time consuming process. All the main detail like process steps, part detail, part number, tool key points and many more are there. All the points of a main content are different from each other. When all the data is collected and then only we can start writing the main content.

While collecting all the process information and detail we have to click some important pictures. All the pictures should be focused and labelled if required.

At last, the footer which contain all the detail about SOP maker, issued date, safety instruction, operational head and quality head.

If there is any issue in the SOP then it has to be mark and then the worker or engineer has to solve the problem. As example given below.



Part number wrong
Same part diff. part numer

IV. Presenting the SOP

Presenting an SOP's is the most important part ,a SOP is made to present a person task. If with any reason the presentation is not visible properly than there is no use of SOP. All the points and pictures should be present and visible properly. Most of the time all the companies has a display machine which display all the SOP's required in the manufacturing line.

The best SOP will be the one how has better presentation and all the important information about the process which is to present in small steps. The presenting SOP should not have any king of colours (marking a mistake).

V. TIPS FOR WRITING AN SOP

1. Set a specific reader in mind and tailor the process accordingly.

2. Write all the processes in an rough paper before typing it on document.

3. All the SOP's should be made in excel software.

4. All the required pictures should be clicked before starting the SOP.

5. All the processes should be in plain English.

6. All the safety precaution should be mentioned.

VI. Developing an SOP

Developing an SOP is a big process because all the processes should be seen by the person and then that person has to create a format which should be easily understood by everyone in the industry. The font and the font size should be kept in mind because for one step you have a set space and the font size should be easily visible to the worker. The process should be direct and it should contain Procedure or activity, tool used and specification, part name and detail, average time taken, quantity of the part, safety instruction, key points and key reason. All these things will come in 2 or 3 lines and that's why we have shortage of words.

Step by step information about the tack or process is the main part of an SOP[4].A single process should be carried in a single page, it cannot be extend to another page or SOP.

VII. Steps for developing an SOP

1.All the SOP should have a unique control number and all the number should be arrange properly, ex-in an automobile plant we have two assembly one is sub assembly and another is main line, the place where the door, chassis, engine are assembled is an sub assembly line and the place where the door is joined to the chassis is an main line.

Tips: The control number should have layers so that a normal person can also read that.Example – XYZ-MEP-ML01-0010,where XYZ represent the vehicle name, MEP represent that it's a part of manufacturing engineering, production and ML01 represent main line and 0010 is just a sequence number.[1]

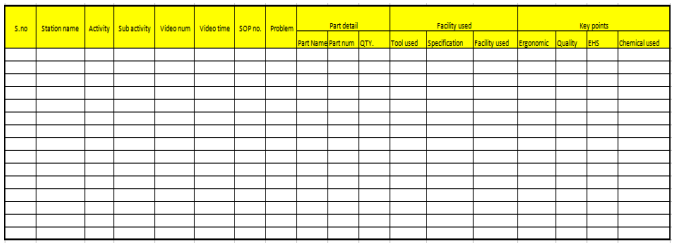
2.Describe every activity in detail, this section include

- Tool name and specification in that particular activity.
- Safety levels and safety gadgets used in activity.
- Assembled parts name and number.
- How the material and tools should be use.
- Required picture of the activity.

Tip: Most of the people can't read long pages which are full with many detail so, it is recommended that one SOP sheet should have only 3 to 4 steps which should contain all the detail given above.

3.Create an overall task sheet, which should have all the kind detail about the task, this sheet can be use by senior engineer or the line in-charge. The sheet mostly called as master sheet, it include only important points like- line name, responsible person, tools detail, part detail, facility used etc. The sheet has no safety points, pictures and has a small description of the task.

Tip: All the master should values and content should be copy from the SOP's and if there is any mistake in the SOP's then both have to be corrected.



4.Set-up a system to monitor the SOP regularity.
When task of completing the SOP is done, then the correction part comes with more difficulties. The entire SOP should be updated and the task should be change if there is an problem facing by the worker. If all the SOP's are corrected and all the workers are following it then only the task of making SOP will be benefited.

VIII. THINKS TO REMEMBER

1. Never use anyone name, use Job title.

2. Use plain English guidelines and a process should have number of steps.

3. Include all the necessary information to complete the task.

4. All the required photos should be clicked, so that any new job person will not face any kind of problem.

5. Recollect all the data and check SOP again.

6. If there is any mistake then it has be noted or marked by different colours.

IX. RESULT / EXECUTION OF PROJECT

All the processes are drafted and followed by all the workers in the production line. As the main target of SOP is to increase quality with quantity has achieved.

X. ADVANTAGES

1. The SOP's are developing to decrease the variation and to promote the quality of an product.
2. TO minimize the miscommunication and to increase the safety concept.
3. Old data can be extracting for any future use.
4. It can also be used as a checklist for auditing procedure.
5. By using an SOP's may be a new person can complete the task in the absence of the in main worker.
6. Sustained return on investment due to reduced process errors.
7. Performing continual quality improvement.

XI. DISADVANTAGES

1.In this process we have note and draft all the procedure and due to this reason it become time consuming.
2.Reduction in workplace individuality

XII. CONCLUSION

This project has achieved ~100% accuracy and has proven good efficiency. Applying of this project in any organization will reduce the human workload and provide more accuracy. This system will be very easy to guide and a production line can be operated with minimal knowledge .The project can be use for guiding new employees in the plant.

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