

Organization learning by analyzing Manufacturing losses- A case study

Dr. Vinod Waiker¹, Mr. Virendra Pal², Mr. Ankit Gawande³

¹Asst. Professor, Datta Meghe Institute of Management Studies, Atrey Layout Nagpur, Maharashtra

² Executive, Trivani Wires Pvt. Ltd. Nagpur, Maharashtra, India

³ Student, Datta Meghe Institute of Management Studies, Maharashtra, India

Abstract - Production learning is a process and be a part of continuous improvement process. Quality improvement is inversely proportionate to the manufacturing losses. Analyzing the production losses due on various reasons must have their unit of measurement as Rupee, which directly or indirectly says that deviation is very costly. This paper study a case of losses at galvanizing process, understand them and suggested some of solution which must be documented, to enhance the organization learning. The dynamism of updating of learning suggest that the even single piece of changes and innovation must be reflected in the documents without losing any time.

Key Words: Organization Learning, Manufacturing Losses, Continuous Process Improvements, Process Refinement, Quality Control

1. INTRODUCTION

The learning curve phenomena is common in manufacturing industry and service operations. Wright(1936) observed the cost association with range of product manufacturing. The basic strategy which every organization generally follows is to produce more number of products to keep the cost low. Generally learning curve has been modelled on the basis of observed cost behaviour.

The variation in the input to output in a working system is considered as a loss. This paper examines the other source of the cost due to losses at production process. The losses can be incurred due to any or all factors of production process.

The loss related to manufacturing related to men can be management loss, motion loss, distribution loss, line organization loss, measuring and adjustment loss, related to machine can be Breakdown, setup and adjustment, cutting blade replacement, start up, minor stoppage and idling, speed reduction, defect and rework and shutdown and related to resource consumption are Yield loss, energy loss, die, jig & tool loss.

This paper examines the machine related cost especially which reducing the productivity of galvanising Process of Wires.

1.1 Process Description

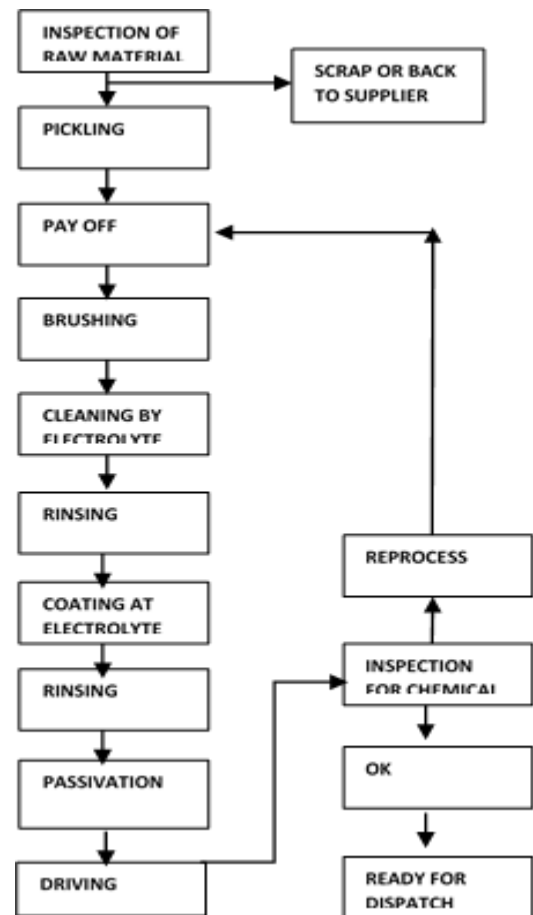


Figure -1: Process Flow

1.2 Metalworking Process

The process involved in drawing a wire is a metalworking process which reduce the cross-section of a wire by pulling the wire through a single, or series of, drawing dies. The application for wire drawing can be electrical wiring, house cables, paper clips, springs, spokes for wheels etc.

Drawing process is somewhat different from extrusion, because in this drawing the wire is pulled through the die and in extrusion it is pushed. The temperature at which drawing is don is usually room temperature.

2. OBJECTIVES

1. To analyze production and process controls of Galvanize plant
2. To analyze and analysis the galvanizing process losses and process mapping
3. To analyze the defect and rework losses in finished product
4. To analyze the setting up and adjustment losses wire drawing machines

2.1 Scope

- This study and analysis can be used for other galvanized plant.
- Losses of G.I. plant can be used for other industries.
- Study of workforce movement at shop floor can be used for other shop floor management at manufacturing industries

2.2 Data Collection

Primary Data

- Personal Visit to company
- Interview and Observation

Secondary Data

- Internet Source
- Company official documents, journals & References etc.

