

IMPROVEMENT OF FLY ASH BRICK MANUFACTURING INDUSTRY USING KAIZEN CONCEPT

Madhuri Bhattacharya¹ and Dr. Abhijit Chakraborty²

Abstract-The fly ash brick manufacturing industry are producing fly ash bricks. But there is a lot of scope of improvement regarding the quality of the product and the production system. A company can earn profit by improving productivity as well as focusing over quality. By the application of Kaizen concept and certain tools of it, the proper utilization of inventory can be made, along with doing proper maintenance. Thus in this paper, an attempt has been made to improve the quality aspects as well as improving the profit by the help of kaizen concept and introspecting at various dimensions of the production process and to give a direction for the betterment of fly ash brick manufacturing industry.

Keywords: Quality, Productivity, Improvement, Production

I. INTRODUCTION

The fly ash brick manufacturing industry throughout the world are gaining acceptance in the construction sector. The main factor for achieving business success of FA brick industry is quality. Quality is the key strategic factor for competing in today's Global market place. The main aim is to assure zero defects regarding the quality of the product and the production system. According to the kaizen concept, it is recognized that there is always scope for improvement. In this paper an attempt has been made to improve the overall production and quality system of fly ash brick manufacturing industry after implementing different kaizen tools .

The concept of kaizen was introduced in Japan in 1950 when the government and management had a feeling that there was a problem in their current management system and a pending labour shortage. The problem was solved with the help of some workforce (Brunet, 2000).The word kaizen is a compound word which involves two concepts, Kai (change) and Zen (good) for better (Palmer, 2001).

Kaizen means improvement, continuous improvement involving everyone in the organization from top management, to managers then to supervisors, and to workers. In Japan, the concept of Kaizen is so deeply engrained in the minds of both managers and workers that they often do not even realize they are thinking Kaizen as a customer-driven strategy for improvement.

¹ *AMS college of Polytechnic Barasat, West Bengal*

² *Technique Polytechnic Institute Hoogly, West Bengal*

Kaizen is a Japanese word that has become common in many western companies. The word indicates a process of continuous improvement of the standard way of work (Chen et al., 2000).

Continuous Improvement is one of the core strategies for excellence in production, and is considered vital in today's competitive environment (Dean and Robinson, 1991). It calls for endless effort for improvement involving everyone in the organization (Malik and YeZhuang, 2006). Bassant and Caffyn (1994) define the Continuous Improvement concept as 'an organization-wide process of focused and sustained incremental innovation'

The origin of quality is mean of quailsas "how constituted", traces its basis in human needs and wants (Schultz, 1994). The definition of quality was "fitness for use; customer satisfaction" (Juran, 1974) and another definition of the quality by Crosby was "quality is conformance to requirements" (Tsai, 1996). According to Berndtsson & Hansson (2000) and Brunet & New (2003), a kaizen (and the techniques for its development) can be adapted to fit the circumstances of each company or sector.



Fig. 1

II. CASE STUDY

A brick manufacturing company located at 24 PGS, west Bengal almost 10 years old in the market but it is facing some problems related to productivity & quality. The main headache of the management is to enhance the desired productivity level of the enterprise as well as the quality standard.

III. METHODOLOGY

The problem has been addressed by the help of a questionnaire, observation and analysing the previous financial statement or records of the company. Those relevant information has been taken into account and analysed.

IV. FINDING AND ANALYSIS:

After doing the analysis, it was found that the concern brick manufacturing company is facing problems in the following perspective:

- Production efficiency
- Poor layout
- Quality maintaining problem
- System for simplification
- Not doing things right the first time
- Chaotic process throughout the factory.

To implement kaizen, it requires careful planning, design and execution of the Business changes needed to achieve the desired Goal.

Analyse the current state of the fly ash brick industry

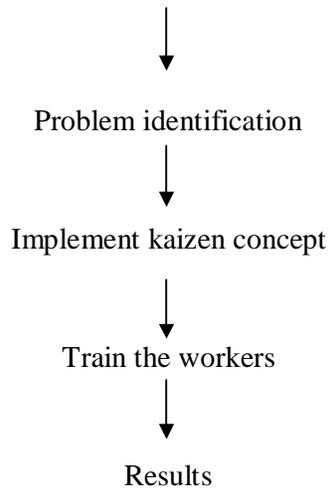


Fig.3

An overall view of the kaizen concept implementation issues and future research directions concerning fly ash brick industry are:

- ✓ All the machines are to be clean to the extent possible
- ✓ Person deployed to see the cleaning operation
- ✓ Bricks are stack according to production date
- ✓ Standard procedure for production are regularly reviewed
- ✓ Tools and machines are to be placed correctly
- ✓ Need of training to be emphasised
- ✓ Workers are to be totally involved in the kaizen concept

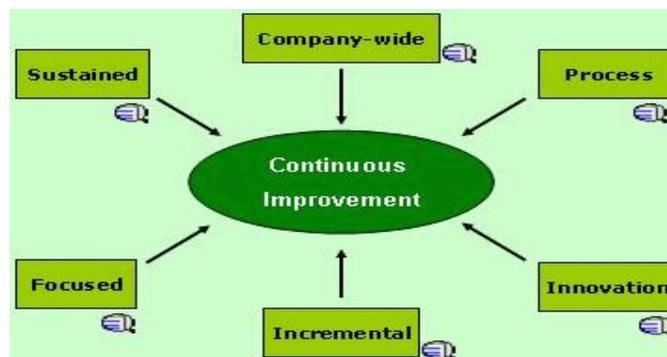


Fig.4

V. APPLICATION OF FIVE - S FRAMEWORK

- **Sort:** The obstacles to be removed while doing the job. The accumulation of unnecessary items to be reduced. The unwanted materials are to be segregated from the workplace.
- **Set in order:** In fly ash brick manufacturing industry should have tools/ equipments in close proximity .FIFO to be applied and work flow should be smooth and easy.
- **Shine:** In this aspect cleanliness of the workplace should be given priority. In addition the workplace to be safe and easy to work.
- **Standardize:** The best practices are to be standised in the work area. Proper orderliness to be maintained with desired standard.
- **Sustain:** Regular audits are to be performed along with proper training to be provided to the workers. The self discipline is to be inducted in the organisation culture.

