VISUAL CONTROL TECHNIQUE IN MANUFACTURING

Prashant Kamane[1], Prashantsingh Baghel[2], A. Sridhar[3]
[12]*UG Student, G. H. Raisoni College of Engineering, Nagpur- 440016,Maharashtra, India*
[3]*General Manager, Spacewood Furnishers Pvt. Ltd. Nagpur-44016, Maharashtra, India*

Abstract

Visual control is a management technique employed in many places where information is communicated by using visual signals instead of texts or other written instructions. Visual controls are information displays, the system of signs layouts, material storage, color-coding and handling tools. Hence such controls accomplish the old-fashioned way of technique i.e. everything in its place and a place for everything. The visual system makes product flow, operations standards, schedules and issues instantly acknowledgeable to even the casual observer. In this paper, we also added a case study which we had done in the wood furniture industry.

Keywords: *visual control, management technique, communication, manufacturing.*

1. Introduction

Visual management may be a method to assist increase efficiency and effectiveness by creating things visible. Many firms use the visual management to form things easier or simpler by the employment of visual signals. very often the signals are available in the varieties of kanban or heijunka boxes or colored wear (if you're a team). For firms United Nations agency have tried it, visual management makes things simpler by merely creating things visible. it's been tested that once things area unit visible, they continue to be in our acutely aware minds. Visual management effectively communicates the knowledge that's required for selections to be created.

More usually than not, visual management is employed to switch textile or numerical knowledge displays with graphical displays. The graphical displays should be straightforward enough that the worker will look at a symptom and simply perceive what's being aforesaid. Some corporations use boards wherever tools square measure unbroken. alternative samples of visual management embrace semiconductor diode displays, colored lights or LED displays. These devices square measure sometimes referred to as Andon boards. Visual management is thought of something that's business connected that's visual. as an example, you'll be able to post the most recent production report on your cubicle wall and this can be thought of visual management

2. Purpose of Visual Control

Visual management ways aim to extend the potency and effectiveness of a method by creating the steps therein method a lot of visible. the speculation behind visual management is that if one thing is clearly visible or in plain sight, it's straightforward to recollect and keep at the forefront of the mind. Another facet of visual management is that everybody is given equivalent visual cues and then square measure doubtless to possess an equivalent viewpoint.

There square measure many alternative techniques that square measure accustomed apply visual management within the work. Some corporations use visual management as AN structure tool for materials. A clearly labeled

storage board lets the worker understand precisely wherever a tool belongs and what tools square measure missing from the board. Another straightforward example of a typical visual management is to possess reminders announce on cubicle walls in order that they continue to be in plain sight. Visual signs and signals communicate data that are required to create effective selections. These choices could also be safety orientated or they will offer reminders on what steps ought to be taken to resolve a tangle. Most firms use visual controls to 1 degree or another, several of them not even realizing that the visual controls that they're creating have a reputation and a operate within the work. whether or not it's recognized by the name of "visual control" or not, the actual fact is that replacement text or range with graphics makes a group of knowledge easier to know with solely a look, creating it a lot of economical manner of an act a message.

Visual management is designed to form the control and management of an organization as easy as doable. This entails creating issues, abnormalities, or deviations from standards visible to everybody. once these deviations are visible and apparent to any or all, corrective action is taken to instantly correct these issues.

3. Benefits of using visual control

a) Provide instruction to employees
b) Provide immediate feedback to consumers
c) Convey information
d) Make the problems, abnormalities, or deviation standards visible to everyone so corrective action will be taken ahead of time.
e) Display the operating or progress status in an easy to see format

4. Types Of Visual Control

Controls or area controls incorporate lines on the floor, shading coding and shadow sheets for a scope of procedures. They are planned to direct the activity of our group. These fundamental sort of visual controls require almost no clarification with reference to what they mean and what activity is required. The test with these controls is guaranteeing consistence from everybody in our group. The advantage obviously with these sorts of control is that our brains are hardwired to agree, influencing the proper activity to is the main activity.