2.3 Sample Size

- Ist Shift: 25 Employees
- IInd Shift : 25 Employees

3. DATA ANALYSIS AND TESTING

Production losses whether it is small or large companies, it directly reflect the cost of production. The situation is getting worse in case of small company. This will also persist for longer duration due to routine process and not able to rectify easily. Planning with deadlines has to be devise to add the modified process, number of items along with meeting timeline and deadlines.

The production process not able to meet its goal because of issues related to machinery malfunctions, even shortage of material supply shortages, errors or mistake related to human, ambience of workshop, temperature and other issues that companies have varying abilities to control. Poper measures will helps in minimize losses, along with their

financial impact Some of the losses consider while processing steel wire are as follows:

- Large amount of iron-zinc and zinc ash loss on product.
- Dross particle settled down at the bottom of zinc layer.
- Re-process of re-bar coating.
- Passivation color variation on re-bar rod.
- Chemical properties

3.1 Initial Situation

The Initial stage reveal about the existing process which is having the following observations

- Dross formation is there at the galvanizing process. It is very sensitive to the amount of Fe which is molting into zinc.
- It formation of dross is like one part of Iron combines with twenty six times its weight.
- Dross is by-product and waste product so extremely costly because of zinc loss.
- The selling price of dross is 65-75% of zinc price.
- The formation of dross at
- Dross formation is approx. 7 -11 % of zinc consumption

3.1 Solution of the Issue

- Very low Fen content Zinc can be used approximately SHG 99.995%.
- In the Fe absorption process 90% dross is produced.
- Try to maintain temperature at 445 - 455°C.
- Maximum temperature do not exceed 465°C.
- Dross needs to be remove regularly

4. CONCLUSIONS

- The temperature of flow remains slow coating on material should be maintained to remain under 70gsm
- As the temperature of flow increases coating will improve and it becomes more than 70gsm
- Coating on Re-Bar rod is improves after establish correct process, quality and quantity of chemicals used.
- It is increasing production cycle of coating on RE-Bar rod when establish the proper course of action

One of the solution is to use the pure zinc which has a very low FE content i.e. SHG 99.995% Zn. Use make of Total quality improvement process so that improving one of the process every other department need to understand and take the action accordingly to determine proper process, quality check and quantity of chemical process. In this process organization need to follow environment safety norms and conditions.

The solution part should also be reflected in the department of quality improvement and how to implement in the process. This quality manual speaks about the current scenario and its related solution which need to be share to all the employees who is actually working upon it. This led to minimize the defects and rework losses in the finished products and lots of money can be saved while improving the galvanizing process.

REFERENCES

- [1] Joseph B. Mazzola and Kevin F. McCardLe, The stochastic learning curve: Optimal production in the presence of learning curve uncertainty, *Operation Research*, Vol. 45, No 3, May-June 1993
- [2] Greenwood, Davydd J, *Organizational Learning II: Theory, Method, and Practice*, ILR Review. July97, Vol. 50 Issue 4, p701-701. 2p.
- [3] Holman, R. L. (1995, September 15). Kawasaki Steel shuts line. *Wall Street Journal - Eastern Edition*. p. A10
- [4] Peter Thompson, The Relationship between Unit Cost and Cumulative Quantity and the Evidence for Organizational Learning-by-Doing, *Journal of Economic Perspectives—Volume 26, Number 3—Summer 2012—Pages 203–224*
- [5] Codrut, a Dura and Claudia Isac, TUsing Taguchi methods to improve the production process quality: A case study, *Total Quality Management* Vol. 20, No. 11, November 2009, 1189–1212
- [6] Michael A. Lapré, TManaging Learning Curves in Factories by Creating and Transferring Knowledge, *CALIFORNIA MANAGEMENT REVIEW* VOL. 46, NO. 1 FALL 2003
- [7] Hau Lee, Production control in multistage systems with variable yield losses, *Operation Research*, Vol No 36, No 2, March-April 1988
- [8] <https://www.journals.elsevier.com/journal-of-loss-prevention-in-the-process-industries>
- [9] Linsu Kim, Crisis Construction and Organizational Learning: Capability Building in Catching-up at Hyundai Motor, *ORGANIZATION SCIENCE/VOI. 9, No. 4, July-August 1998,1047-7039/98/0904/0506/*