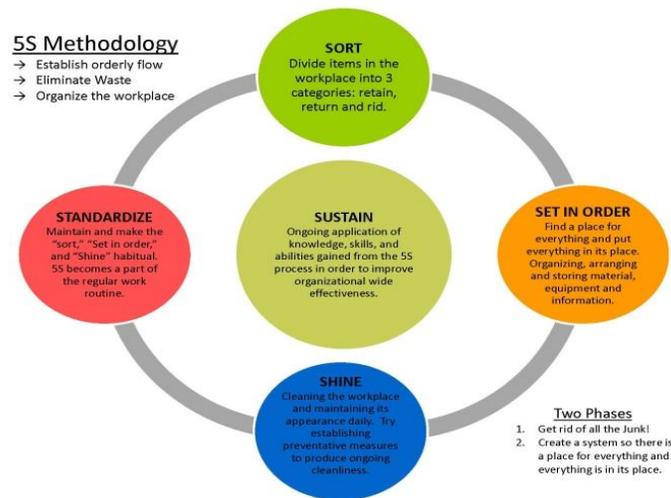


Fig. 5

5s stand for Sorting, set in order, Sweep, standardise, sustain. It is the first step for continuous improvement.

- There is always room for improvement
- Workers should be clear / satisfied/confident about offering suggestions
- Everyone's opinion is valued
- Strong discipline
- Team work in quality circle

VI. PROPOSED MODEL



Fig.5

The development of the fly ash brick manufacturing industry can be possible by improving at different spheres of production system. In that context, the problems are to be visible then only counter measures can be taken by determining the root causes of the problem. This will lead to a hypothesis solution that is to be tested and then solution to be implemented. This will ultimately lead to a standardised work.

VII. MAIN FACTORS NEED TO BE IMPLEMENTED

- Elimination of waste

- **Overproduction waste:** In fly ash brick industry overproduction waste takes place when bricks are produced not according to their requirement, planning.
- **Waiting waste:** whenever bricks are not moving or being processed, the waste of waiting occur.
- **Inappropriate process:** Inappropriate process brick production increases the waste amount.
- **Excess inventory:** it may sometimes increases the lead time of production.
- **Defects:** quality defects of fly ash bricks resulting in rework or scrap are a tremendous cost of organization.

VIII. CONCLUSION

The fly ash brick manufacturing industry problem can be addressed by kaizen concept to improve the productivity and quality. Different changes are to be made in the production

system by putting emphasis on workflow and proper arrangement of tools and equipments. The unnecessary and unused items are to be traced and removed from the work place to make it clean, spacious as well as help in improving the workflow. The 5S concept can be applied for kaizen concept along with keeping a strict vigil on elimination of waste due to overproduction, excess inventory, inappropriate process or defects. All this will make the fly ash brick manufacturing industry competitive in the future market.

REFERENCES

- [1] B. Chatterjee, K.K. Singh, N.G. Goswami“ *Flyashutilizationforvalueadded products*”,February,1998.
- [2] Bassant J, CaffynS,“Rediscovering Continuous Improve- ment”, Technovation, Vol. 14, No. 1, 1994, pp. 17-29.
- [3] Berto, R. M. V. S., & Nakano, D. N. (2000). A produçãocientíficanos anais do Encontro Nacional de Engenharia de Produção: um levantamento de métodos e tipos de pesquisa. *Revista Production*, 9(2), 65-76.
- [4] Brunet, A. P., & New, S. (2003). Kaizen in Japan: an empirical study. *International Journal of Operations & Production Management*, 23(12), 1426-1446.
- [5] Chen J C, Dugger J., Hammer B,“A Kaizen Based Approach for Cellular Manufacturing Design: A Case Study”, *The Journal of Technology Studies*, Vol. 27, No. 2, 2000, pp. 19-27.
- [6] Das,A.K.,(1999) : *Coal ash utilisation: An alternative technology*, Journal of CAII,September,1999.
- [7] Dean M, Robinson A,“America’s Most Successful Export to Japan: Continuous Improvement Programs”, *Sloan Management Review*, Vol. 3, 1991, pp. 67-74.
- [8] Larson, H.F.G, “*An analysis of maintenance strategies and development of a model for strategy formulation– A case study*”,Department of Production and Production Development, Chalmers University of Technology, Goteborg,Sweden,2012.
- [9] Pasupuleti,P,“*Factors contributing to the proliferationof a native technologyof a developing nation contributing towards the sustainable development: A case study*”, Master Thesis, Aalborg Universitet,2010.
- [10] Malik S A, Li-bin L, YeZhuang T., Xiao-Lin S, “*Continuous Improvement Practices in Asian Developing Countries: A Comparative Analysis between Chinese and Pakistani Manufacturing Industry*”, 14th International Conference on Management Science and Engineering, 2007, pp. 692-697.