

## 5S INTRODUCING IN PVC WINDOW SYSTEMS PRODUCTION

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**Keywords:** 5S techniques, window systems production, Kaizen

**Abstract:** In the present study is presented the Keisen concept along with its “5S’s applied in the manufacturing of PVC windows and doors. Properly applying these procedures could yield spectacular results of increased productivity, without investing in modern and expensive equipment.

### 1. Generalities

Today, companies, dedicated to manufacturing activities, are continuously searching to apply concepts to result in higher productivity and financial performance. This thing can be done investing in high technology or by implementing advanced operational management techniques. One of these techniques is the KAIZEN concept.

Kaizen is the philosophy referring to continuous improvement of manufacturing process, management and all activities which are part of manufacturing process. In Japanese, Keisen means continuous improvement, formed from the words 'Kai' meaning continuous and 'zen' meaning improvement.

From the view point of Kaizen, management has two major functions: maintenance and improvement.

Among the most important principles of Kaizen, we could list the following:

▶ Quality – on the first place

Regardless how attractive is the pricing and delivery offered to the client, the company will not be able to compete if the product or the service will lack quality.

▶ Talk based on facts

To properly understand a problem, one must recognize it; collect information to create databases to be thoroughly analyzed.

▶ Next process is the client

A material or information offered by the production process A (contractor) is processed and improved in process B and further sent to process C. The next process should be always viewed as being the customer.

### 2. The 5S’s

1 SEIRI ( TIDINESS)

▶ Identify things which are necessary and not, discarding the ones not.

2 SEITON (ORDERLY)

- ▶ Orderly position in place all items that remains after completing *seiri* step.
- 3 SEISO (CLEANLINESS)
  - ▶ Ensure that all equipment and working environment are being kept clean.
- 4 SEIKETSU (STANDARDIZED - SYSTEMATIC)
  - ▶ Extent of the cleanliness concept to the individuals personal cleanliness and continuously apply the other steps.
- 5 SHITSUKE (DISCIPLINE-STANDARDIZED PROCESS)
  - ▶ Getting to self-discipline and make a habit to applying 5S's will result standardized applications.

### 3. 5S application in manufacturing practice of PVC window systems

Production system in which 5S techniques are implemented in producing and marketing PVC doors and windows with thermo pane glass.

The company's activity is divided in three main fields:

- PVC windows and doors manufacturing;
- thermo-proof glass manufacturing;
- doors and windows assembly;

After a period which was necessary to determine the benefits of the 5S's to the implementation method chosen it was time to build a team to implement the techniques. So, the following steps were taken:

#### a. SEIRI (TIDINESS)

- Identification of items with no use in the factory, for the next 6 days, an labeling them;
- Disposal of scrap resulting from the process - figure 1.



Figure 1. Excess raw materials from workshops area

- Remove excess raw materials from workshops area;

**b. SEITON (ORDERLINESS)**

- Classifying items based on their use;
- Giving a name, volume and location number to the sorted items – figure 2;



*Figure 2. Classifying and giving a name items*

- Naming and allocating appropriate space to minimize the time to find the item.

**c. SEISO (CLEANLINESS)**

- Cleaning of equipment, floor and walls - figure 3.



*Figure 3. Cleaning of equipment*

- Dust removal.

d. SEIKETSU (DISCIPLINE-STANDARDIZATION)

- Applying activities related to the 5S's every day to find quickly irregularities appearing in the process;

#### **4. Conclusion**

Many aspects in the factory are simple problems like the way work is being done, the way difficulties and various aspects are being dealt with on a daily basis, as well as inappropriate working procedures and mistakes resulting from worker mistakes due to lack of attention.

In the scope to reduce these, management must establish standards, leading to self-discipline among employees, to maintain standards and assure that customers are not receiving items below standard quality. Majority of problems concerning quality can be solved by using principles "*gemba-gembutsu*" and by a practical approach, with reduced costs.

After a constant application of the 5S's, the company has noticed an increase in productivity in various activities, by anywhere between 20 and 30%. Continuous efforts to introduce the 5S's will result in changing in management culture. The future will tell, if in small and medium size companies in Romania, these advanced techniques will have success or not.

The authors believe that it will all depend on the development of the human resources implicated in such projects.

#### **Bibliography**

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