Fig-1 Area control by lining and shading

Metrics and charts area unit show controls which give info and feedback on the performance of a number of components. the most effective samples of these area units very straightforward to grasp. there's consistency across every chart and across every space at intervals our business, creating it easier for folks moving across areas to grasp the standing and knowing however they have to respond.

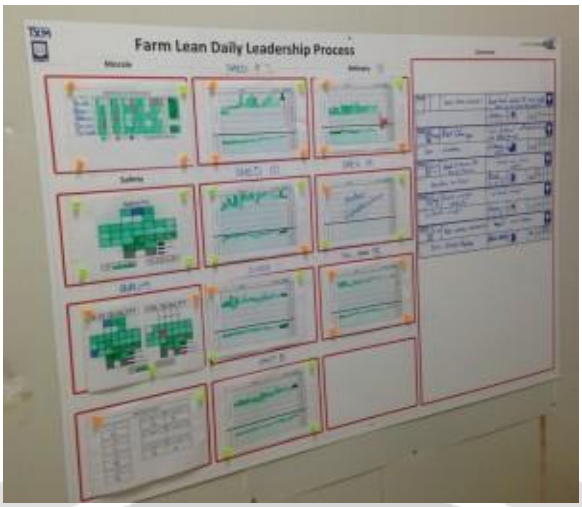

Fig-2 Performance charts

5. Visual Control At Workplace - Case study

In wood furniture industry there are various types of problems which affects on productivity and quality of finished product.

In the production process, there are different operations like cutting, edge binding, drilling, etc. And one of the important operations is assembly. In assembly different parts assembled together to get the final finished product.

During the assembly process, to join two panels screws are being used. Before doing it, in drills inserting of PVC or metal is necessary as it helps to prevent from enlarging drill holes and from scratches. So PVC and metal inserting is a very important aspect.

Fig-3 Pvc and metal insert

In wood furniture industry the workers do not have skills to understand the product drawing which shows details about which insertion should be done. There are three different types of insertion.

- PVC insert 5mm
- PVC insert 8mm
- Metal Insert

Hence the workers go for the wrong insertion and it affects the final product. There could be many problems generated due to this small mistakes, therefore we decided to take it as case study challenge to solve this problem.

I. **Problem Statement:**

Wrong insert of PVC and Metal in wooden panels.

II. **Different Causes:**

Communication gap, Memory problems, Workers does not have skills to understand drawing .

III. **Solution:**

Implementing Visual control technique by converting drawing of products to electronic multimedia files.

IV. **Steps to convert:**

i. Firstly we converted drawing into PowerPoint presentation format.
ii. Then we show 3 insertions by 3 different colors.
iii. PVC 5mm- 

PVC 8mm- 

Metal 8mm- 

iv. After showing with this color coding finally we converted it into short movie clips for different products.
v. And then we transfer these files to LED display.

V. **Implementation:**

We put LED display in front of the workplace and play the movie clips. Now workers can easily do the same work by watching on the LED.

VI. **Result:**

- Reduces number of mistakes.
- Inserting process become flawless.
- Quality improves

7. Conclusion

- Including visual controls in manufacturing will result in better understanding.
- If implemented properly it will help to reduce the cost of accidents or small defects in the product. Also to convey the information to employees easily.

8. References

[1] *Greif, Michel (1991). The Visual Factory: Building Participation Through Shared Information. Productivity Press. ISBN 978-0-915299-67-6.*
[2] *Nikkan Kogyo Shimbun (1995). Visual Control Systems. Productivity Press. ISBN 978-1-56327-143-4.*
[3] *Ortiz, Chris A; Park, Murry (2010). Visual Controls: Applying Visual Management to the Factory. CRC Press. ISBN 978-1-4398-2090-2.*
[4] *Bateman, Nicola; Philp, Lee; Warrender, Harry (2016). "Visual management and shop floor teams development, implementation, and use.". International Journal of Production Research (54(24),): pp.7345–7358*
[5] http://txm.com.au/blog/visual-controls-workplace